



# *iExpertAdvisor*<sup>TM</sup>



# ***FX PowerGrid Plug-in***

Requires VTS-Connect minimum version **4.0.0.43**

The ***FX PowerGrid Plug-in*** allows you to easily build a trading grid that opens multiple positions as the market moves.

## ***What is a Plug-in?***

*VTS stands for Visual Traders Studio.*

*The VTS Expert Advisor Builder is a Windows graphical application that enables non-programmers to build complex Expert Advisors by dragging, dropping and connecting logical elements.*

*The VTS application contains basic functionality to build almost any Expert Advisor.*

*A VTS Plug-in allows traders to easily implement advanced trading techniques using an add-on user interface.*

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## Enable the *FX PowerGrid Plug-in*

You must enter your License key to enable the **FX PowerGrid Plug-in**. Your license key for all of your VTS products can be found in the [Members Area](#).

License keys are entered in Visual Traders Studio (VTS) from the License entry tab.

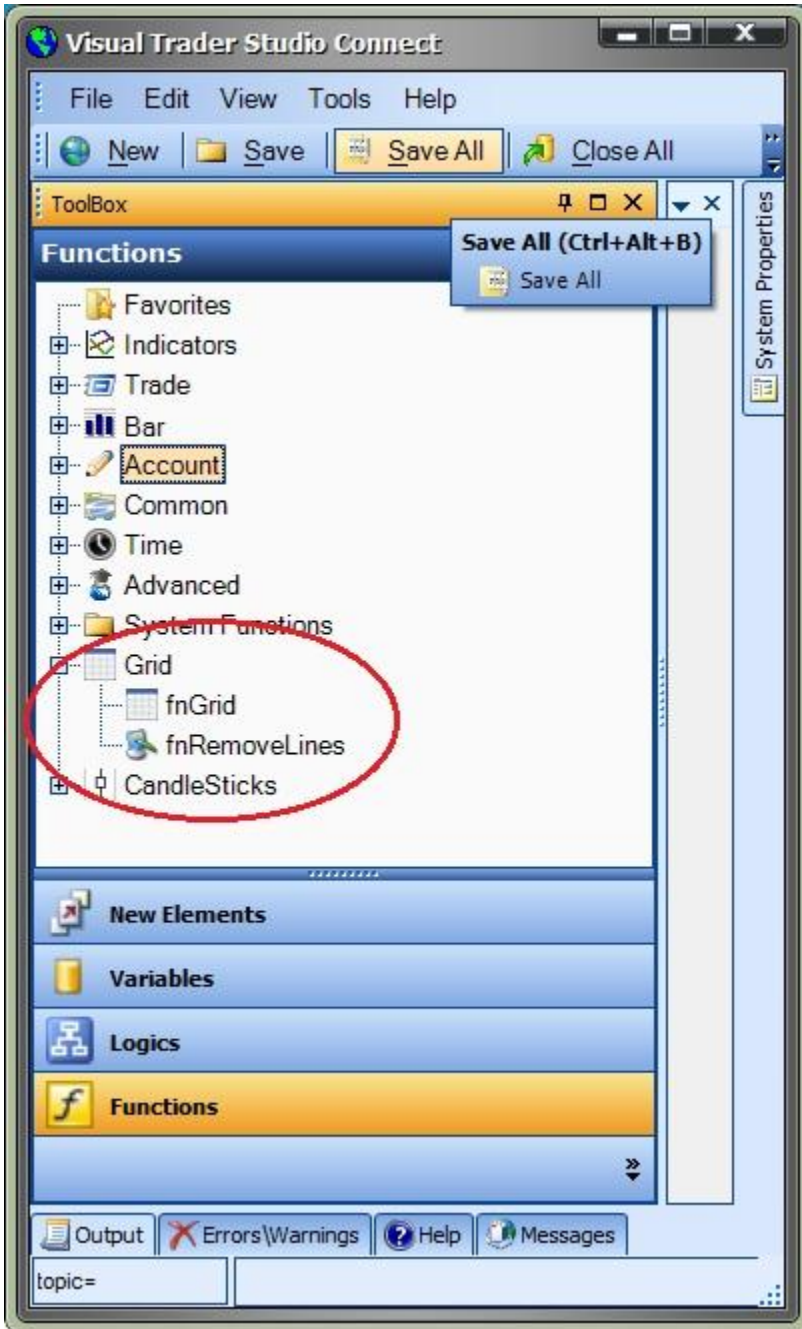
- The **email** address is the email address used to purchase [VTS](#).
- The **License Key** is the key that is sent to the email address.
- The **Verify** button is used to verify the email address and license key.
- The **Add** button is used to add a key.
- The **Remove** button is used to remove a key.
- Double-click a key to edit its value.



## FX PowerGrid Functions in the Toolbox

Once enabled, the PowerGrid functions are available in the [Toolbox](#) Function tab under the Grid menu.

These functions are dragged and dropped from the Toolbox onto the [Drawing Pad](#) like any other functions.



## FX PowerGrid Functions

The PowerGrid function library include these functions:

- [fnGrid](#)
  - Used to build a trading grid Expert Advisor.
- [fnRemoveLines](#)
  - Used to remove vertical and horizontal lines from a price chart.

## fnGrid

The **FX PowerGrid** function *fnGrid* is used to build a fully functional trading grid.

After the *fnGrid* function has been added to a Drawing, it is configured by clicking the (+) button along the bottom of the Element.

The [fnGridFunction Configuration](#) window displays three main tabs:

- **FX Power Grid** The main tab for configuring the grid.
- **Notes** The [Note](#) tab is used to add useful comments to the [Element](#).
- **Message** The [Message](#) tab is used to send messages from the [Element](#).

The **FX Power Grid** main tab displays 3 sub-tabs:

- [Grid Main Settings](#) Used to set the main settings of the trading grid
- [Grid Up Levels](#) Used to configure and add [Up Levels](#) to the trading grid
- [Grid Down Levels](#) Used to configure and add [Down Levels](#) to the trading grid

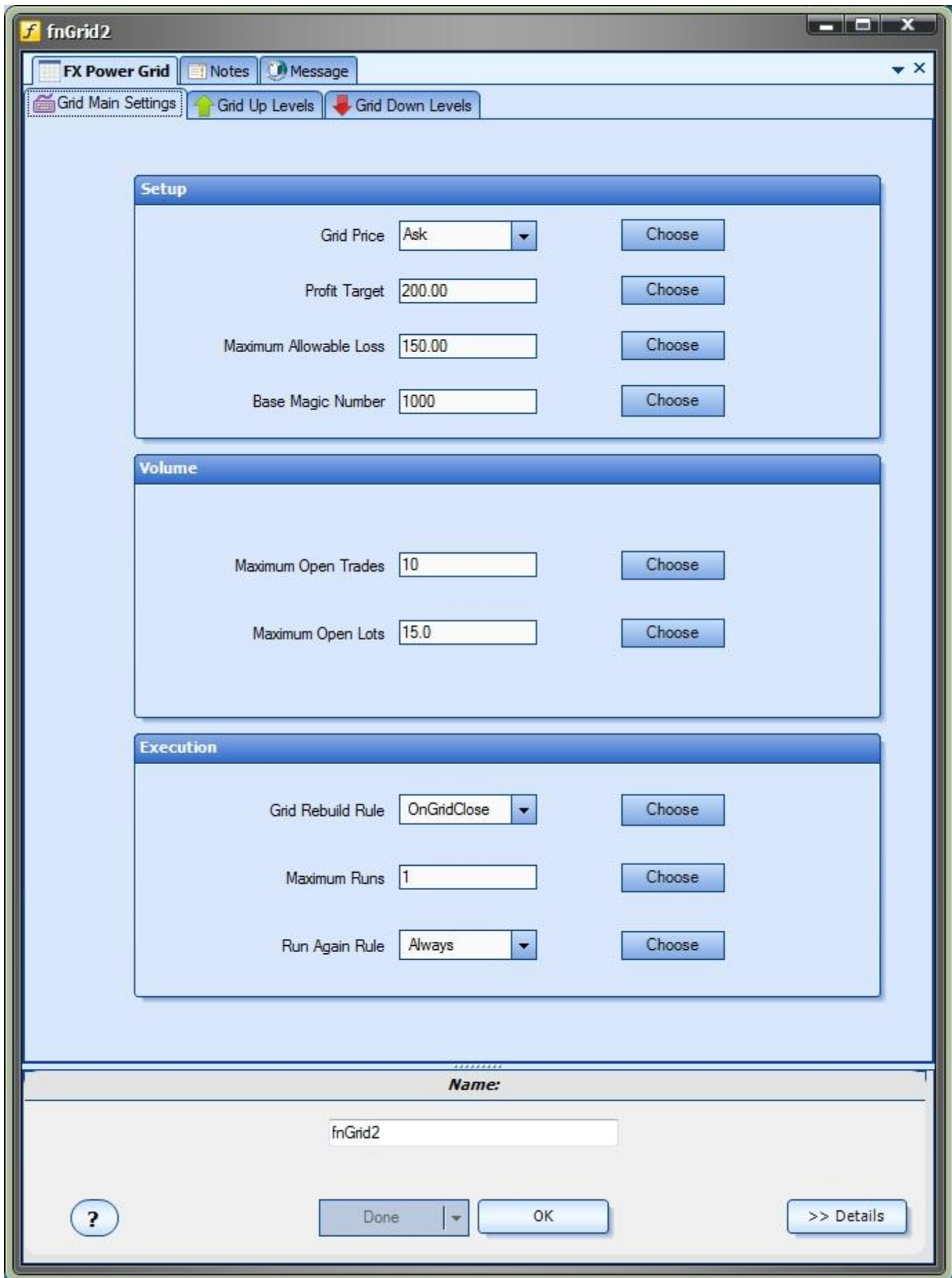
## Grid Main Settings

The **Grid Main Settings** tab is used to set global settings for the trading grid. The following table describes each setting.

Parameter Name	Data type	Description
Grid Price ( <b>Grid Start Price</b> )	double	<p>This is the price used for determining price action throughout the grid. For example, if the <b>Grid Price</b> is set to <a href="#">Bid</a>, trades will be opened based on the value of the Bid price with respect to the Grid levels. Any price value can be used. Most trading grids use Ask, Bid or (Ask+Bid)/2. These values are all available from the pull-down menu as well as the <a href="#">Choose</a> button.</p> <p>This value also defines the <b>Grid Start Price</b>. The start price is set the moment the Grid is first build and is used as an anchor price for the life of the grid.</p>
Profit Target	double	This is the profit value in dollars (or local currency) that when reached will cause the grid to be closed for a profit. The profit is calculated using only the trades opened by the grid, not all trades open on the account.
Maximum Allowable Loss	double	This is the loss value in dollars (or local currency) that when reached will cause the grid to be closed for a loss. The loss is calculated using only the trades opened by the grid, not all trades open on the account.
Base Magic Number	integer	<p>A <a href="#">Magic Number</a> is used to identify an open trade. The <b>Base Magic Number</b> is used to define magic numbers for each level of the grid. For example, if the Base Magic Number is 1000:</p> <ul style="list-style-type: none"> <li>• A trade opened in <b>Up</b> Level 1 will have a magic number of 1001.</li> <li>• A trade opened in <b>Up</b> Level 2 will have a magic number of 1002.</li> <li>• Etc.</li> <li>• A trade opened in <b>Down</b> Level 1 will have a magic number of 999.</li> <li>• A trade opened in <b>Down</b> Level 2 will have a magic number of 999.</li> <li>• Etc.</li> </ul> <p><b>NOTE: The trader must take care to not allow the magic numbers to collide with other running Expert Advisors that use magic numbers.</b></p>
Maximum Open Trades	integer	The maximum number of trades that the grid will open. Any attempt by the Grid to open a trade after this number has been reached will be denied.
Maximum Open Lots	double	The maximum total number of lots that the grid will open. Any attempt by the Grid to open additional lots after this number has been reached will be denied.
Grid Rebuild Rule	integer	This rule defines when the Grid will be rebuilt. The allowable values are:



		<ul style="list-style-type: none"> <li>• <b>Never:</b> The Grid is never rebuilt.</li> <li>• <b>OnGridClose:</b> The Grid is rebuilt when the Grid has been close for a profit or loss. <b><i>This is the behavior of most grids.</i></b></li> <li>• <b>OnDay:</b> The Grid is rebuilt at the start of each day.</li> <li>• <b>OnHour:</b> The Grid is rebuilt at the start of each hour.</li> <li>• <b>OnNewBar:</b> The Grid is rebuilt at the start of each new bar.</li> <li>• <b>OnTick:</b> The Grid is rebuilt on each new tick. <b>Note:</b> This setting only makes sense in very specific configurations, for example when the grid levels are defined as prices (such as a Moving Average) that may change with each tick.</li> </ul>
Maximum Runs	integer	<p>Defines how many times the Grid may run. A run is complete when the Grid has closed for either a Profit or a Loss.</p> <p><b>Note: A value of 0 allows unlimited runs.</b></p>
Run Again Rule	integer	<p>Defines when the Grid may run again. The allowable values are:</p> <ul style="list-style-type: none"> <li>• <b>Always:</b> Always runs again, until <b>Maximum Runs</b> is reached.</li> <li>• <b>OnceOnly:</b> Runs one time only.</li> <li>• <b>OnLoss:</b> Runs again only after a loss.</li> <li>• <b>OnWin:</b> Runs again only after a win.</li> </ul>



## Grid Up Levels

The **Grid Up Levels** tab is used to define an unlimited number of levels for a trading grid. The following table describes each setting.

Parameter Name	Data type	Description
Grid Price Level	double	<p>The price level which represents the start of this level. For example, if the grid is started when the Bid price is 1.3450, a reasonable level for the first level would be 1.3470. If the Bid price is ever at or above 1.3470, a trade will be opened as defined by the settings for the level.</p> <p>This value may be an <b>offset</b> or an <b>absolute price</b> level.</p> <ul style="list-style-type: none"> <li>An example of an <b>offset</b> is 25. This will define that the level begins at the <a href="#">Grid Start Price</a> plus 25 pips.</li> <li>An example of an <b>absolute price</b> is the 12-period moving Average, or any technical indicator that yields a price value.</li> </ul> <p>Note: <b>offsets</b> are cumulative: If <b>level 1</b> has an offset of 20 and <b>level 2</b> has an offset of 30, then the start of <b>level 2</b> is at: Grid Start Price + 20 + 30</p>
Trade Type	integer	<p>Defines the type of trade opened when the Grid Price is in this level. The choices from the pull-down menu are:</p> <p>OP_BUY OP_SELL OP_BUYLIMIT OP_SELLLIMIT OP_BUYSTOP OP_SELLSTOP</p> <p>Note: Pending orders are not opened until the Grid Price enters the level.</p>
Lot Size	double	<p>The Lot size of any trade opened in this level. The value may be <b>multiple</b> or a <b>value</b>.</p> <ul style="list-style-type: none"> <li>An example of a <b>multiple</b> is 1.5. This will define the lot size as 1.5 multiplied by the level number and then multiplied by the global <i>Lots</i> extern variable. <ul style="list-style-type: none"> <li>Level 1: (1.5 x 1 x Lots)</li> <li>Level 2: (1.5 x 2 x Lots)</li> </ul> </li> <li>An example of a <b>value</b> is any valid lot number, such as 1.0, or any variable, such as the extern variable <i>Lots</i>.</li> </ul> <p>Note: The global <i>Lots</i> extern variable is automatically created by VTS.</p>

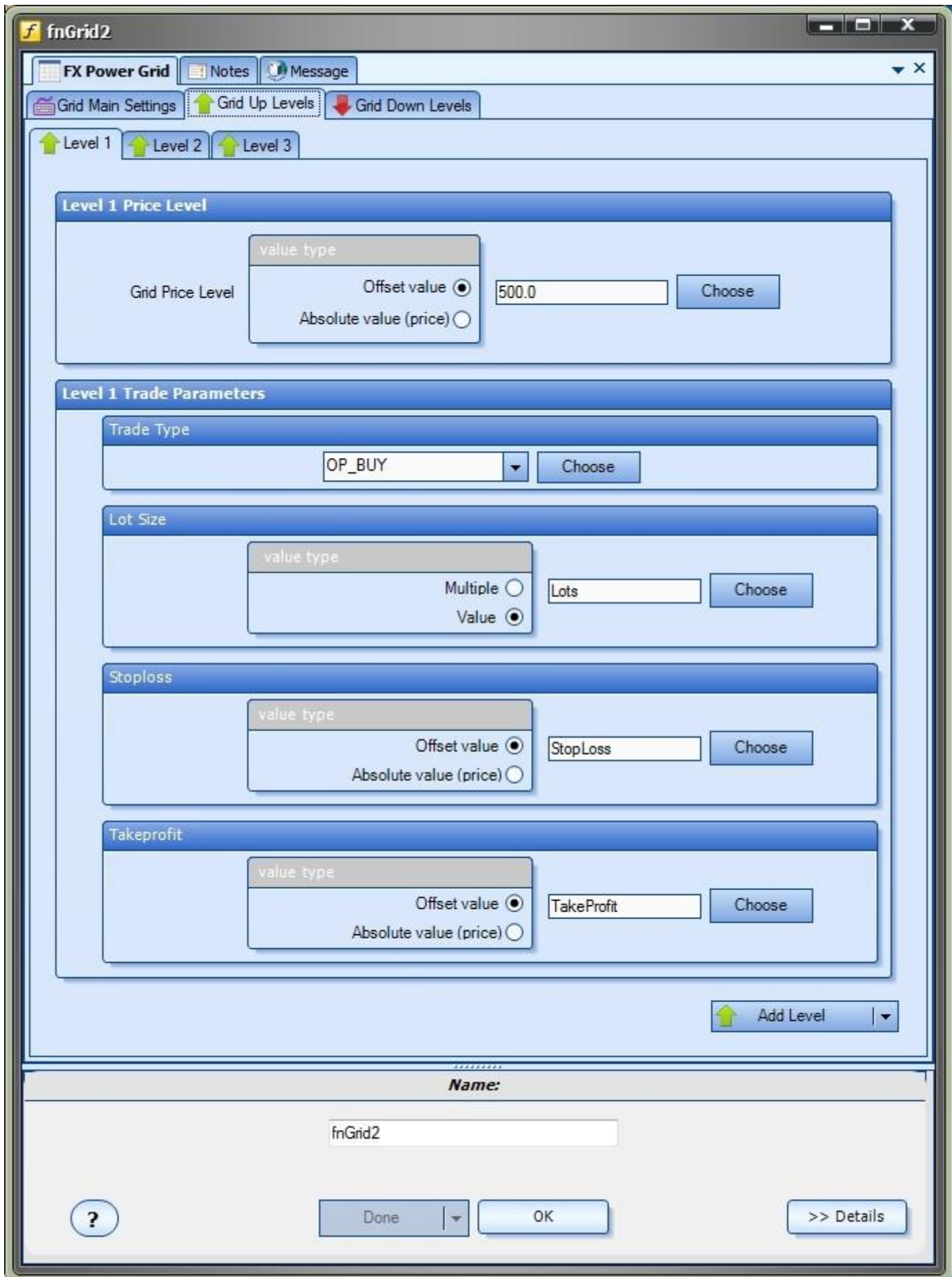
Stoploss	double	<p>The stoploss value of any trade opened in this level. The value may be <b>offset</b> or a <b>absolute value</b>.</p> <ul style="list-style-type: none"> <li>The <b>Absolute value</b> option is useful for using technical indicator values or price values such as <b>Low[1]</b> or <b>High[1]</b>.</li> </ul>
Takeprofit	double	<p>The takeprofit value of any trade opened in this level. The value may be <b>offset</b> or a <b>absolute value</b>.</p> <ul style="list-style-type: none"> <li>The <b>Absolute value</b> option is useful for using technical indicator values or price values such as <b>Low[1]</b> or <b>High[1]</b>.</li> </ul>

## Add Level

The **Add Level** button on the bottom right corner of the window is used to add levels to the grid. In theory, an unlimited number of levels may be added, however the number will be bounded by the memory and processor of your PC.

## Remove Level

The **Add Level** button offers a pull-down to **Remove Last Level**. Note: only the last level added may be removed and a minimum of one level must always exist.



## Grid Down Levels

The **Grid Down Levels** tab is used to define an unlimited number of levels for a trading grid. The following table describes each setting.

Parameter Name	Data type	Description
Grid Price Level	double	<p>The price level which represents the start of this level. For example, if the grid is started when the Bid price is 1.3450, a reasonable level for the first level would be 1.3430. If the Bid price is ever at or below 1.3430, a trade will be opened as defined by the settings for the level.</p> <p>This value may be an <b>offset</b> or an <b>absolute price</b> level.</p> <ul style="list-style-type: none"> <li>An example of an <b>offset</b> is 25. This will define that the level begins at the <a href="#">Grid Start Price</a> minus 25 pips.</li> <li>An example of an <b>absolute price</b> is the 12-period moving Average, or any technical indicator that yields a price value.</li> </ul> <p>Note: <b>offsets</b> are cumulative: If <b>level 1</b> has an offset of 20 and <b>level 2</b> has an offset of 30, then the start of <b>level 2</b> is at: Grid Start Price - 20 - 30</p>
Trade Type	integer	<p>Defines the type of trade opened when the Grid Price is in this level. The choices from the pull-down menu are:</p> <p>OP_BUY OP_SELL OP_BUYLIMIT OP_SELLLIMIT OP_BUYSTOP OP_SELLSTOP</p> <p>Note: Pending orders are not opened until the Grid Price enters the level.</p>
Lot Size	double	<p>The Lot size of any trade opened in this level. The value may be <b>multiple</b> or a <b>value</b>.</p> <ul style="list-style-type: none"> <li>An example of a <b>multiple</b> is 1.5. This will define the lot size as 1.5 multiplied by the level number and then multiplied by the global <i>Lots</i> extern variable. <ul style="list-style-type: none"> <li>Level 1: (1.5 x 1 x Lots)</li> <li>Level 2: (1.5 x 2 x Lots)</li> </ul> </li> <li>An example of a <b>value</b> is any valid lot number, such as 1.0, or any variable, such as the extern variable <i>Lots</i>.</li> </ul> <p>Note: The global <i>Lots</i> extern variable is automatically created by VTS.</p>

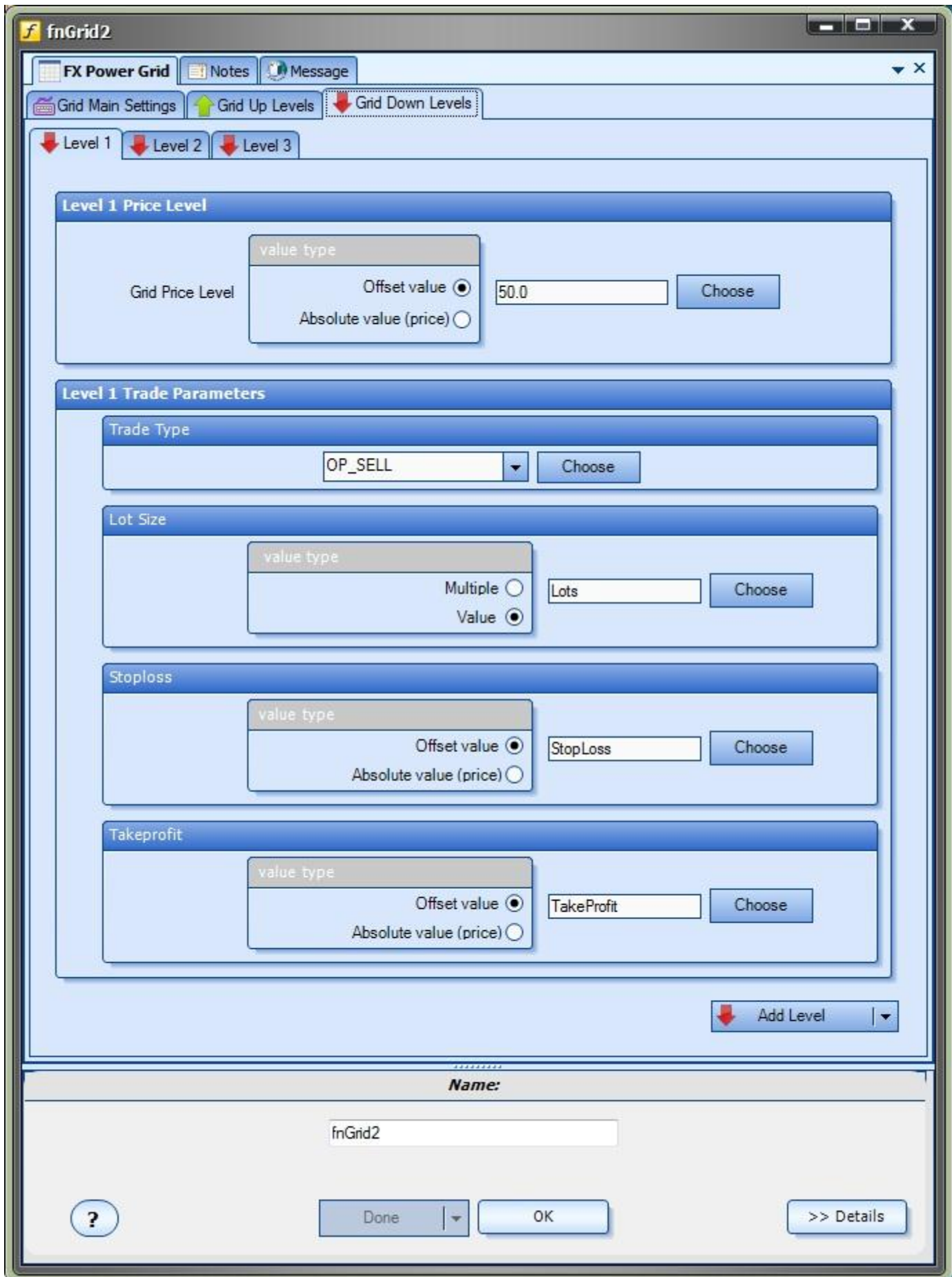
Stoploss	double	<p>The stoploss value of any trade opened in this level. The value may be <b>offset</b> or a <b>absolute value</b>.</p> <ul style="list-style-type: none"> <li>The <b>Absolute value</b> option is useful for using technical indicator values or price values such as <b>Low[1]</b> or <b>High[1]</b>.</li> </ul>
Takeprofit	double	<p>The takeprofit value of any trade opened in this level. The value may be <b>offset</b> or a <b>absolute value</b>.</p> <ul style="list-style-type: none"> <li>The <b>Absolute value</b> option is useful for using technical indicator values or price values such as <b>Low[1]</b> or <b>High[1]</b>.</li> </ul>

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## **fnRemoveLines**

The **FX PowerGrid** function **fnRemoveLines** is used to remove all vertical and horizontal lines from a price chart.

The **fnGrid** function draws lines for the grid start price, start time and each grid level. The **fnRemoveLines** function can be used to programatically remove all of these lines.

One convenient method is to create a [deinit](#) drawing function and add **fnRemoveLines** to the drawing. This will cause all of the lines to be removed each time the Expert Advisor is removed from the chart.

- The **fnRemoveLines** does not required any parameters.
- The **fnRemoveLines** is a [Drawing function](#). Its drawing can be opened and/or modified by double-clicking the caption of the function.

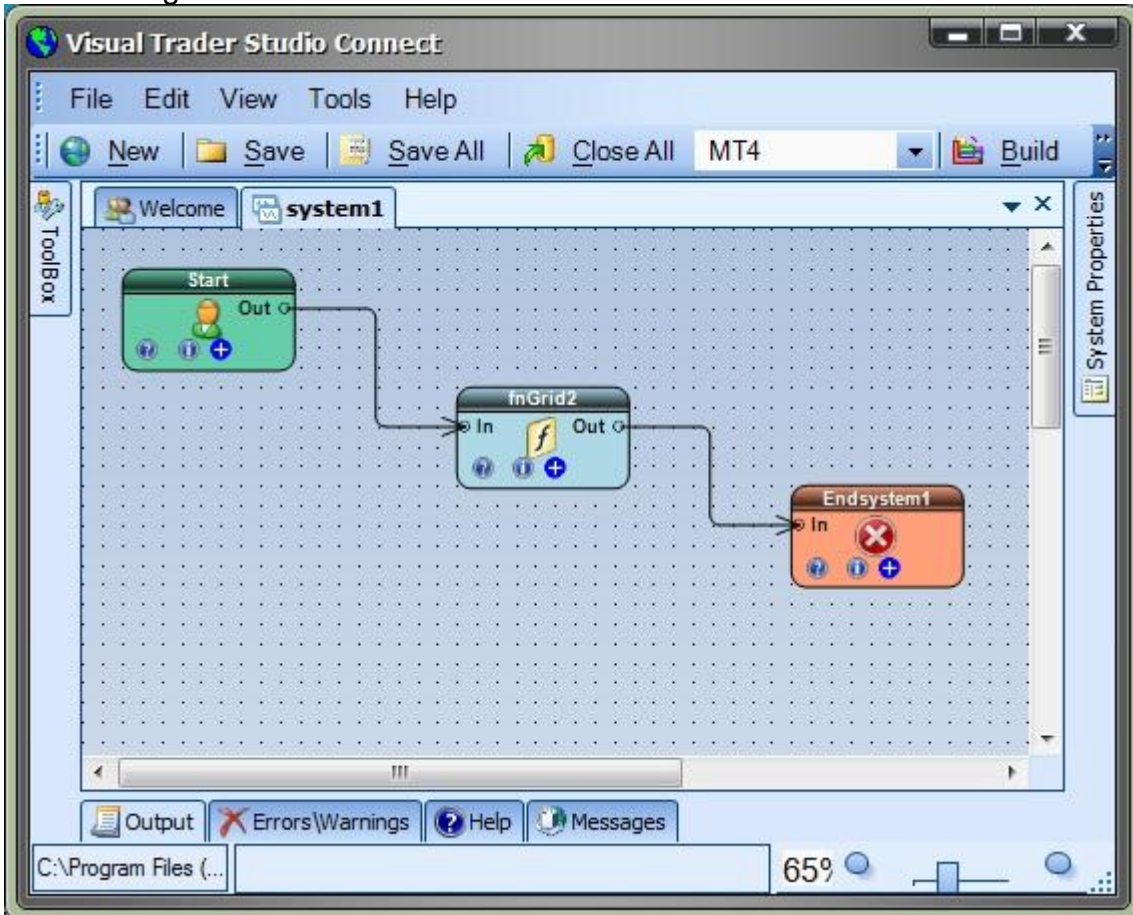
## Using FX PowerGrid

FX PowerGrid is very easy to use.

Follow these 5 steps to build your first [trading grid](#).

1. Create a new EA Builder system
2. Uncheck all Drawings so that only a main-system drawing is created
3. Drag an [fnGrid](#) Function Element from the [ToolBox](#) and connect it between the [Start](#) and the [EndElement](#).

The drawing should look like this:

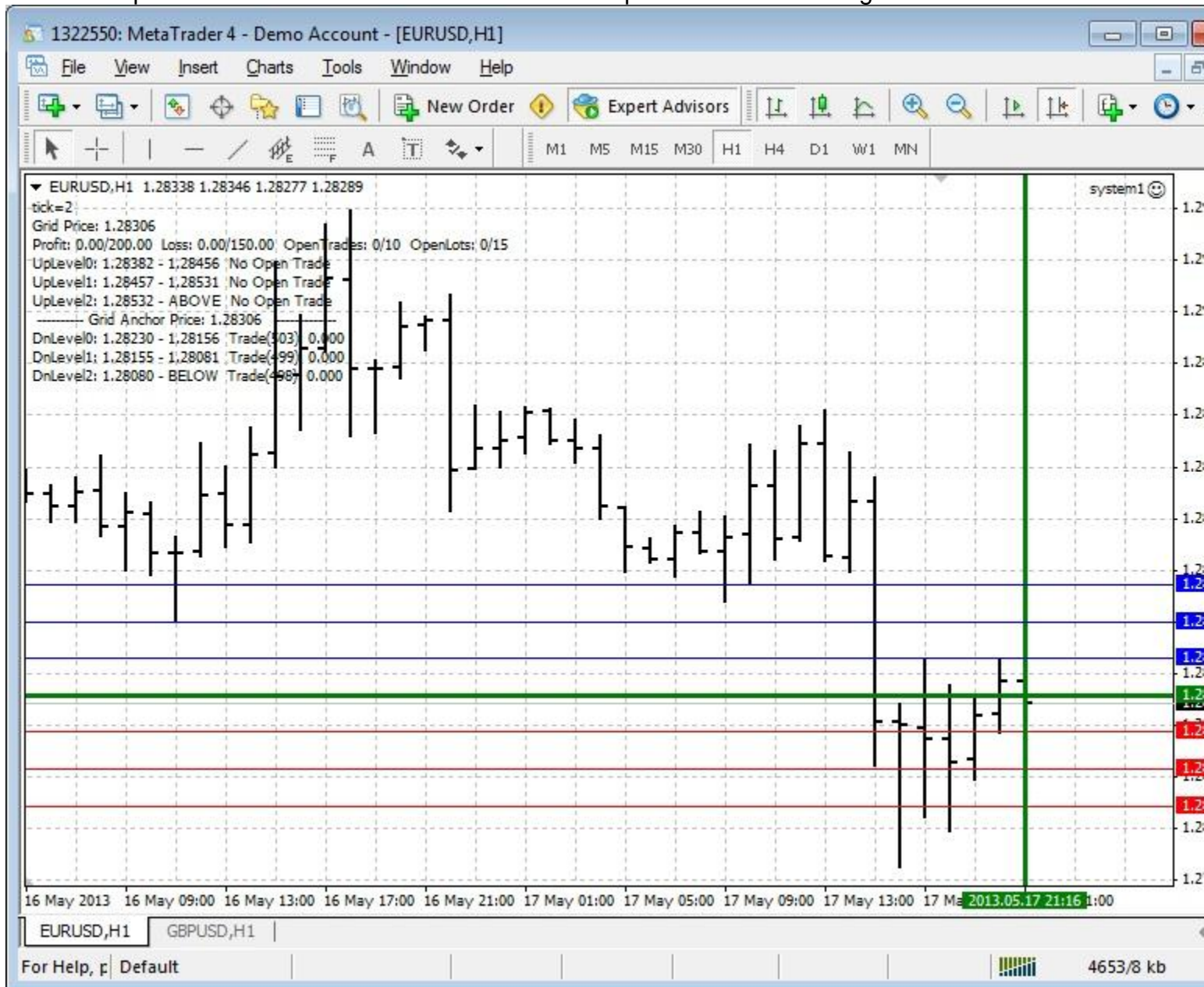


4. Now [configure](#) your grid by clicking the (+) button in the bottom right corner of the fnGrid Element.
5. Click the [Build](#) button to create your Expert Advisor [Trading Grid](#).

## Notes

- If any indicators are used within the grid, they should be connected before the grid Element.
- The grid Element may be attached to [Logic](#) Elements, however care should be taken to ensure the flow of Logic allows the Grid to be executed when desired.
- More than one grid can be added to a drawing. The limitation will be with the memory and/or processor power of the running PC. Also, be careful to define [base Magic Numbers](#) that do not interfere with each other.

This how a price chart looks when an **FX PowerGrid** Expert Advisor is running.



- The Grid Start Time is the thick green horizontal line.
- The Grid Start Price (anchor price) is the thick vertical line.
- The start of each Up Level begins with a blue line.
- The start of each Down Level begins with a red line.
- The top left corner of the chart shows:
  - The current Grid Price.
  - The current Total Profit, Total Loss, Open Trades and Open Lots
  - The range of each level, and if a trade is open in that level the profit of the trade.

Also, the comment field of each trade opened by the ***FX PowerGrid*** contains the EA name and the magic number of the trade.