

STEP BY STEP GUIDE

for

ExpertAdvisor

In this guide, wherever you read “**ExpertAdvisor**” replace it by the name of the expert advisor you bought or rented from Metaquotes site.

The User Manual for **ExpertAdvisor** is in a separate pdf document. The User Manual explains each parameters in the input file.

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NOMENCLATURE

OP=open price at entry

TP=take profit price

SL=Stop Loss price

ATR= Average true range (latest value)

RPP= Risk per pip (computed based on risk amount, SL and lot size)

MAx = Moving Average of x periods

CP=current price

ASK=ask price

BID=bid price

EA=Expert Advisor

****All explanations are for a BUY trade. SELL trades follow the same logic with proper changes.**

**** All TP and SL are checked against STOP and FREEZE levels.**

Note: Ranges and steps for parameters

All optimizable parameters show a bracket with suggested values to use in the optimization. For example, [0,2,12] means to set the variable go from 0 to 12 every 2. Additionally, if there is a value between vertical lines, it disables the variable. For instance, |<0|[0,1,5] means that when the variable is less than zero the variable has no effect. Values inside the brackets [] are preferred but not mandatory. Values inside the vertical lines | | are enforced in the code to disable the variable in question.

******* Since the currency of your account can be any, the EA reports currency amounts with a “C” in front of the value. For instance, if your profit is 1234.0 (in your account currency), the profit will be reported as C1234.0, meaning 1234.0 units of your account currency. If the amount is negative, you will see C-1234.0 instead. That is, you must interpret “C” as USD, or EUR, or JPY, or GBP, etc., depending on your account “C”urrency.

RISKS:

- Before purchasing this (or any!) EA, be aware of risks involved.
- Past performance is not a guarantee of future profitability (EA could also incur losses).
- Back-tests shown are optimized for the training data, and the performance cannot be directly applied to live trading in the future.
- There is a probability (although small) when using any EA that you may lose money in all your trades.
- Hence, risk the amount of money you are comfortable losing.

This guide shows users how to execute two important steps:

- 1) Use the **ExpertAdvisor** to optimize parameters using the Tester in Metatrader 5
- 2) Use the **ExpertAdvisor** in a live account

In the package you downloaded there are these files:

- This document: the Step-by-Step guide (PDF format).
- The User Manual for all parameters except for the strategy parameters (PDF format).
- The Strategy-specific User Manual (PDF format).
- The .set file: this file is an example of a set file you can use in the optimization phase.

In addition, and separately, Metaquotes will allow you to download the **ExpertAdvisor.ex5** file once you pay for the purchase or rental of this expert advisor.

STEP 1) STEPS TO OPTIMIZE PARAMETERS

(Please read and be familiar with the optimization strategy in Metatrader 5 in this article:

https://www.metatrader5.com/en/terminal/help/algotrading/strategy_optimization)

“Settings” Tab

- Launch Metatrader 5.
- Go to the Settings tab.
- Load the **ExpertAdvisor.ex5** expert advisor executable file you bought or rented. (in the figure below, the optimization is done with the PARTy expert advisor)
- Go to the Input tab to see all input parameters available to you. This has the default values for all parameters.
- Load **ExpertAdvisor.set** by right-clicking on any of the input parameters and press “load.” Find the **ExpertAdvisor.set** and load it.

Now you should be able to see input parameters again, but this time with some different values. Use these for the Optimization step next.

- Go to the “Settings” tab and fill all values.
 - Select the symbol you want to trade (see figure below).
 - Select any time frame (it will be over written by the EA). In the figure, H2 was chosen.
 - Select Custom Period. This should end on today’s date, and should start one year before.
 - Forward: No or 1/3. We will show how to handle both cases below.
 - Select the second option in the pull down menu in Delays.
 - Select “Every tick based on real ticks” in Modeling
 - Make sure to un-select “profit in pips....”
 - Enter the Deposit for the account, and the currency
 - Enter the leverage of this account (this information comes from your broker or prop firm)
 - Enter “Fast genetic based algorithm” in the Optimization
 - Select the objective to maximize. We prefer to use Custom max.

- Click on the “Input” tab. You should be able to see the parameters that will be optimized. They can be identified because they have a blue check mark on them. Other parameters with no check marks, or with gray check marks, will be held constant during the optimization.

We prefer to perform your first optimization without changing anything in the Input tab. Once you get familiar with the EA, you should be able to change what parameters to optimize, and input ranges for each parameter, as you wish.

Expert:	MyEAs\PARTy_sep_14.ex5					
Symbol:	XAUUSD		H2			
Date:	Custom period		2024.08.29		2025.08.29	
Forward:	No		2025.04.29			
Delays:	109 ms			emulate slippage and requotes during trade execution		
Modelling:	Every tick based on real ticks		<input type="checkbox"/>	profit in pips for faster calculations		
Deposit:	100000		USD		1:200	
					leverage	
Optimization:	Fast genetic based algorithm		Custom max			

If you choose Forward “1/3” you will see this:

Expert:	MyEAs\PARTy_sep_14.ex5					
Symbol:	XAUUSD		H2			
Date:	Custom period		2024.08.29		2025.08.29	
Forward:	1/3		2025.04.29			
Delays:	109 ms			emulate slippage and requotes during trade execution		
Modelling:	Every tick based on real ticks		<input type="checkbox"/>	profit in pips for faster calculations		
Deposit:	100000		USD		1:200	
					leverage	
Optimization:	Fast genetic based algorithm		Custom max			

“No” Forward versus “1/3” Forward Optimization

In the field of modeling and optimization for the purpose of prediction (in this case prediction of trend or price), you could run an optimization on the past data only (known as back test), or you could run optimization in a fraction of the past data, and then simulate the rest of the past data (known as the forward test) using the parameters from the optimization phase. We are recommending to use “1/3” which means that 2/3 of the past data will be used for the optimization, and 1/3 will be used for the forward test.

“Inputs” tab

Below is what you should see in the Inputs tab. A complete description of each input parameter is given in a different PDF file found in the same zip file you downloaded from the blog. In the following images there are parameters that are selected to be optimized. They are shown with a blue check next to the parameter’s description. Once you become familiarized with the input parameters and understand how they work, you should experiment with ranges, select other ones.

“Inputs” Tab Images

Variable	Value	Start	St
<input checked="" type="checkbox"/> Add any comment for your reference	write your comment here		

----- TIME PARAMETERS -----				
<input checked="" type="checkbox"/> Time frame (bar period)	15 Minutes	5 Minutes		2 Hours
<input type="checkbox"/> Entries allowed from this server hour [0,23]	0	0	1	10
<input type="checkbox"/> ----- Plus these minutes [0,59]	0	0	1	10
<input type="checkbox"/> Entries allowed these many hours each day [0,24]	24	24	1	240
<input type="checkbox"/> ----- Plus these minutes [0,59]	0	0	1	10
<input type="checkbox"/> Allow to open trades on Monday (server time)	true	false		true
<input type="checkbox"/> Allow to open trades on Tuesday (server time)	true	false		true
<input type="checkbox"/> Allow to open trades on Wednesday (server time)	true	false		true
<input type="checkbox"/> Allow to open trades on Thursday (server time)	true	false		true
<input type="checkbox"/> Allow to open trades on Friday (server time)	true	false		true
<input type="checkbox"/> Daily position close at (hour) -1[0,23]	-1	-1	1	-10
<input type="checkbox"/> Daily position close at (min) -1[0,59]	-1	-1	1	-10
<input checked="" type="checkbox"/> N (Close position after N bars from open) 0 [2,...]	60	5	5	100
<input checked="" type="checkbox"/> Allow work on ticks	false			

In the image below, you use the **ExpertAdvisor** strategy parameters. (as an example, ZING is used here. Please read the Strategy-specific user manual)

----- ZING Strategy Params -----					
<input checked="" type="checkbox"/> i0_zing [1,1,10]	1	1	1	6	6
<input checked="" type="checkbox"/> stochastic 1	false	false		true	2
<input checked="" type="checkbox"/> stochastic 2	true	false		true	2
<input checked="" type="checkbox"/> stochastic 3	true	false		true	2
<input checked="" type="checkbox"/> stochastic 4	true	false		true	2

----- TP <OPEN> PARAMETERS -----					
<input type="checkbox"/> At Opening TP method	TPopMult: TP_opMul...	TPopMult: TP_opMul...		TPopFractalMU: TP_...	
<input checked="" type="checkbox"/> TP_opMult [0,1,6](if 0 => no TP)	2	0.0	1	5	6
<input type="checkbox"/> TP_opAtr [0,2,20](if 0 => no TP)	6	0.0	2.0	8.0	
<input type="checkbox"/> TP_opConvex01: [0,0.1,1](higher=>near to OP)	0	0.0	0.2	1.0	
<input type="checkbox"/> TP_opPct: from OP [0.5,0.5,2]	1	0.5	0.5	2.0	
<input type="checkbox"/> TP_opNbars [0,10,50] # bars sup/res 0	0	0	20	200	

----- SL <OPEN> PARAMETERS -----				
<input type="checkbox"/> At the opening SL Method	Pct+ATR: SL_opPricePct,SL_opATR	FixPips: SL_opFixPips		Swing: SL_opFixPips
<input type="checkbox"/> SL_opFixPips: [10,10,120]	30	30	1	300
<input checked="" type="checkbox"/> SL_opATR: [1,1,10]	1	1.0	1.0	4.0
<input type="checkbox"/> SL_opPrevBar: number of previous bars [3,3,12]	9	3	3	15
<input type="checkbox"/> SL_opConvex01: [0.1,0.1,1]	0.7	0.7	0.07	7.0
<input checked="" type="checkbox"/> SL_opPricePct: [0.1,0.1,0.5]	1.0	1.0	0.5	3.0
<input type="checkbox"/> SL_opAggr: open aggressivity (T/F)	false	false		true

----- SL <TRAILING> PARAMETERS -----				
<input checked="" type="checkbox"/> SL Trailing Method (at each new bar)	MA2040:SL_trTrigFac, SL_trConvex01	FixPips: SL_trTrigFac, SL_trFixPips		Pct+ATR: SL_trPricePct,SL_trATR
<input checked="" type="checkbox"/> SL_trTrigFac: [0,0.1,1]	0.6	0.0	0.2	1.0
<input checked="" type="checkbox"/> SL_trConvex01 [0,0.1,1]	0.6	0.0	0.2	1.0
<input checked="" type="checkbox"/> SL_trFixPips [10,10,120]	30	20	10	50
<input checked="" type="checkbox"/> SL_trATR: [0.5,0.5,]	1.0	1.0	0.5	3.0
<input checked="" type="checkbox"/> SL_trPrevBar: number of previous bars [3,3,12]	9	3	3	15
<input checked="" type="checkbox"/> SL_trPricePct: % [0.1,0.1,1]	2.0	0.5	0.5	3.0
<input checked="" type="checkbox"/> SL_trFixMoney: [Currency amount]	1000	250.0	250.0	1000.0

----- SL PARAMS TO AVOID BIG LOSSES -----				
<input type="checkbox"/> SL_negGap: move SL when a negative Gap happens	false	false		true
<input type="checkbox"/> SL_BADbigBar ATR factor 0 [2,1,5]	4	2.0	1.0	6.0
<input type="checkbox"/> SL_X200 (reduce SL if cross MA200 & -trend)	false	false		true
<input type="checkbox"/> SL_x9nT: # bars crossing MA9 <=1 [2,1,5]	0	0	1	10
<input type="checkbox"/> SL_aBL: fraction of Risk to close 0 [0.3,0.3,0.9]	0	0.0	0.0	0.0
<input type="checkbox"/> SL_ConsOppBars 1 [1,2,11](reduce SL if conseq bars opp dir)	0	5	1	50

----- SL PARAMS TO PRESERVE GAINS -----				
<input type="checkbox"/> SL_posGap: move SL when a positive Gap happens	false	false		true
<input type="checkbox"/> SL_GOODBigBar: ATR factor 0 [2,1,5]	4	2.0	1.0	6.0
<input type="checkbox"/> SL_turbo01: fract. of TP-OP -> tightSL 0 [0,2,1]	0	0.0	0.0	0.0
<input type="checkbox"/> SL_fractal: fractal near TP <0.5 [0.4,0.1,1]	0	0.95	0.095	9.5
---- Asymmetric Volatility for big gain & loss -----				
<input checked="" type="checkbox"/> Down volatility factor <=1 [1,1,5]	1	1.0	1.0	3.0

---- PARTIAL TAKE-PROFIT PARAMS <@each tick> -----				
<input checked="" type="checkbox"/> SL_Gain2BE: trigger to move to B.E. 0 [0,0.25,TP]	2.0	0.0	0.25	2.0
<input checked="" type="checkbox"/> SL_Gain2CL: added trigger to close %vol 0 [0,0.25,TP]	1.75	0.0	0.25	2.0
<input type="checkbox"/> SL_GainVol: vol fraction to reopen 0 [0,0.2,1]	0.25	0.0	0.0	0.0
<input checked="" type="checkbox"/> SL_GainTight: use tight SL after partial close	true	false		true
<TICK TRAILING> STOP LOSS PARAMETERS -----				
<input type="checkbox"/> SL_ttConvex01 0 [0,0.1,1]	0	0.5	0.05	5.0

---- PROP FIRM INFORMATION ---				
<input checked="" type="checkbox"/> Prop.Firm-like rules for daily & account DD	FTMO-like Rules			
<input checked="" type="checkbox"/> Current GMT off set (eg, Prague=2 when DST, 1 other...	2			
<input checked="" type="checkbox"/> Roll over hour in PropFirm time (e.g., 17 for TFT)	24			

----- RISK MANAGEMENT (RM) PARAMETERS -----				
<input checked="" type="checkbox"/> Risk Management (RM) method at the open	Fixed Risk % (RM:1,2,3,6)			
<input checked="" type="checkbox"/> RM0: Init.Deposit to calculate max loss allowed	100000			
<input type="checkbox"/> RM1: base amount in currency to apply Risk	Initial Deposit (RM0)	Initial Deposit (RM0)		Allowed Dayly Loss (RM8 * RM0)
<input type="checkbox"/> RM2: Initial % Risk (per trade)	2	1.0	0.1	10.0
<input type="checkbox"/> RM3: Max % Risk (per trade)	10	10.0	1.0	100.0
<input type="checkbox"/> RM4: Fixed Lot Size (per trade)	1	1.0	0.1	10.0
<input type="checkbox"/> RM5: Lot Size Per every 10k of free margin	0.25	0.25	0.025	2.5
<input type="checkbox"/> RM6: Max Lot Size per trade 0 >0]	0	10.0	1.0	100.0
<input type="checkbox"/> RM7: Fixed Currency amount risked per trade	100	100.0	10.0	1000.0
<input type="checkbox"/> RM7.5: Risk reduction per loss 0 [0.25,0.25,0.5]	0	0.5	0.05	5.0
----- OTHER RISK PARAMETERS (FIXED) -----				
<input checked="" type="checkbox"/> RM8: MaxDailyLoss in % of Ini.Dep.	5			
<input checked="" type="checkbox"/> RM9: Safety factor for DailyLoss (RM8) 0.5,1]	1			
<input checked="" type="checkbox"/> RM10: MaxAccountLoss in % of Ini.Dep.	25			
<input checked="" type="checkbox"/> RM11: Safety factor for Acct.Loss (RM10) 0.5,1]	1			
<input checked="" type="checkbox"/> RM12: Use RM8, RM10 when computing lot size	true			
<input checked="" type="checkbox"/> RM13: Safety factor for MARGIN_SO_CALL 1,5]	1.5			
<input checked="" type="checkbox"/> RM14: Nbr Simult. symbols in trading (Tester only)	1			
<input checked="" type="checkbox"/> RM15: Target as % Ini.Dep. (closeALL, stop EA) 0 >0]	0			
<input checked="" type="checkbox"/> RM16: Req.Margin must be less than Balance/2	false			

---- PROP FIRM PARAMETERS ---				
<input checked="" type="checkbox"/> Prop.Firm-like rules for daily & account DD	FTMO-like Rules			
<input checked="" type="checkbox"/> Current GMT off set (eg, Prague=2 when DST, 1 other...	2			
<input checked="" type="checkbox"/> Roll over hour in PropFirm time (e.g., 17 for TFT)	24			

----- MISCELLANEOUS PARAMETERS -----					
<input type="checkbox"/> Order Type	Market (instant exec...	Market (instant exec...			Stop (NBACK, WBSO)
<input type="checkbox"/> NBACK: # bars back high/low for Stop Orders	1	1	1	10	
<input type="checkbox"/> WBSO: Max # waiting bars for Stop Orders	2	2	1	20	
<input type="checkbox"/> WBLO: Max # waiting bars for Limit Orders	6	6	1	60	
<input type="checkbox"/> nBackLO: for Limit Orders	5	5	1	50	
<input type="checkbox"/> atrLO: for Limit Orders	2	2.0	0.2	20.0	
<input checked="" type="checkbox"/> Max # Open Symbols [0][1,1,n] (Live trading)	10				
<input checked="" type="checkbox"/> Slippage (points) [2,20]	10				
<input checked="" type="checkbox"/> Waiting time (minutes) before 1st trade in week	60				
<input checked="" type="checkbox"/> Round trip commission per lot (C/lot) (estimate)	4				
<input checked="" type="checkbox"/> Allow trades to BUY, or SELL or BOTH	Buy and Sell orders ...				
<input checked="" type="checkbox"/> Display Permitted daily losses (in Live trading)	false				
<input checked="" type="checkbox"/> Send me an email when opening an order	false				
<input checked="" type="checkbox"/> Magic number. If 0, autogenerate MAGIC number	0				

----- NEWS HANDLING PARAMETERS (Live trading only) -----					
<input checked="" type="checkbox"/> Minutes before News to take actions	2				
<input checked="" type="checkbox"/> Minutes after News to restart trading	2				
<input checked="" type="checkbox"/> Action for profitable open positions	Keep open, same SL				
<input checked="" type="checkbox"/> Action for losing open positions	Keep open, same SL				
<input checked="" type="checkbox"/> NAF: News Atr Factor to tight SL	0.5				
<input checked="" type="checkbox"/> Reset SL back to original (after news)	true				
<input checked="" type="checkbox"/> Close pending Orders before News	true				

----- WEEKEND HANDLING PARAMETERS -----					
<input checked="" type="checkbox"/> Minutes before Friday 5pm EST to take actions	5				
<input type="checkbox"/> Weekend action for profitable open positions	Keep open, same SL	Keep open, same SL		Keep open, move SL ...	
<input type="checkbox"/> Weekend action for losing open positions	Keep open, same SL	Close it		Keep open, move SL ...	
<input checked="" type="checkbox"/> WAF: Weekend Atr Factor to tight SL	0.5				
<input checked="" type="checkbox"/> Close pending Orders before weekend	true				

---- Withdraw in Tester: if Bal. > Ini.Bal. + Wmult*Wmoney ----					
<input checked="" type="checkbox"/> Wmoney [0][0,Ini.Dep.]	0				
<input checked="" type="checkbox"/> Wmult [≥ 1]	2				

Read this article: <https://www.mql5.com/en/articles/14365>

- Build Custom Objective to Maximize:					
<input checked="" type="checkbox"/> Select Objective Function to Maximize 1:	1] Annual Return %				
<input checked="" type="checkbox"/> Target 1	100				
<input checked="" type="checkbox"/> Weight 1	100				
<input checked="" type="checkbox"/> Select Objective Function to Maximize 2:	0] NO objective				
<input checked="" type="checkbox"/> Target 2	5				
<input checked="" type="checkbox"/> Weight 2	10				
<input checked="" type="checkbox"/> Select Objective Function to Maximize 3:	0] NO objective				
<input checked="" type="checkbox"/> Target 3	10				
<input checked="" type="checkbox"/> Weight 3	5				
<input checked="" type="checkbox"/> Select Objective Function to Maximize 4:	0] NO objective				
<input checked="" type="checkbox"/> Target 4	50				
<input checked="" type="checkbox"/> Weight 4	25				
<input checked="" type="checkbox"/> Select Objective Function to Maximize 5:	0] NO objective				
<input checked="" type="checkbox"/> Target 5	1				
<input checked="" type="checkbox"/> Weight 5	1				

- Hard Constraints:					
<input checked="" type="checkbox"/> if false, all constraints are ignored	true				
<input checked="" type="checkbox"/> Select Constraint Function 1:	1] Daily Loss % Init...				
<input checked="" type="checkbox"/> Type 1	<= Less or equal to				
<input checked="" type="checkbox"/> Bound Value 1	5				
<input checked="" type="checkbox"/> Select Constraint Function 2:	2] Acct Loss % Init...				
<input checked="" type="checkbox"/> Type 2	<= Less or equal to				
<input checked="" type="checkbox"/> Bound Value 2	10				
<input checked="" type="checkbox"/> Select Constraint Function 3:	5] Win Rate %				
<input checked="" type="checkbox"/> Type 3	>= Greater or eq...				
<input checked="" type="checkbox"/> Bound Value 3	55				
<input checked="" type="checkbox"/> Select Constraint Function 4:	4] # Consecutive los...				
<input checked="" type="checkbox"/> Type 4	<= Less or equal to				
<input checked="" type="checkbox"/> Bound Value 4	5				
<input checked="" type="checkbox"/> Select Constraint Function 5:	7] Recov Factor				
<input checked="" type="checkbox"/> Type 5	>= Greater or eq...				
<input checked="" type="checkbox"/> Bound Value 5	2				
<input checked="" type="checkbox"/> Select Constraint Function 6:	15] # MaxDailyLoss ...				
<input checked="" type="checkbox"/> Type 6	<= Less or equal to				
<input checked="" type="checkbox"/> Bound Value 6	0				
<input checked="" type="checkbox"/> Select Constraint Function 7:	6] # trades/week				
<input checked="" type="checkbox"/> Type 7	>= Greater or eq...				
<input checked="" type="checkbox"/> Bound Value 7	1				
<input checked="" type="checkbox"/> Select Constraint Function 8:	20] Monthly VaR% f...				
<input checked="" type="checkbox"/> Type 8	<= Less or equal to				
<input checked="" type="checkbox"/> Bound Value 8	15				
<input checked="" type="checkbox"/> Select Constraint Function 9:	17] MCPredProf/MCP...				
<input checked="" type="checkbox"/> Type 9	>= Greater or eq...				
<input checked="" type="checkbox"/> Bound Value 9	2				
<input checked="" type="checkbox"/> Select Constraint Function 10:	16] RoR=(Net Profit ...				
<input checked="" type="checkbox"/> Type 10	>= Greater or eq...				
<input checked="" type="checkbox"/> Bound Value 10	10				

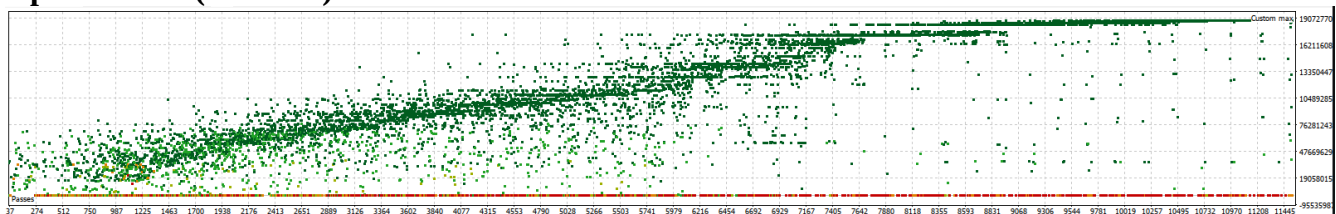
----- Misc Optimization Params -----						
<input checked="" type="checkbox"/>	Choose Result-column's decimals	WinRate %				
<input checked="" type="checkbox"/>	Choose capital method for Risk of Ruin	Loss Allowed by Pro...				
<input checked="" type="checkbox"/>	Custom Value for Risk of Ruin (if needed)	0				
<input checked="" type="checkbox"/>	Annual Risk Free rate% for Sortino calc.	2				
<input checked="" type="checkbox"/>	Draw summary on chart	false				
<input checked="" type="checkbox"/>	Print summary on journal	true				
<input checked="" type="checkbox"/>	Subtract Largest Profit from Netprofit	true				
<input checked="" type="checkbox"/>	Add Largest Loss to Net profit	false				
<input checked="" type="checkbox"/>	Multiplier for Objectives (k_o)	100000				
<input checked="" type="checkbox"/>	Multiplier for Penalties (k_p)	100				

Analysis of Optimization Results

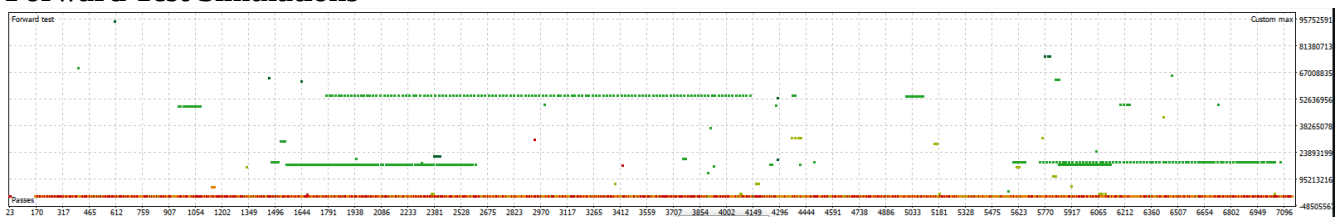
Once Metatrader 5 finishes the optimization process, which may take several hours depending on the number of parameters being optimized, the ranges of each parameter, the number of cores of your computer, and the time length you selected in the Settings tab (one year was shown in the images above), then you will get lots of combinations of parameters in one table if you chose “No” forward, or two tables if you chose “1/3” or “1/4” or “1/2” forward.

We are going to illustrate the case of running a backtest and a forward test of 1/3 the length of the full test. If you prefer to run only the backtest, it is easily analyzed if you understand the backtest+forward case presented here.

Optimization (Backtest) Simulations



Forward Test Simulations



Notice how less points have positive values of the Custom Max function in the Forward test simulations when compared to the Optimization backtest simulations. This makes sense because the optimization phase over fits the data.

Below is the snippet of the Optimization Results tab and the Forward Results tab. The difficulty lies on having a consistent criterion to select the row of parameters (i.e., the .set file) that you will use in the live trading. There are multiple approaches, among them:

- 1) Manually select and simulate rows that you like because of their profit, and/or draw down, and/or profit factor, etc., in both tables.
- 2) Select the row with highest Forward profit.
- 3) Select the row with highest recovery factor.

You can create your own criterion, and keep it simple and repeatable. We prefer to use a different technique based on the [Pareto front algorithm](#) which identifies a few rows that are on the Pareto front with respect to profit, draw down, and recovery factor, as a minimum. We use the [Optimized Parameter Selector \(OPS\)](#), which is a simple script that does the selection of rows on the Pareto front. The advantage of using OPS is speed, and completeness, as compared to the three approaches shown above.

Optimization Results Table

Using “Result” as sorting criterion.

Pass	Result ✓	Profit	Total trades	Expected pa...	Drawdown %	Recovery fa...		
43,506	1875983053...	109120.06	159	686.29	8.27	11.49		
43,491	1875983053...	109120.06	159	686.29	8.27	11.49		
43,477	1875983053...	109120.06	159	686.29	8.27	11.49		
43,473	1875983053...	109120.06	159	686.29	8.27	11.49		
43,449	1875983053...	109120.06	159	686.29	8.27	11.49		
43,448	1875983053...	109120.06	159	686.29	8.27	11.49		
43,444	1875983053...	109120.06	159	686.29	8.27	11.49		
43,436	1875983053...	109120.06	159	686.29	8.27	11.49		
43,434	1875983053...	109120.06	159	686.29	8.27	11.49		
43,409	1875983053...	109120.06	159	686.29	8.27	11.49		
43,394	1875983053...	109120.06	159	686.29	8.27	11.49		
43,371	1875983053...	109120.06	159	686.29	8.27	11.49		
43,362	1875983053...	109120.06	159	686.29	8.27	11.49		
Overview		Settings	Inputs	Backtest	Forward	Graph	Optimization Results	Forward Results

Using “Profit” as sorting criterion.

Pass	Result	Profit ✓	Total trades	Expected pa...	Drawdown %	Recovery fa...		
43,441	1859480934...	110233.58	160	688.96	8.27	11.61		
41,337	1859480934...	110233.58	160	688.96	8.27	11.61		
39,327	1859480934...	110233.58	160	688.96	8.27	11.61		
39,477	1849898821...	109780.90	160	686.13	8.27	11.56		
43,506	1875983053...	109120.06	159	686.29	8.27	11.49		
43,491	1875983053...	109120.06	159	686.29	8.27	11.49		
43,477	1875983053...	109120.06	159	686.29	8.27	11.49		
43,473	1875983053...	109120.06	159	686.29	8.27	11.49		
43,449	1875983053...	109120.06	159	686.29	8.27	11.49		
43,448	1875983053...	109120.06	159	686.29	8.27	11.49		
43,444	1875983053...	109120.06	159	686.29	8.27	11.49		
43,436	1875983053...	109120.06	159	686.29	8.27	11.49		
43,434	1875983053...	109120.06	159	686.29	8.27	11.49		
Overview		Settings	Inputs	Backtest	Forward	Graph	Optimization Results	Forward Results

Using “Recovery Factor” as sorting criterion.

Pass	Result	Profit	Total trades	Expected pa...	Drawdown %	Recove... ✓
43,441	1859480934...	110233.58	160	688.96	8.27	11.61
41,337	1859480934...	110233.58	160	688.96	8.27	11.61
39,327	1859480934...	110233.58	160	688.96	8.27	11.61
39,477	1849898821...	109780.90	160	686.13	8.27	11.56
43,506	1875983053...	109120.06	159	686.29	8.27	11.49
43,491	1875983053...	109120.06	159	686.29	8.27	11.49
43,477	1875983053...	109120.06	159	686.29	8.27	11.49
43,473	1875983053...	109120.06	159	686.29	8.27	11.49
43,449	1875983053...	109120.06	159	686.29	8.27	11.49
43,448	1875983053...	109120.06	159	686.29	8.27	11.49
43,444	1875983053...	109120.06	159	686.29	8.27	11.49
43,436	1875983053...	109120.06	159	686.29	8.27	11.49
43,434	1875983053...	109120.06	159	686.29	8.27	11.49
<div> <div>Overview</div> <div>Settings</div> <div>Inputs</div> <div>Backtest</div> <div>Forward</div> <div>Graph</div> <div>Optimization Results</div> <div>Forward Results</div> </div>						

Forward Results Table

Using “Forward” as sorting criterion.

Forward ✓	Backtest	Profit	Total trades	Expected pa...	Drawdown %	Recovery fa...
9418066771...	5109555305...	29005.10	84	345.30	7.45	3.31
7516331328...	1244062566...	24688.66	83	297.45	7.73	2.81
7516331328...	1244062566...	24688.66	83	297.45	7.73	2.81
7516331328...	1244062566...	24688.66	83	297.45	7.73	2.81
6906284880...	-2849.40	23838.90	44	541.79	8.62	2.55
6500560205...	-335738007.48	30177.39	412	73.25	6.59	3.41
6355318511...	9426999231...	21963.41	87	252.45	7.61	2.53
6280183561...	-212522658.49	29850.96	413	72.28	6.64	3.37
6280183561...	-212522658.49	29850.96	413	72.28	6.64	3.37
6280183561...	-212522658.49	29850.96	413	72.28	6.64	3.37
6199788753...	6411571685...	21584.76	87	248.10	7.70	2.46
5406800990...	1713179361...	19592.04	84	233.24	8.21	2.15
5406800990...	1713179361...	19592.04	84	233.24	8.21	2.15
5406800990...	1875983053...	19592.04	84	233.24	8.21	2.15
<div> Overview Settings Inputs Backtest Forward Graph Optimization Results Forward Results </div>						

Using “Profit” as sorting criterion.

Forward	Backtest	Profit ✓	Total trades	Expected pa...	Drawdown %	Recovery fa...
6500560205...	-335738007.48	30177.39	412	73.25	6.59	3.41
6280183561...	-212522658.49	29850.96	413	72.28	6.64	3.37
6280183561...	-212522658.49	29850.96	413	72.28	6.64	3.37
6280183561...	-212522658.49	29850.96	413	72.28	6.64	3.37
9418066771...	5109555305...	29005.10	84	345.30	7.45	3.31
7516331328...	1244062566...	24688.66	83	297.45	7.73	2.81
7516331328...	1244062566...	24688.66	83	297.45	7.73	2.81
7516331328...	1244062566...	24688.66	83	297.45	7.73	2.81
6906284880...	-2849.40	23838.90	44	541.79	8.62	2.55
-890.53	-17129.48	23571.04	417	56.53	14.08	1.37
-1812.55	-21449.48	23235.51	345	67.35	12.52	1.63
6355318511...	9426999231...	21963.41	87	252.45	7.61	2.53
6199788753...	6411571685...	21584.76	87	248.10	7.70	2.46
-550.66	-34808.61	21491.53	112	191.89	12.13	1.65

Using “Recovery Factor” as sorting criterion.

Forward	Backtest	Profit	Total trades	Expected pa...	Drawdown %	Recover...	✓
6500560205...	-335738007.48	30177.39	412	73.25	6.59	3.41	
6280183561...	-212522658.49	29850.96	413	72.28	6.64	3.37	
6280183561...	-212522658.49	29850.96	413	72.28	6.64	3.37	
6280183561...	-212522658.49	29850.96	413	72.28	6.64	3.37	
9418066771...	5109555305...	29005.10	84	345.30	7.45	3.31	
7516331328...	1244062566...	24688.66	83	297.45	7.73	2.81	
7516331328...	1244062566...	24688.66	83	297.45	7.73	2.81	
7516331328...	1244062566...	24688.66	83	297.45	7.73	2.81	
4243939498...	-936.54	18204.41	41	444.01	6.59	2.71	
6906284880...	-2849.40	23838.90	44	541.79	8.62	2.55	
-757.99	-52998465.14	2116.49	2	1060.74	0.82	2.53	
6355318511...	9426999231...	21963.41	87	252.45	7.61	2.53	
-539.54	-257700616.50	20822.25	415	50.17	6.94	2.52	
6199788753...	6411571685...	21584.76	87	248.10	7.70	2.46	

Overview | Settings | Inputs | Backtest | Forward | Graph | Optimization Results | **Forward Results**

As you can see, the task of selecting one, and only one, row between the two tables that will be used for the live trading is not obvious. You need to analyze too many rows, criteria, and simulate them in order to do the final selection. Hence, we prefer to use the script [OPS](#) for this.

After running [OPS](#), you get this output inside the Expert tab:

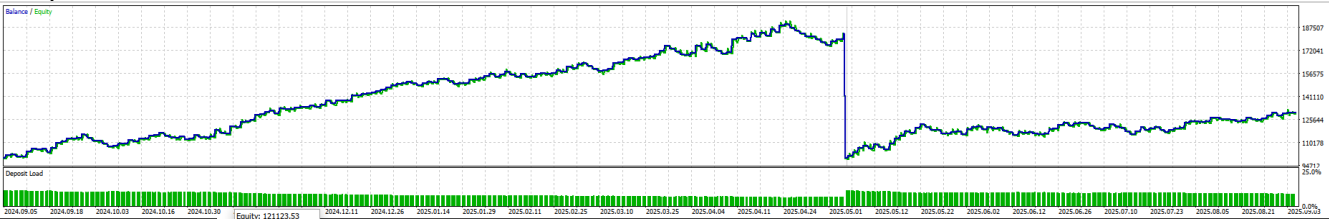
```

***** OPS Results (Pareto Front) *****
MINPROFIT      MAXDD      MINRF      MINSR      MINPF
1000.0(true)   10.0(true)   2.0(true)   2.0(false)  1.5(false)
oProfit fProfit oDD%  fDD%  oRF  fRF  oSR  fSR  oPFac fPFac  f/o_profit  oWR%  fWR%  Forward  BackTest  pass#
90897.73  21963.41  8.88  7.61  5.35  2.53  4.76  2.34  2.00  1.43  0.2  63  55  635531851102.55  942699923147.63  7132
102386.39  19592.04  4.92  8.21  10.47  2.15  5.52  2.15  2.37  1.40  0.2  66  55  540680099018.55  1713179361423.66  7034
109120.06  19592.04  8.27  8.21  11.49  2.15  5.78  2.15  2.59  1.40  0.2  67  55  540680099018.55  1875983053296.67  6937
26012.30  8321.62  4.93  4.06  4.26  2.00  3.25  2.17  1.70  1.50  0.3  61  59  215816519537.59  358903253556.61  6894
12809.11  7711.74  4.95  3.36  2.43  2.20  2.56  3.37  1.39  1.83  0.6  52  52  196151035410.52  9735253204.52  450
15658.00  5836.76  5.57  2.45  2.76  2.31  3.11  2.60  1.40  1.36  0.4  48  41  -3449.41  -869.48  245
---> The Pareto front is made of 6 points.
===== End of OPS Results =====

```

In this case, there are 6 Pareto points (rows) that are worth simulating manually, in order to select the row that we will use as the live trading .set file. The criteria used to create the 6 rows was profit>1000, maxDD<10, and minRecovFact>2. As you can see in the image above, the largest Forward profit is 21963.41, which is much smaller than the largest profit in the table (30177.39). We selected this row to simulate and the output of this simulation is below.

Simulating One of the Rows
Graph Tab



Journal Tab (OnTester Summary) Explained

The summary printed in the Journal tab has many of the same variables in the Backtest tab, plus some more computed by the EA. Here we explain those additional variables that are not in the Backtest tab. For more information please read the GOF article mentioned above.

The top part of the Summary looks like this:

===== OnTester SUMMARY =====		
--- PARTy on XAUUSD - 2025.09.04 23:58:59 ---		
Initial Deposit : C100000	Test Length(Yrs) : 0.33	
MetaTrader Profit : C30317	Annual Return % : 120.8	
Profit (inc Exp.) : C26272	Annual Return % : 101.0	
minEqty-IniDep : C-644.0	minEqty-IniDep % : -0.6	
maxEqDDrel % : 7.0	maxEqDDrel : C8675	
maxBalDDrel % : 6.1	maxBalDDrel : C7512	
maxEqtyDD : C8675	maxBalDD : C7512	
minBal-IniDep : C-5.0	minBal-IniDep % : -0.0	
ExpPayOff/IniDep % : 0.34	maxEqtyDD/IniDep % : 8.68	
Recov Fact : 3.49	Profit Fact : 1.60	
Reward/Risk ratio : 1.16	Sharpe ratio : 3.16	
WinRate % : 58	Total Trades : 88	
AvgWinTrade : C1583.9	AvgLossTrade : C-1363.8	
Best Trade : C3611.5	Worst Trade : C-2214.4	
# Trades/week : 5.1	# ConscLossTrd : 5	
maxDalyLoss : C-4576	# maxDalyLoss/Yr : 0.0	
AvgRisk/trade : C2225	ReturnOnRisk % : 15.5	
Expectancy : 0.25	GoodPrediction % : 49	
Avg Vol : 0.60	LargestVol : 0.63	
Account Levrge : 200	Min Marg Levrge : 1000	
Total Commission : C-434	Commission/GrossProf % : -0.54	
Total Swap : C-1016	Swap/GrossProf % : -1.26	
Sortino ratio : 0.57	Risk of Ruin % : 0.00	
MC daily VaR95 % : -2.17	MC daily CVaR95 % : -2.84	
MC monthly VaR95 % : -9.94	MC monthly CVaR95 % : -13.01	
MC maxEqDDrel+2std : 17.99	MC # conscLossTrd+2std : 11	
MC Prof Mean / Std : C30284.8 / C4782.0	ratio : 6.33	

- Initial Deposit: initial deposit in the account (also shown as IniDep or Ini.Dep.)
- Test Length(Yrs): the length of the test measured in years
- MetaTrader Profit: profit as reported by MetaTrader
- Annual Return %: annual return in percent
- Profit (inc Expenses): Net profit minus commissions, swaps, and largest win (if requested).
- minEqty, minBal: minimum equity and balance in the test
- maxBalDDrel: maximum balance drawdown relative
- maxBalDD: maximum balance drawdown
- maxEqDDrel: maximum equity drawdown relative
- maxEqDD: maximum Equity drawdown
- Recov Fact: recovery factor
- Profit Fact: profit Factor
- Reward/Risk ratio: also known as RRR=average win / average loss.
- WinRate%: win rate in %
- AvgWinTrade, AvgLossTrade: average winning and losing trade in currency
- Best Trade, Worst Trade: best and worst trade in currency
- # Trades/week: number of trades per week
- # conscLossTrd: max number of consecutive losing trades
- maxDalyLoss: maximum loss in a day, in currency
- # maxDalyLoss/Year: number of times that the max daily loss was reached during the test, per year.
- AvgRisk/trade: average risk (in currency) per trade
- ReturnOnRisk %: $(\text{NetProfit}/\text{sum}(\text{Risk @ open})) \times 100$. It is the net profit over the sum of opening risk of all trades.
- AvgVol LargestVol: average trade volume, largest trade volume
- Expectancy: defined as $\text{WinRate} \times \text{RRR} - (1 - \text{WinRate})$.
- GoodPred%: percent of trades where the first bar closed in the profit direction
- Account Levrg: account leverage
- Min Marg Levrg: minimum margin level percent during the test
- Total commission: total commission in currency
- Commission/GrossProf %: total commission as percent of gross profit.
- Total Swap: total currency spent in Swap
- Swap/GrossProf %: swap as percent of the gross profit
- Sortino: the Sortino ratio
- Risk of Ruin %: risk of ruin the account (account=based on Misc Optimization Parameters)
- MC daily VaR95 %: 95% confidence Value at Risk% daily (Monte Carlo estimation)
- MC monthly VaR95 %: 95% confidence Value at Risk% monthly (Monte Carlo estimation)
- MC daily CVar95 %: 95% confidence Conditional Value (shortfall) at Risk% daily (Monte Carlo estimation)
- MC monthly CVar95 %: 95% confidence Conditional Value (shortfall) at Risk% monthly (Monte Carlo estimation)
- MC maxEqDDrel+2std is the Monte Carlo estimation of max equity relative draw down (mean plus $2 \times \text{StdDev}$). This may happen with ~2% probability.
- MC # conscLossTrd+2std is the Monte Carlo estimation of number of consecutive losing trades (mean plus $2 \times \text{StdDev}$). This may happen with ~2% probability.
- MC Prof Mean / Std: Monte Carlo predicted profit mean divided by its standard deviation. Ratio is the value of the division.

The second part of the summary looks like this:

---- Objective Functions ----			
	Value	Target	Weight Contribution%
	MAX_AnnRetPct: 1.01e+02 100.00 1000.00 99.9%		
	MAX_Rew2RiskRatio: 1.16e+00 10.00 10.00 0.1%		
----- Constraints: (Actual vs Bound) -----			
	Pass	: MaxDailyLoss = -4.58% vs -5.00%	
	Pass	: MaxLossTrade = -2.21% vs -5.00%	
	Pass	: MaxAccLoss = -0.64% vs -25.00%	
	Pass	: WinRate = 58% vs 50%	
	Pass	: nbrConsecLossTrades = 5 vs 10	
	Pass	: RecovFactor = 3.49 vs 2.00	
	Pass	: Eqty_DrawDown = 6.97% vs 15.00%	
	Pass	: Trades/Week = 5.1 vs 0.5	
	Pass	: MCPredPrf(Mean/Std) = 6.33 vs 2.00	
	Pass	: monthlyVaR = -9.94% vs -15.00%	
	Pass	: ReturnOnRisk % = 15.48 vs 5.00	

	Custom Max Obj Value: 1.001e+12		
=====			
*** Sim elapsed time = 39.0 sec			

In this second part the EA reports the multiple objectives and constraints. Four values are printed for objectives:

- Value: objective function value
- Target: target value
- Weight: weight value
- Contribution: how much the objective contributed to the total objective value, in percent.

For each constraint the report prints Pass or FAIL, the actual value of the constraint, versus the bound it is subject to.

Lastly, the Custom Max Objective value is printed. Keep in mind that this value has no physical meaning as it is the result of penalties and scaling factors, however, it serves as the metric to maximize your objective.

“Journal” Tab

Along with the Metatrader 5 Summary in the Backtest tab, **ExpertAdvisor** prints a summary if you use the [GOF](#) optimizer (Custom Max). The OnTester Summary can be found in the Journal tab.

Custom Max Objective Functions & Constraints Available (updated from the original article)

The GOF optimizer (<https://www.mql5.com/en/articles/14365>) has been updated substantially since the article was written. Here is the complete list of objectives and constraints available in the latest version:

Custom Max Objectives (select up to 5 functions)

- 1] **Annual Return %:** annual return in percent
- 2] **Balance:** total balance at the end of the test
- 3] **Net Profit:** total net profit at the end of the test
- 4] **Sharpe Ratio:** Sharpe ratio
- 5] **Expect. Payoff/Ini.Dep*100:** Expected payoff as percent of the initial deposit
- 6] **Recovery Factor:** recovery factor (aka Calmar ratio)
- 7] **Profit Factor:** profit factor
- 8] **Win Rate %:** winning rate in percent
- 9] **Reward/Risk(RRR=AvgWin/AvgLoss):** average Win / average loss
- 10] **Expectancy=Wrate*RRR-(1-Wrate):** as given by the formula
- 11] **100 - |EqtyMaxDD%|:** as the formula says it
- 12] **RoR:** Return over Risk = (Net Profit C)/(Tot Risk C)*100
- 13] **MCPredProf/MCPredStd:** Monte Carlo predicted Profit/Std
- 14] **100 + monthly_VaR%_for_95%conf.:** as the formula says it
- 15] **Kelly Criterion:** Kelly criterion formula
- 17] **Sortino ratio:** Sortino ratio formula
- 17] **#Trades/week:** number of trades per week

Custom Constraints (select up to 10 constraints)

- 1] **Daily Loss % InitDep (RM8 recommended):** max daily loss allowed as % of initial deposit
- 2] **Accnt Loss % InitDep (RM10 recommended):** max account loss allowed as % of initial deposit
- 3] **Equity DrawDown %:** max equity draw down allowed in %
- 4] **Consecutive losing trades:** max number of consecutive losing trades
- 5] **Win Rate %:** win trade rate in percent
- 6] **# trades/week:** number of trades per week
- 7] **Recov Factor:** recovery factor (aka Calmar ratio)
- 8] **RRR=Reward/Risk ratio:** average Win / average loss
- 9] **Annual Return in %:** total annual return in percent
- 10] **Profit Factor:** profit factor
- 11] **Sharpe Factor:** Sharpe factor formula
- 12] **Expected PayOff / IniDep*100:** Expected Pay off / Initial Deposit *100
- 13] **Max Loss trade in Currency:** max loss in any trade in the currency of the account
- 14] **Sortino Ratio:** Sortino ratio formula
- 15] **# MaxDailyLoss Events/Year:** number of days with max daily loss per year
- 16] **RoR=(Net Profit C)/(Tot Risk C)*100**
- 17] **MCPredProf/MCPredStd:** Monte Carlo (Profit/Std)
- 18] **MaxEqtyDD/IniDep*100:** Max Equity draw down as percent of the initial deposit
- 19] **Expectancy:** Expectancy = WinRate*RRR-(1-WinRate)
- 20] **Monthly VaR% for 95% confidence**

Step 2) ExpertAdvisor in a live account

The assumption is that you know the basics of Metatrader 5, and also know how to navigate its terminal. Every time you double-click on a row in the Optimization results table, the Input tab is populated with the values from the table, and a simulation is performed. Once you simulate several combinations and compare their profit, win rate, recovery factor, and any other metric you like, decide which combination to use in live trading. Proceed like this:

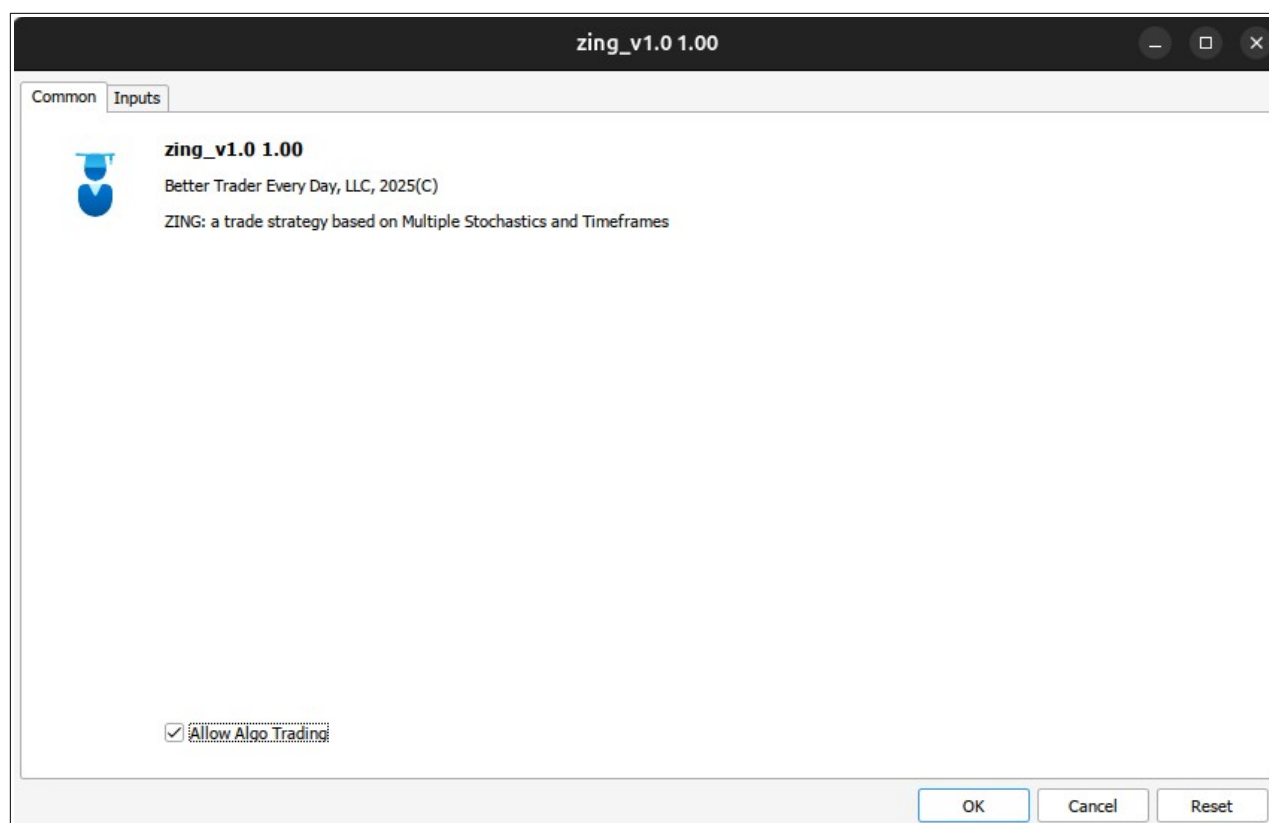
- Double-click on the combination you chose to simulate the back test.
- Go to the Input tab.
- Type in the first line on the input tab any the comment you like. Here is an example:

Variable	Value	Start
<input checked="" type="checkbox"/> Add any comment for your reference	USDJPY_mar_14_H3_ar58%_wr56%_rf5.7_tt59_ZING	

- Right-click on any input parameter and select “save”

Variable	Value	Start	Step	Stop	Steps
<input type="checkbox"/> SL_trTrigFac: [0,0,2,1]	0.5	0.5	0.05	5.0	
<input type="checkbox"/> SL_trFixPips [10,10,120]	20	20	1	200	
<input type="checkbox"/> SL_trATR: [0.5,0.5,] lower=>more aggressive SL	2	0.5	0.5	3	
<input type="checkbox"/> SL_trPrevBar: number of previous bars [3,3,10]	4	4	1	40	
<input checked="" type="checkbox"/> SL_trAccBE: BreakEven trigger [0.1,0.2,1.1]]>=1.1]	1.1	0.1	0.2	1.1	6
<input checked="" type="checkbox"/> SL_trAcc: [0.25,0.25,1.25]. Higher => more aggressi...	0.25	0.25		1.25	5
<input type="checkbox"/> SL_trPricePct: % [0.1,0.1,1]	0.5	0.5		5.0	
<input type="checkbox"/> SL_trFixMoney: [Currency amount]	0	0.0		0.0	
<input type="checkbox"/> SL_trBarCountOp: [3,1,5]	3	3		30	
-----SL PARAMS TO AVOID BIG LOSSES -----					
<input checked="" type="checkbox"/> SL_negGap: move SL when a negative Gap happens	false	false		true	2
<input type="checkbox"/> SL_ClosePos (reduce SL if opp entry is better)	false	false		true	
<input checked="" type="checkbox"/> SL_CloseX200 (reduce SL if cross MA200 & -trend)	true	false		true	2
<input checked="" type="checkbox"/> SL_ConsBars (reduce SL if several bars opp dir)	false	false		true	2

- Give an appropriate name to the file (it will be a file with extension .set)
- Go to the price chart of the symbol you optimized for, and load the **ExpertAdvisor** expert. An EA window will pop up.
- Make sure to activate “Allow Algo Trading” in the Common tab. Now go to the Inputs tab.
- When the EA is loaded, all parameters are filled with the default values inside the EA automatically. You now need to load the set file you saved to overwrite the default values.
- In the Input tab in the new window that popped up and click “Load”
- Select the set file you saved.



Common
Inputs

Variable	Value
ab Add any comment for your reference	Write your comments here
----- TIME PARAMETERS -----	
Time frame (bar period)	current
01 Entries allowed from this server hour [0,23]	0
01 ----- Plus these minutes [0,59]	0
01 Entries allowed these many hours each day [0,24]	24
01 ----- Plus these minutes [0,59]	0
Allow to open trades on Monday (server time)	true
Allow to open trades on Tuesday (server time)	true
Allow to open trades on Wednesday (server time)	true
Allow to open trades on Thursday (server time)	true
Allow to open trades on Friday (server time)	true
01 Daily position close at (hour) -1 [0,23]	-1
01 Daily position close at (min) -1 [0,59]	-1
01 N (Close position after N bars from open) 0 [2,...]	0
----- PRICE ACTION STRATEGY PARAMETERS -----	
$\frac{1}{2}$ p1_d [0,0.5,3]	1.0
$\frac{1}{2}$ p2_d [0.25,0.25,2]	0.75
$\frac{1}{2}$ p1_e [2,1,6]	3.0
----- TP <OPEN> PARAMETERS -----	

Load
Save

OK
Cancel
Reset

- Once loaded, scroll down to “Risk Management (RM) Parameters” section. We prefer any option that takes into account the actual money available for trading, not a fixed amount. The parameter RM1 has the option “Free Margin” which is the available money to open trades.

Variable	Value
1/2 SL_Gain2CL: added trigger to close %vol [0][0,0.25,...	0.0
1/2 SL_GainVol: vol fraction to reopen [0][0,0.2,1]	0.0
----- <TICK TRAILING> STOP LOSS PARAMETERS -----	
1/2 SL_ttConvex01 [0,0.1,1]	0.5
----- RISK MANAGEMENT (RM) PARAMETERS -----	
Risk Management (RM) method at the open	Fixed Risk % (RM:1,2,3,6)
1/2 RM0: Init.Deposit to calculate max loss allowed	10000.0
RM1: base amount in currency to apply Risk	Initial Deposit (RM0)
1/2 RM2: Initial % Risk (per trade)	Initial Deposit (RM0)
1/2 RM3: Max % Risk (per trade)	Free Margin
1/2 RM4: Fixed Lot Size (per trade)	1.0
1/2 RM5: Lot Size Per every 10k of free margin	0.25
1/2 RM6: Max Lot Size per trade [0][>0]	10.0
1/2 RM7: Fixed Currency amount risked per trade	100.0
1/2 RM7.5: Risk reduction per loss [0][0.25,0.25,0.5]	0.5
----- OTHER RISK PARAMETERS (FIXED) -----	
1/2 RM8: MaxDailyLoss in % of Ini.Dep.	5.0
1/2 RM9: Safety factor for DailyLoss (RM8) [0.5,1]	0.9
1/2 RM10: MaxAccountLoss in % of Ini.Dep.	10.0
1/2 RM11: Safety factor for Acct.Loss (RM10) [0.5,1]	0.9

Buttons: Load, Save, OK, Cancel, Reset

NOTE: the reason we don’t like to optimize with “Free Margin” is because as the balance grows, the later part of the back test period (1 year) will have more importance than the initial part of the back test period, and the optimizer would find combinations that take advantage of the later price action in the test period. It is better to have even importance spread along the year which is accomplished by always risking a fixed amount (e.g., fixed percent of the Initial Deposit). However, once you are in the live trading mode, it is preferred to risk a percentage of the available money as is the case of “Free Margin.”

You will know that **ExpertAdvisor** is ready to trade when you get a chart like this:



In your price chart you should see:

- The green triangle “Algo Trading” on the top part of the terminal above the chart
- The blue **ExpertAdvisor** icon in the top right corner of the chart

*** If the green triangle is not there, but you see a red square, you need to click on it to get the green triangle.

*** If the **ExpertAdvisor** icon is gray, you probably forgot to check “Allow Algo Trading” in the “Common” tab when you loaded the .set file.

You should also see in the top left corner inside the chart:

- The time window where the EA is allowed to trade. In the example above, it is between yesterday at 5pm to today at 5pm in local time. Similar information is shown in parenthesis in Server Time. In the example above: (Server: 0+24hr), which means start trading at midnight for 24 hours.
- The “Any Comment” line you entered in the .set file is also shown in the top left corner. Appended to this line there is the Magic number being used for that symbol.

WHEN TO PERFORM A MANUAL INTERVENTION IN AN OPEN POSITION?

Once a position is open, you can manually change its SL and/or TP, or close the position. Doing this manual intervention defeats the purpose of having an EA software running your trades. So, in what circumstances is a manual intervention acceptable?

- The EA may select a SL or TP that is too far from the opening price. This may happen due to slippage, spreads, or simply bad parameter values in the input file. In these cases, it is acceptable to manually tighten the SL or TP, but do not exaggerate. If this needs to be done too often, review the optimization process and fix the SL open parameters.
- Suppose you have a TP:SL of 6:1, and the position is in profit very close to, say, 5.9:1, and you see that the price is starting to retreat against your profit before touching the 6:1 TP. In this case, it is acceptable to close the position manually, and take the 5.9X profit. Remember, the purpose is to secure your wins, not to blindly let the EA to control your money when you are looking at the price chart.
- You can stop the Algo trading any time when there are no positions open. This is useful when you are on vacation and don't have the connection to check your trades. However, if you install Metatrader 5 in your cell-phone, you can monitor open positions, and intervene manually if needed.

THINGS GONE WRONG

Computer shuts down

The most likely problem you will encounter while running any EA is that your computer stops working (due to lack of power, freezing OS, etc.). In this case, restarting the Metatrader 5 terminal should restore all your settings as before the problem with your computer.

MT5 Updates in the middle of a trading day

If you get a pop-up window from Metaquotes about updating your Metatrader 5 version, we prefer to close the pop-up window, and wait until your positions are closed. Then close Metatrader 5, re-start it and the pending update will happen automatically.

Passing Proprietary Firm Challenges

If you are using a Prop Firm to get funded, there are daily and account loss limits that you must satisfy. There are two possible scenarios of things gone wrong regarding such limits:

1) When the amount of losses increases, and the “max daily permitted loss” is about to be reached, the EA will close positions, suspend trading in all symbols, and go into hibernation (sleep mode) until the next day when it will wake up automatically. How close to the “max daily permitted loss” is hibernation activated? It depends on parameters RM9 through RM11 in the input (.set) file. The wake up time will be visually indicated on the chart by displaying a purple vertical line at the time the max daily permitted loss is reset based on the Prop Firm rules.

2) When the amount of losses increases, and the “max account permitted loss” is about to be reached, the EA will close positions, suspend trading, and remove the EA from all charts in the MT5 terminal. How close to the “max account permitted loss” is the suspension activated? It depends on parameters RM9 through RM11 in the input (.set) file. An Alert window will pop up indicating this important event. There will be instructions in the Expert tab on how to resume trading again. If you reload the EA, you will need to reduce the risk (RM1 parameter), and relax your safety factors (RM10, RM11) making them closer to 1. Be aware that a small loss could invalidate your prop firm account, and you will need to start over with a new challenge account.

OPTIMIZATION DECISIONS

Once you are familiar with the optimization tool in Metatrader 5, you can play around with more parameters. The following is a sequence of decisions that will guide you select which parameters to optimize.

- Select the symbol to optimize
- Decide what time frames to optimize (or pick one and fix it)
- Always select to optimize the Entry Strategy parameters (all of them)
- Decide which Take Profit method at the opening of the trade.
- Select to optimize parameters needed for that method
- Decide which Stop Loss method at the opening of the trade.
- Select to optimize parameters needed for that method
- Decide which Stop Loss method for trailing
- Select to optimize parameters needed for that method
- Select additional trailing SL parameters in sections “SL PARAMS TO AVOID BIG LOSSES” and “SL PARAMS TO PRESERVE GAINS.”
- Decide if you want to take partial gains in a trade. If yes, select SL_Gain2BE, SL_Gain2CL, SL_GainVpct to optimize them.
- Make sure RM0 is the initial deposit (this is used to compute max draw downs)
- Decide your Risk Management method. In the optimization phase, we prefer a method that gives equal importance to any trade during the test period. There are several methods to chose from:
 - Fixed Risk % (RM:1,2,3,6)
 - Risk% based on WinRate (RM:1,2,3,6)
 - Fixed lot per order (RM:3,4,6)
 - Fixed Lot/(10k) (RM:1,5,6)
 - Fixed Currency Amount (RM:6,7)

For optimization we prefer “Fixed Risk %” and for RM1 we prefer “Initial Deposit.” In this case, every trade will risk $RM0 \cdot RM2$.

- There are RMxx parameters required for the method you selected. You may choose to have a fixed value, or to optimize them.
- Decide what type of entry orders you want: market, stop, or limit.

The rest of the input parameters can be left as the default values in the .set file supplied, but you are welcome to play with different settings.

- The Custom Max Optimization section is very important and affects the results substantially. We prefer to leave the default values as they provide good combinations of parameters. Later, as you become more used to the EA, you may play with the parameters in this section.

In total, you should have around 10 to 15 parameters to optimize: the entry strategy parameters, and the rest for the position management (TP, SL). Any number higher that 15 will slow down the optimization

phase. You may get better results adding more than 15 variables, but they will be curve-fitting the back test price data, and will likely perform poorly in the real (live) use of the **ExpertAdvisor**.

Regarding News and Weekends

As you will read in the user manual ---later in this document--- there are features in **ExpertAdvisor** to handle important news and weekends. Select how you want to handle them.

WHEN TO PERFORM OPTIMIZATION?

Since the FOREX market is closed during weekends, the best time to start your optimization runs is Friday (after 5pm EST). You would have 48 hours to perform several optimization runs and be ready for Sunday (5pm EST) with all your optimized parameters.