BACKTESTING GUIDE

Nika EA V2.91

Complete Strategy Tester Configuration & Optimization Reference

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This guide covers the complete backtesting workflow for Nika EA V2.91, from initial Strategy Tester setup through advanced optimization using the proprietary NQ scoring system. Whether you are running your first backtest or fine-tuning parameters for a prop firm challenge, this document provides the configuration details, metric benchmarks, and practical advice you need.

Chapter 1

Quick Start — Getting Started with Backtesting

What You Need

- MetaTrader 5 installed and connected to a broker (demo or live account)
- Nika EA V2.91 — the compiled `.ex5` file placed in `MQL5/Experts/`
- Custom indicators — Universal Nika Trading and All_MA indicators placed in `MQL5/Indicators/`
- Sufficient history data — minimum 3 years for the symbols you intend to test
- Hardware — optimization runs are CPU-intensive; a multi-core processor significantly speeds up genetic optimization

Step 1: Open the Strategy Tester

Press Ctrl+R or navigate to View → Strategy Tester from the MT5 menu bar. The Strategy Tester panel will appear at the bottom of your MetaTrader 5 window. If the panel is not visible, ensure you are running the desktop version of MT5 (the web terminal does not support strategy testing).

Step 2: Select Nika EA

In the Strategy Tester panel, click the Expert Advisor dropdown and select Nika EA V2.91. If the EA does not appear in the list, verify that the `.ex5` file is in the correct `MQL5/Experts/` directory and restart MT5. Also ensure the custom indicators are installed — the EA will fail to initialize without them.

Step 3: Configure Basic Settings

Before running your first test, configure these essential settings in the Strategy Tester panel:

Setting	Value	Notes
Symbol	Your target pair/instrument	e.g., EURUSD, XAUUSD, NAS100
Period	As specified by your strategy	H1, H4, or D1 are common starting points
Date Range	At least 3 years	e.g., 2022.01.01 to 2025.12.31
Forward	No	Enable only for walk-forward testing later
Deposit	$10,000	Standard benchmark for comparable results
Leverage	1:100	Match your intended broker conditions
Modeling	Every tick based on real ticks	Most accurate mode — see Chapter 2

Step 4: Your First Test Run

Click Start to begin the backtest with default EA settings. This initial run establishes your baseline. Do not change any EA input parameters yet — the defaults are designed to produce reasonable results across most major pairs. Watch the progress bar at the bottom and check the Journal tab for any initialization errors. When complete, review the Backtest and Graph tabs for results.

> Tip: If the backtest completes with zero trades, check the Journal tab for error messages. Common causes include missing indicators, insufficient history data, or a symbol name mismatch.

Chapter 2

Strategy Tester Configuration

Recommended Settings

These settings are recommended for producing reliable, broker-realistic backtest results with Nika EA V2.91:

Setting	Recommended	Why
Modeling	Every tick (real ticks)	Most accurate tick generation; reproduces real market microstructure
Period	3–5 years minimum	Covers bull, bear, and ranging markets — multiple regimes
Deposit	$10,000	Standard benchmark for comparing results across setups
Leverage	1:100	Match your intended live broker conditions
Spread	Variable (current)	Realistic spread — fixed spreads distort edge calculation
Execution	Market execution	Avoids requote artifacts from instant execution simulation

Loading History Data

Accurate backtesting requires complete tick history. MT5 downloads data automatically but you should verify coverage:

1. Open View → Symbols (or press Ctrl+U)
2. Select the symbol you plan to test
3. Click the Ticks tab and verify data goes back to your desired start date
4. If data is missing, click Request and wait for the download to complete
5. Check the Bars tab for OHLC data on your target timeframe

Data Quality Check

After a backtest completes, check the quality percentage shown in the Strategy Tester results. A quality below 90% indicates significant gaps in the tick data, which can invalidate results. Target 95% or higher for reliable testing. If quality is low, try a different date range or broker server that provides better historical data.

Understanding 'Every Tick Based on Real Ticks'

MT5 offers several tick generation modes. Every tick based on real ticks uses actual recorded tick data from your broker, preserving the exact sequence of price changes including spread variations, gaps, and micro-movements. This is the gold standard for backtesting because it eliminates artificial interpolation. The tradeoff is speed — real tick mode can be 5–10x slower than generated tick mode, especially for multi-year tests.

Mode	Speed	Accuracy	Best For
Every tick (real ticks)	Slowest	Highest	Final validation, scalping EAs
Every tick	Slow	High	General testing with generated ticks
1 minute OHLC	Fast	Medium	Quick parameter screening
Open prices only	Fastest	Low	Bar-close-only strategies
Math calculations	Instant	N/A	Indicator logic testing only

Recommendation: Use 1 minute OHLC for rapid parameter screening during optimization Phases 1–3, then validate your top configurations with Every tick (real ticks) in the final phase.

Chapter 3

Understanding Nika EA's NQ Optimization Metrics

Nika EA V2.91 includes 11 built-in optimization criteria — 6 legacy modes for backward compatibility and 5 proprietary NQ modes that use geometric-mean scoring with weighted exponents for smooth, non-distortable evaluation. The NQ modes are the core differentiating feature.

Legacy Modes (Backward Compatible)

Mode	Formula	Use Case
Result/DD+2	Result% / (MaxDD% + 2)	Simple risk-adjusted return
Result x Recovery	Result% × Recovery Factor	Growth + recovery balanced
(Result/DD+2) x Recovery	Combined formula	Conservative multi-factor
(Result/DD) x Recovery	Result%/DD × Recovery	Higher DD penalty
(Result/DD) x Sharpe	Result%/DD × Sharpe	Risk-quality hybrid
Win Rate	Win% × 100	Pure win consistency

Proprietary NQ Modes (Recommended)

Each NQ mode uses a geometric mean with weighted exponents, producing smooth scoring that resists distortion from extreme single-metric values. All NQ modes share a common structure but differ in weight distribution and penalty thresholds.

1. NQ Final Boss (Default) — Best All-Round

The default and recommended mode. Balances return, risk quality, and statistical significance. Uses log-compressed return with a quadratic drawdown penalty (threshold: 18%).

Component	Weight	Details
Return (log-compressed)	0.40	log(1 + AnnualizedReturn) / (1 + (DD/18)^2.2)
Sharpe Ratio	0.20	Standard risk-adjusted quality measure
Recovery Factor	0.15	Net profit / max drawdown
Profit Factor (capped at 3.0)	0.10	Prevents PF gaming above 3.0
Trade Adequacy	0.15	Penalizes low trade counts (see formula below)

```
Score = pow(log(1+Ann)/(1+pow(DD/18, 2.2)), 0.40) × pow(Sharpe, 0.20) × pow(Recovery, 0.15) × pow(PF_capped, 0.10)
× pow(TradeAdequacy, 0.15)
```

2. NQ Growth — Alpha Hunting / Discovery

Heavier return emphasis (0.50), lighter drawdown penalty (threshold 24%), lower Sharpe weight (0.10). Best for initial parameter discovery when you want maximum return potential.

3. NQ Safe — Prop Firm / Live Survival

Heavy drawdown penalty (0.35 weight, threshold 12% with cubic exponent 3.0), strong Sharpe (0.20), lower return weight (0.20). Designed for prop firm challenges and conservative live accounts where survival is paramount.

4. NQ Efficiency — Annualized Return vs DD Ratio

Uses log(1 + AnnualizedReturn/DD) as primary factor (0.55 weight). Best for comparing capital efficiency across different strategies and parameter sets.

5. NQ Depth — Statistical Substance / Anti-Fake

Uses Expectancy in R-units (0.25 weight), heaviest Trade Adequacy weight (0.35), PF capped at 3.0 (0.15). Aggressively punishes low trade counts. Uses the `_nq_risk_pct_per_trade` input (default 0.33%) to calculate R-units.

NQ Mode	Primary Emphasis	DD Threshold	DD Exponent	Best For
NQ Final Boss	Balanced (Return 0.40)	18%	2.2 (quadratic)	General use, default
NQ Growth	Return heavy (0.50)	24%	2.0	Signal discovery
NQ Safe	DD penalty (0.35)	12%	3.0 (cubic)	Prop firms, live
NQ Efficiency	Return/DD ratio (0.55)	—	—	Capital efficiency
NQ Depth	Trade Adequacy (0.35)	18%	2.2	Anti-curve-fit validation

Trade Adequacy Formula (Shared by All NQ Modes)

Trade Adequacy creates a soft asymptotic curve that rewards higher trade counts without hard thresholds. The formula ensures that results based on very few trades receive appropriately low scores:

```
TradeAdequacy = 1 - exp(-trades / 500)
```

Trades	50	100	200	500	1,000	2,000
Adequacy	0.095	0.181	0.330	0.632	0.865	0.982

Key NQ Input Parameters

Parameter	Default	Description
_drawdown_type	NQ Final Boss	Selects which optimization metric to use from the 11 available modes
_nq_risk_pct_per_trade	0.33	Risk % per trade — used by NQ Depth for R-unit calculation
_nq_min_trades	30	Minimum trade count — below this threshold, score is forced to 0

Chapter 4

Optimization Workflow

Effective optimization follows a structured multi-phase approach. Each phase targets a specific aspect of the strategy, and each uses a different NQ mode matched to the objective. Rushing through phases or optimizing everything at once is the primary cause of overfitting.

Phase 1: Signal Discovery

Enable 2–3 signals and optimize their weights and indicator periods. The goal is to discover which signal combinations work on your target instrument and timeframe.

- Use NQ Growth mode — emphasizes return to surface strong signal combinations
- Enable genetic optimization for broad parameter spaces
- Focus on signal selection, not risk management yet
- Record the top 5–10 parameter sets, not just the single best

Phase 2: Risk Tuning

Lock in your signal parameters from Phase 1. Now optimize the risk management layer.

- Switch to NQ Final Boss mode — balanced return and risk evaluation
- Optimize: SL method, ATR multiplier, TP multipliers
- Keep signal parameters fixed from Phase 1
- Watch for parameter sensitivity — if small SL changes destroy results, the setup is fragile

Phase 3: Trade Management

Fine-tune trade management features that affect how positions are managed after entry.

- Continue with NQ Final Boss mode
- Optimize: trailing stop mode, breakeven distance, partial close percentages
- These parameters should improve the equity curve smoothness, not just raw return

Phase 4: Validation

This phase checks whether your optimized parameters are robust or overfit.

- Switch to NQ Safe mode and re-run the backtest with your optimized parameters
- If results collapse under NQ Safe's stricter DD penalty, the parameters are likely overfit
- Also test with NQ Depth to verify statistical substance
- Cross-mode validation: parameters that score well across multiple NQ modes are robust

Phase 5: Walk-Forward Testing

The definitive overfitting test. Split your data into in-sample and out-of-sample periods.

1. Split data 70/30 — e.g., 2020–2023 for optimization, 2024–2025 for validation
2. Optimize on the in-sample period using your chosen NQ mode
3. Apply the best parameters to the out-of-sample period (no re-optimization)
4. OOS should achieve >60% of in-sample performance
5. If OOS performance is <40% of IS, the parameters are overfit — return to Phase 1

Phase	Objective	NQ Mode	Optimize
1. Signal Discovery	Find working signals	NQ Growth	Signal weights, indicator periods
2. Risk Tuning	Calibrate risk management	NQ Final Boss	SL method, ATR mult, TP mult
3. Management	Smooth equity curve	NQ Final Boss	Trailing, breakeven, partial close
4. Validation	Confirm robustness	NQ Safe + NQ Depth	No optimization — test only
5. Walk-Forward	Prove OOS viability	NQ Final Boss	IS optimization, OOS validation

Genetic vs Exhaustive Optimization

Aspect	Genetic	Exhaustive
Speed	Fast — tests a fraction of parameter space	Slow — tests every combination
Coverage	Stochastic — may miss optimal areas	Complete — finds the true optimum
Best for	Large parameter spaces (>10,000 combos)	Small, focused searches (<5,000 combos)
Overfitting risk	Lower — natural regularization	Higher — finds peak-fit outliers
Recommended use	Phases 1–3 (discovery)	Phase 4–5 (validation of narrow ranges)

Chapter 5

Reading Backtest Results

After a backtest completes, MT5 provides a detailed report. Understanding what each metric tells you — and what it hides — is essential for making sound decisions.

Key Metrics Benchmarks

Metric	Good	Caution	Bad
Profit Factor	> 1.5	1.2 – 1.5	< 1.2
Sharpe Ratio	> 1.0	0.5 – 1.0	< 0.5
Recovery Factor	> 2.0	1.0 – 2.0	< 1.0
Max Drawdown %	< 15%	15% – 25%	> 25%
Total Trades	> 200	100 – 200	< 100
Expected Payoff	Clearly positive	Near zero	Negative

What to Check

Equity Curve Shape

A smooth, consistently rising equity curve is the hallmark of a robust strategy. Look for steady gains across the entire test period, not just at the beginning or end. Large flat periods suggest the strategy stops working in certain market conditions.

Drawdown Profile

Compare maximum drawdown to average drawdown. If the max DD is more than 3x the average, the strategy may have a structural vulnerability to specific market events. Check when the max drawdown occurred — was it during a known high-volatility event (e.g., NFP, rate decision)?

Long vs Short Performance

Review the breakdown of long and short trade performance. A strategy where all profits come from one side may only work in trending markets. Balanced L/S performance indicates a more robust edge.

Time Distribution

Check whether profitability is consistent across years. A strategy that was flat for 2020–2023 but very profitable in 2024 may be overfit to recent conditions. Annual consistency matters.

Spread Sensitivity

Re-run the backtest with slightly wider spreads (e.g., +2 points). If profitability drops significantly, the edge is too thin for real trading where execution costs vary.

Red Flags

Red Flag	What It Means	Action
Back-loaded equity curve	Most profit comes from the last 20% of the test period	Likely overfit to recent data — extend test period
Profits from few trades	Remove top 5 trades and profitability disappears	Edge is fragile — not enough statistical substance

Red Flag	What It Means	Action
Asymmetric L/S performance	One direction accounts for >80% of profits	Strategy may only work in trends — test across regimes
High parameter sensitivity	Small parameter changes destroy results	Overfit to noise — look for parameter plateaus instead
Unrealistic profit factor	PF > 5.0 over extended periods	Likely curve-fit — validate with walk-forward testing

Chapter 6

Avoiding Overfitting

Overfitting is the single biggest risk in EA optimization. An overfit strategy shows excellent backtest results but fails in live trading because it has memorized historical noise rather than learning genuine market patterns.

Signs of Overfitting

- Unrealistically high profit factor (> 5.0) or Sharpe ratio (> 3.0)
- Results collapse with small parameter changes (sharp peaks in optimization surface)
- Low trade count (< 100 trades) with high returns — insufficient statistical sample
- Performance concentrated in a single year or market condition
- Too many optimized parameters (> 6 free parameters for a single-signal strategy)
- Out-of-sample performance drops below 40% of in-sample results

Walk-Forward Methodology

Walk-forward analysis is the most reliable defense against overfitting. The process divides your data into alternating optimization and validation windows, then chains the out-of-sample results together:

1. Divide total data into rolling windows (e.g., 12 months optimize, 6 months validate)
2. Optimize on window 1, test on validation window 1
3. Slide forward — optimize on window 2, test on validation window 2
4. Chain all validation results — this is your realistic expected performance
5. Walk-forward efficiency = OOS total / IS total — target > 0.6 (60%)

Parameter Plateaus vs Peaks

When reviewing optimization results, look for plateaus — regions where many nearby parameter values produce similar good results. These indicate a genuine edge that is not sensitive to exact parameter values. Conversely, sharp peaks where only one specific combination works well are almost always overfit. Always choose parameters from the center of a plateau, not from the highest single peak.

Cross-Validation with Multiple NQ Modes

Nika EA's multiple NQ modes provide a built-in cross-validation framework. After optimization:

- Run the same parameters under NQ Growth, NQ Final Boss, and NQ Safe
- If all three modes rank the parameter set highly, it is genuinely robust
- If NQ Growth loves it but NQ Safe rejects it, the parameters depend on excessive drawdown
- If NQ Depth rejects it, there are too few trades for statistical confidence

The 'Remove Top 5 Trades' Test

A simple but powerful robustness check: mentally remove the 5 most profitable trades from your backtest. If the strategy is no longer profitable, the entire edge depends on a handful of outlier events that may not repeat. A robust strategy remains profitable even without its best trades. Check this in the Strategy Tester's trade list — sort by profit and see what happens without the top entries.

Chapter 7

Advanced Tips

Visual Mode Signal Debugging

Set `_show_indicators = true` in the EA inputs, then run the Strategy Tester in Visual Mode. This overlays the EA's signals directly on the chart, allowing you to see exactly when and why entries and exits are triggered. Use the speed slider to slow down execution at interesting points. This is invaluable for understanding how the EA interprets market conditions.

Minimum Trade Filter

Set `_nq_min_trades` to reject optimization results with too few trades. The default of 30 is suitable for most cases, but for shorter test periods you may want to lower it, and for multi-year tests you can raise it to 50 or 100 to ensure statistical significance.

Multi-Symbol Testing

Run the same optimized parameters across multiple symbols to test universality. A strategy that works on EURUSD, GBPUSD, and USDJPY with the same parameters demonstrates a genuine market edge. A strategy that requires completely different parameters for each symbol may be overfit. Note that some parameter adjustment between symbols (e.g., ATR multiplier due to different volatility) is expected and acceptable.

Session-Based Backtesting

If Nika EA V2.91 includes session filter inputs, use them to test performance during specific trading sessions (Asian, London, New York). Many strategies have dramatically different performance characteristics across sessions. Testing with sessions enabled can reveal whether the edge is session-dependent.

Spread Filter Sensitivity Testing

Run the same backtest three times with different spread settings: (1) variable/current spread, (2) current spread + 5 points, (3) current spread + 10 points. If the strategy remains profitable at +10 points, it has a meaningful edge that can survive real-world execution variations.

Demo Forward-Testing Protocol

Before deploying any optimized settings to a live account:

1. Run the EA on a demo account with the optimized parameters for 2–4 weeks
2. Compare demo results to backtest expectations — are metrics in the same ballpark?
3. Monitor execution quality — slippage, spread widening, and order fill rates
4. Only move to live once demo performance confirms backtest predictions
5. Start live with reduced lot size (50% of target) for the first 2 weeks

Important: Backtest results are always optimistic. Real trading introduces slippage, spread widening during news events, connectivity issues, and execution delays. Budget for 10–20% lower performance than backtest numbers and you will make more realistic decisions.

Quick Reference Card

NQ Mode Selector

Your Goal	Use This NQ Mode
First-time optimization / general use	NQ Final Boss (default)
Discovering which signals work	NQ Growth
Prop firm challenge / conservative live trading	NQ Safe
Comparing capital efficiency across setups	NQ Efficiency
Verifying statistical substance / anti-curve-fit	NQ Depth
Cross-validation (run with optimized params)	NQ Safe + NQ Depth

Recommended Backtest Settings

Setting	Value
Modeling mode	Every tick (real ticks)
Test period	3–5 years minimum
Deposit	$10,000
Leverage	1:100
Spread	Variable (current)
_nq_min_trades	30 (default)
_drawdown_type	NQ Final Boss (default)

Metric Benchmarks (Quick View)

Metric	Target	Minimum
Profit Factor	> 1.5	> 1.2
Sharpe Ratio	> 1.0	> 0.5
Recovery Factor	> 2.0	> 1.0
Max Drawdown	< 15%	< 25%
Total Trades	> 200	> 100
Walk-Forward Efficiency	> 60%	> 40%

Common Mistakes to Avoid

Mistake	Why It Hurts	Fix
Optimizing all parameters at once	Massive parameter space → overfitting	Use phased workflow (Ch. 4)
Ignoring trade count	Low trades = statistically meaningless	Set _nq_min_trades ≥ 30
Using fixed spreads	Unrealistic execution costs	Always use variable spread
Skipping walk-forward test	No overfitting defense	Always split 70/30 for validation

Mistake	Why It Hurts	Fix
Going live without demo test	Backtest ≠ reality	2–4 weeks demo first
Picking the single best result	Peak optimization = peak overfit	Choose from parameter plateaus

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