**COMPLETE COPIER PRO (with Advanced News filter capabilities)**

# Requirements Specification:

The design requirements are.

- The EA is to be coded on a multi-level basis to achieve the best possible copy speed (efficient coding).

- The coding is to be as modular as possible to allow code to be used in upcoming developments. The envisaged developments are a News Trader as well as an order manager / trade manager.

- Programming code is to be adequately documented.

- One instance of the copier is both Originator (server) and Received (client). In Originator (server) mode no aspect of the Receiver (client) mode coding will be accessed for efficiency.

- Ability to copy one to one, one to many, many to one.

- A Duplication mode (mainly for application to Signals) which allows it to be used on one single MT4 instance. In this mode all receiver and server functionality will be off for performance reasons. The application is such that it will only consider magic numbers or currency pairs opened on the same MT4 terminal. In this mode, there will be no need to access certain components of Money Management Settings (Apply Account Size in MM, Apply Currency in MM and Apply Leverage in MM).

- The product is designed to work off a single VPS or desktop and with the exception of order duplication will not work on the MQL5 virtual hosting terminal.

- Supports symbols that might not be matched between brokers as well as user input of special symbol requirements between brokers.

- Works with both 4 and 5 digit brokers and allows copying of metals and CFD's.

# 1) Trade Copier/Duplicator

### A) GENERAL SETTINGS

**Mode:** SERVER, CLIENT or DUPLICATOR

**Client Mode Terminal Selection:** Input the account number(s) – input by exact match to Originating (server) broker account number.

**Expert Advisor Selection:** Default = blank – would apply to all expert advisors on the terminal. Expert advisor magic numbers can then be entered into a comma delimitated list. There will be recognition of "-" for EA's not to include and "*" as a wildcard number. "-" and "*" can be applied in conjunction. *"*" as a wildcard is a replacement of many or one character, please refer to a section later on where a fuller explanation is provided of the wildcard character use*.

**Cycle Time:** Value – the default will be 100 and will be the time in milliseconds for which there will be polling for trades opened by other EA's or other terminals. This allows user setting of program resources.

**Slippage:** The maximum tolerable slippage in pips that would be allowed. This will be the difference in originator EA price and the Executing EA price. For four and five digit currencies this will be taken

as the movement of the digit of the 4<sup>th</sup> decimal and for all other it will be the movement of the second digit after the decimal.

<span style="color:red">(Please advise if my understanding of slippage might be incorrect in terms of how it has been applied in other developments)</span>

**Improved Trading Mode:** TRUE or FALSE. When set to FALSE then the trade will be executed taking only slippage into account. When set to TRUE then only trades a specified number of pips away from the originating trade.

**Improved Trading Mode Value:** Value – The default value would be 0 and would result in deals only copied at the same or better position. How this would work in operation is when **Improved Trading** is TRUE then it not enforce the slippage and instead apply the value here to look for trade execution. When coding this the logic must be such that it recognises the difference between buy and sell trades and bid and ask prices. Then 0 will be taken to be an equal or improved trade. A value of 10 would mean a value 10 pips better off than the original, i.e. only trade when the original trade is in positive territory. Similarly a value of -10 would initiate a trade when the position is in a loss specified by 10 pips away from the originating trade.

<span style="color:red">(The application of this is similar to slippage, again just please advise if my understanding is incorrect.)</span>

**Max Allowable Time Outage:** This will be a value in minutes that will be considered when copying /duplicating trades. The Default value is 0 and will allow copying at the desired slippage or improved trade settings as appropriate.

**B) MONEY MANAGEMENT SETTINGS**

**Money Management Mode**: OFF, BALANCE, EQUITY or DRAWDOWN.

**Multiplier**: Numerical value default 1 and where 0 is input then the Fixed Lot size will be used. For clarity a value of 0.5 would be ½ or 50% and value of 2 would be it would be double or 200%.

**Apply account size in MM settings:** OFF, EQUITY or BALANCE. Default is set to BALANCE. The functionality is such that the Server account lot size will be divided by either the Server balance or equity and multiplied by the Client account balance or equity. E.g. Server lot size is 1 and account balance is 10000 and the Client Account Balance is 6000 1/10000*6000=0.6.

**Apply leverage in MM settings**: TRUE or FALSE – where set to TRUE then it would apply leverage difference. It would work quite simply by multiplying the trade with the leverage of the server account and dividing by the leverage of the client account. E.g. if the server account is 1:100 and the client account is 1:500 it would be (lot size of server*100/500). Default is TRUE.

**Apply Currency in MM settings**: TRUE or FALSE – this would recognise the currency of the server terminal and compare this to the client terminal and where there is a difference it would use market watch of the client terminal to determine the exchange rate and apply this to the lot size. E.g. if server terminal is in JPY and client terminal in USD. It would recognise that the inverse of the USDJPY rate needs to be applied i.e. ( Lot Size of server) * 1/(USDJPY bid rate) Where the server terminal is in USD and client in JPY it would simply multiple with the USDJPY bid rate i.e. ( Lot Size of server) * (USDJPY bid rate). Default is TRUE and an error will be executed when TRUE is on and the currency pair is not in Market Watch.

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The application of these Settings will be to take the result of the multiplier lot size to the result of these two settings. Where the input is FALSE then a value of 1 will be used. So an example calculation would be where leverage is set to TRUE and Currency to FALSE, Lot Size multiplier is 0.75 [0.6*0.75*(100/500)*1]. Remember that **Max** and **Min** lot restrictions if set would apply to this.

To developer can consider the application of this section in terms of cycle times for efficiency to reduce the traffic between client and server terminal. E.g. the leverage would be a start up check only and then performed every hour. Currency can be checked every hour and stored so to avoid potential slippages at trade execution stage.

**Fixed lot size**: Numerical value, default 0.5

**Max Lot setting**: Default 0, not used. This would be the maximum lot size allowed.

**Min Lot Setting**: Default 0, not used. This would be the minimum lot size allowed.

**Stop by Value:** Value – where mode is set to EQUITY or BALANCE and a value is present then trades will not be executed after this absolute value is reached. Default is 0 meaning that stops by % will be implemented.

**Set Stop by Percentage (EQUITY or BALANCE)**: % - where mode is set to EQUITY and where open trades are a specific percentage of equity then copied duplicated trades will not be executed. Default is 20 for 20%.

**Set Stop by Percentage (DRAWDOWN)**: % - this will use the drawdown percentage calculated as follows to consider whether a trade should be entered into. The formula used is ((Equity/Balance)-1)*100, thus where equity is 800 and Balance is 1000 then the result would be -20%. A negative value is to be taken as negative and positive value as positive.

**Auto-close at Max Draw Down:** TRUE or FALSE – when set to TRUE then closing of orders placed by this EA would be automatically closed when a user defined max drawdown is reached. When set to FALSE then trades may continue / remain open.

**Max Drawdown Percentage:** The input will be a percentage similar to the description in **Stop by percentage (DRAWDOWN)**. This is the user defined input to the previous setting.

The application of these settings would be to consider whether money management by BALANCE, EQUITY or DRAWDOWN and would then either allow a trade or not. Then should a trade be allowed or where the Mode is set to OFF apply the lot multiplier (default set at 1) or Fixed Lot will be applied to the originating EA trade. Where the lot multiplier is then there will be an additional check for Max and Min lot size restrictions and apply either one of these restrictions where values have been set.

## C) ORDER OPENING FILTER

**Weekday Time Filter:** TRUE or FALSE – When set to True it will consider specific time intervals to apply. Time settings should be UTC aligned with NY server close time. I.e. New York server close is taken as 24:00. Should the developer not be aware of a way to automate this then the standard GMT offset can be applied to NY server close time. A filed for client set GMT offset can then be applied.

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**Monday:** Timeslot1, Timeslot2, Timeslot3 – Timeslots can be entered in a comma delimited lost E.g HH:mm-mm,HH:mm-mm. In each case HH:mm is the start hour and mm would be the minutes for which the slot is open. I think a max of 3 should be placed as I cant think of a reason for more.

**Tuesday:** Timeslot1, Timeslot2, Timeslot3

**Wednesday:** Timeslot1, Timeslot2, Timeslot3

**Tuesday:** Timeslot1, Timeslot2, Timeslot3

**Friday:** Timeslot1, Timeslot2, Timeslot3

**Disable Monday AM trading:** Will disable for 12 hours after server opens, this will disable overlapping Monday time slots entered.

**Disable Friday PM trading:** Will disable for 12 hours prior to server closing, this will disable overlapping Monday time slots entered.

**Copy Existing Orders:** TRUE or FALSE – when set to FALSE which is the default then no existing orders will be copied. When set to TRUE then only orders allowed by Max Allowable Time Outage will be placed. By default therefore the FALSE setting would only mean that new orders are placed.

**Magic numbers:** Refer to the section pertaining to magic numbers filtered in the news section and similar functionality is to exist. This refers to the use of "-" and the use of "*" as a wildcard. The default when blank is all.

**Custom Pairs:** Only execute trades on custom pairs as defined. As the functionality will have been built I think USD for example would mean all USD pairs. However the more traditional approach is to use EURUSD,GBPJPY etc as an example in a comma delimited list. The use of "-" would exclude certain currencies.

*General comments – some copiers have the following functionalities: <u>Mirror or inverted trading, copy pending orders, copy SL and TP limits.</u> Generally I don't think this is necessary as this is a news filtered copier. However with developer input I would consider these additional filters/parameters. I general where the EA places SL's and TP's then these would be copied in this the duplication mode. In Copier mode there will be more settings.* <span style="color:red">*To clarify, the default application of this EA is **not** to copy pending orders, however opened orders and modified orders will be completely copied with SL and TP limits. This is mainly a protection mechanism should the connection between sender and receiver be lost for whatever reason.*</span>

### D) ORDER CLOSE OVERRIDE SETTINGS

**Enable Order Close Override:** STRICT, ENHANCED or OFF – when set to this mode the originating trader order closure will not be used. STRICT is a complete override, thus only will follow order close settings determined here. ENHANCED will still allow order closure by the originating trader as long as the specified settings determined in this section are not utilised. OFF is off as a default setting i.e. will have no influence on order closure.

**Trailing Stop: TRUE FALSE** – This only works for brokers that allow trailing stop and when set to TRUE it would allow a trailing stop to be implemented at a specified distance. This will be implemented by way of an order modification.

**Trailing Stop Distance:** Value – The value in pips/points at which stage a trailing stop will be implemented.

**Trailing Stop in Pips.** The value of the trailing stop.

**Take Profit in Pips:** Value – this is the value in pips when the deal is in profit at which the order will be closed. Note this will not be an order modification and will close an order when the specified distance is reached.

**Stop Loss in Pips**: Value in pips when the order will be closed when the deal is in loss. This will also not be an order modification but will execute the order close once the specified distance has been reached.

*These are just basic order management settings. The developer **may** leave out trailing stop if this will result in conflicting order modifications (i.e. between this EA and originating trade).*

*Note: This section will later be expanded into an order management system.*

*The application of this section with **Improved Trading Mode** set to TRUE could result in trades being closed by this section and then opened again provided those conditions are still valid.*

**E)  ORDER MODIFICATION AND CLOSING SETTINGS**

**Allow Order Modification:** TRUE or FALSE - when this is set to TRUE then any user overridden SL, TP or partial close would be allowed or order close will be allowed. When set to FALSE then it wont allow, however it would be noted that if the user does manually override then it would allow such instance until the originating server changes its SL or TP settings if the order is changed. I want to avoid unnecessary polling of existing orders and only want to focus the EA on new or changed orders being processed. FALSE is the default Mode. Also note that when set to FALSE and the user closes orders then the EA may reopen the orders provided the satisfy other settings and **Max Allowable Time Delay**.

**Orders Remain Open: TRUE or FALSE** – FALSE (Default) will mean that orders will be closed when the Originating EA closes its orders. When set to TRUE then orders will only be closed manually and no TP or SL levels will be copied.

**Order Comments: NONE, DEFAULT, CUSTOM, EA** – When set to NONE then there will be no comment, this is sometimes referred to a stealth setting. DEFAULT would be "Copied from magic no.", CUSTOM would be user defined. Where EA is used then the EA comment will be copied.

**User Defined Comment:** Input Field

# 2) News Filter

## Standard settings

The news filter can be turned ON or OFF.

The news filter is to receive the news feed via webrequest from http://ec.forexprostools.com.

The filter is to be able to categorise the basic high, medium and low impact news per currency (e.g. USD,CNY,etc ...).

For each categorisation there should be a time in minutes before the news release time and a time in minutes after the news release for trade to pause.

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**Advanced option 1: User Defined news events**

Takes input in the form of: Currency abbreviation:Text and user can enter a comma delimited list.

E.g. USD: FOMC,GBP:BOE

The currency match is exact, but the text is to recognise the first portion only. E.g. FOMC will apply to FOMC Member Williams speaks and FOMC Member Mester speaks. However if the input field is "FOMC Member Williams speaks", then only that event will be chosen.

Wildcard characters "*" can be allowed as defined and "-" can be used to completely exclude certain events.

There can be more than one news event set per currency.

As for standard settings, there is to be a time delay before and after these events.

A maximum of 20 such events can be allowed.

**Advanced option 2: User defined times**

This is strictly not a news filter, but contained in this section as its functionality is similar to news filtering.

Takes input in the form of Date-Time,Date-Time-Currency

Multiple inputs to be contained in a comma delimited list.

Date in the format of Day:Month:Year e.g. "01:06:2017", Time in the format HH:mm.

The completed syntax would be "01:06:2017-19:30-USD" and an example of multiple would be "01:06:2017-19:30-EUR,15:07:2017-00:30-USD,23:08:2017-08:30-ALL".

Where "ALL" is used then it will apply to all currencies and will effectively allow restriction of all trades for a given timeframe.

As for standard settings, there is to be a time delay before and after these events, however this time delay is to be input in the form of hours only.

A maximum of 20 such events can be allowed.

**Advanced option 3 – News Impacted Currency settings**

Input by means of a table.

| News Currency | Currency pairs affected |
|---|---|
| USD | USD |
| GBP | GBPUSD,GBPJPY,EURGBP |
| EUR | |
| CNY | USD,AUD,-AUDNZD |
| ….. | |

Where input is left blank as for the table above then it is turned off for news of that currency.

Where the input is in the form of USD or USD,AUD – then it will apply to all USD currency pairs in the first case and in the second case to all USD and AUD pairs.

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Where input is in the form of "GBPUSD" then only that currency pair will be affected.

Where input contains the prefix "-" then such currency pair will be excluded. An example of this application would be an input as follows "AUD,-AUDNZD"  For this all AUD pairs will be affected except for AUDNZD.

Input can also be provided in the form of shares/futures/CFD's but to avoid confusion this would have to be an exact match.

General notes on currency pair syntax

a) Generally there is no distinction between uppercase and lowercase.
b) The following will be relevant if the implementation option is a trade copier between two terminals running on different brokers.
   - Suffixes behind the currency should be ignored. So a filter on GBPUSD will be applied on gbpusd and on gbpusd**b** and on gbpusd**_e**.
   - To allow this to work on unforeseen differences between brokers there needs to be a user defined match function provided. E.g. in the case of XAUUSD and GOLD.
   - The user defined field filed will take input in the form of "XAUUSD=GOLD". Up to 20 matching options are to be provided.

**Advanced option 4 – News Impacted EA settings**

**Alternative 1:**

| News Currency | Magic Numbers |
|---|---|
| USD | 7777,123 |
| GBP | -7777 |
| EUR | *7 |
| CNY | 7*,123 |
| ….. | |

Have an input table like this. However this may be make the input section of the EA to long.

**Alternative 2:**

User defined currency applicability to magic number: USD:7777,USD:123,GBP:-7777,EUR:*7,CNY:7*,CNY:123

User defined currency pair applicability to magic number: EURUSD:7777,etc

Default applicability will be to **all** magic numbers.

The prefix "-" will exclude certain magic numbers.

The character "*" is used as a wild card and a substitute for one or multiple character. E.g:

"*7" will be all magic numbers ended with 7,

"7*" will be all magic numbers starting with 7,

"*7*" all magic numbers containing a 7 except for the first and last character,

"1*345" will be all magic numbers starting with a one and ending with 345.

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The impact of the advanced option 3 and 4 working together would be for example:

Advanced option 3 input for USD = "USD" and Advanced option 4 input for USD="7777" would be to exclude all trades except those originating from an EA generating a magic number 7777.