

# Triple Smoothed Momentum Shift

Expert Advisor Documentation

## PLATFORM

MetaTrader 5 (MT5)

## TYPE

Momentum / Trend-Following

## TIMEFRAME

H1 (configurable)

## WEBSITE

[www.algotbot.live](http://www.algotbot.live)

**⚠ Important Disclaimer** This document is for educational and informational purposes only. It does not constitute financial or investment advice. Trading forex, CFDs, and other leveraged instruments involves substantial risk of loss and is not suitable for all investors. Past backtest performance does not guarantee future results. Never trade with capital you cannot afford to lose.

## Overview

**Triple Smoothed Momentum Shift** is a trend-momentum Expert Advisor built around **TRIX** — the rate-of-change of a *triple-smoothed* exponential moving average of price. Running the close through three cascaded EMAs strips out the short-cycle noise and single-bar spikes that make raw momentum oscillators so twitchy; what survives is the underlying momentum of the trend itself. TRIX is the one-bar percentage change of that thrice-smoothed line, so it reads positive while smoothed momentum is accelerating upward and negative while it is accelerating downward.

The EA trades the interaction of TRIX with two references: its own **signal line** (an EMA of TRIX, which supplies the trigger) and the **zero line** (which acts as a regime gate). A fresh signal-line crossover only becomes a trade when it happens on the correct side of zero — up-crosses are taken only in an established up-regime, down-crosses only in a down-regime. That single gate discards the counter-trend crosses that fire in the chop around the midline, which is what keeps trade count and drawdown down and avoids curve-fitting to noise.

Every read goes through the primary symbol and timeframe, so the same logic runs on whatever chart it is attached to. The natural playground is a liquid tender such as EURUSD, GBPUSD or XAUUSD on H1. The strategy is indicator-only, single-timeframe, with distinct long and short rules.

**Design intent.** TRIX and its signal line are reproduced in the MQL5 build with the *same* hand-rolled recursive EMA cascade as the C# research source (the three EMAs seeded to the first close, the signal seeded from zero) rather than the platform's built-in `iTriX`. This guarantees the crossover behaviour matches the backtested logic bit-for-bit.

## How It Works

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### The momentum engine

On each newly-closed bar the closing price is pushed through a cascade of three EMAs, each using the smoothing factor `alpha = 2 / (TrixPeriod + 1)`:

```
ema1 += alpha * (close - ema1)
ema2 += alpha * (ema1 - ema2)
ema3 += alpha * (ema2 - ema3)

TRIX = (ema3_new - ema3_old) / ema3_old * 100
signal = signal + sigAlpha * (TRIX - signal), sigAlpha = 2 / (SignalPeriod + 1)
```

The EA processes exactly one signal per closed bar. On the first close all three EMAs are seeded to that close so the cascade starts converged, and on initialisation the EA warm-starts from history — replaying up to `3 × TrixPeriod + SignalPeriod + 10` closed bars (plus a buffer for ATR) so that live trading begins from a fully-warmed state rather than a cold zero.

### Entry logic

Two conditions must line up on the just-closed bar. A *fresh* crossover of TRIX through its signal line supplies the trigger, and the sign of TRIX supplies the regime gate:

- **Long** — TRIX crosses **above** its signal line *while TRIX is already above zero*. Momentum is turning up inside an established up-regime — ride it.
- **Short** — TRIX crosses **below** its signal line *while TRIX is already below zero*. The mirror image inside a down-regime.

Only one position per magic number is held at a time. Before a signal becomes an order it must also pass the spread gate — if the current spread exceeds `MaxSpreadPoints`, the signal is skipped.

### Exit logic

Exits are threefold, so a trade can be released by protection, by target, or by a change of heart in the momentum itself:

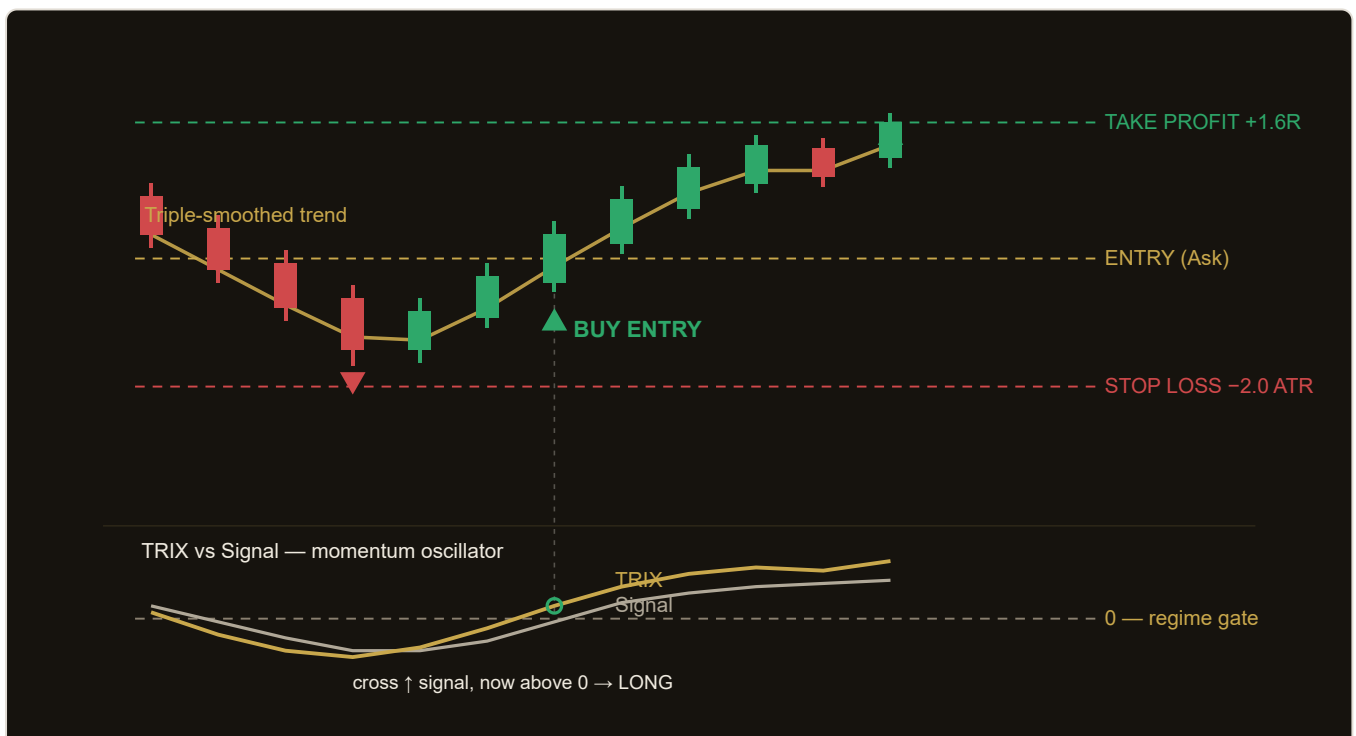
- **ATR stop-loss** — a volatility-scaled stop placed  $\text{AtrStopMult} \times \text{ATR}$  from entry, so it travels with the market's current range rather than a fixed pip distance.
- **Reward-multiple take-profit** — the target sits  $\text{RewardRatio} \times \text{stopDistance}$  from entry, i.e. the reward-to-risk multiple is measured directly from the same ATR-based stop distance.
- **Early momentum-reversal exit** — when `ExitOnReversal` is enabled, an open long is closed the moment TRIX crosses back below its signal (and a short the moment it crosses back above), so a stalled trade is released before it round-trips through the stop.

### Worked long example

Suppose TRIX has been positive for several bars (up-regime confirmed) and now crosses up through its signal line. Entry is taken at the Ask. With  $\text{ATR} = 0.00120$ ,  $\text{AtrStopMult} = 2.0$  and  $\text{RewardRatio} = 1.6$ : the stop sits  $2.0 \times 0.00120 = 0.00240$  below entry, and the target sits  $1.6 \times 0.00240 = 0.00384$  above it. If TRIX later crosses back below its signal before either level is hit, the position is closed early on the reversal.

## Strategy in Action

The illustration below shows an example of how the strategy identifies a setup and triggers its entry and exit. This is a simplified, illustrative example for educational purposes — not real market data.



*Illustrative example only. Actual market behaviour varies.*

## Parameters

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Parameter	Default	Description
<b>TrixPeriod</b>	15	EMA length used for each of the three smoothing passes that build TRIX. Range 5–40, step 1. Larger values smooth more heavily and trade less often.
<b>SignalPeriod</b>	9	EMA length of the signal line drawn on TRIX — the crossover trigger. Range 3–20, step 1.
<b>AtrPeriod</b>	14	ATR length for the volatility-scaled stop. Range 5–30, step 1.
<b>AtrStopMult</b>	2.0	Stop distance = this many ATRs from entry. Range 0.5–5.0, step 0.25.
<b>RewardRatio</b>	1.6	Take-profit distance as a multiple of the stop distance (reward : risk). Range 0.8–4.0, step 0.1.
<b>MaxSpreadPoints</b>	30	Skip a signal if the current spread (in points) is wider than this. Range 1–200, step 1.
<b>ExitOnReversal</b>	1	Close a live trade when momentum crosses back through its signal line (1 = on, 0 = off). Range 0–1.
<b>Lots</b>	0.10	Trade size — the position-sizing lever. Range 0.01–1.0, step 0.05.
<b>Magic</b>	7314	Magic number identifying this EA's positions. Range 0–9,999,999, step 1.

**Tip — one trade, one magic.** The EA manages a single open position per magic number at a time. If you run more than one instance (for example on separate charts or symbols), give each a distinct **Magic** so their position management never collides.

## Recommended Settings

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The defaults are tuned for a liquid trending instrument on the hourly chart. Use them as a starting point and re-optimize on your own broker's data before committing capital.

- **Symbols:** liquid trenders such as EURUSD, GBPUSD or XAUUSD.
- **Timeframe:** H1 is the intended default; the code reads the chart's timeframe, so it will run on any timeframe you attach it to.
- **Trend vs. noise:** raise **TrixPeriod** for fewer, cleaner signals in choppy conditions; lower it for more responsiveness on strongly trending pairs.

- **Risk shape:** widen `AtrStopMult` to survive volatility spikes, and lift `RewardRatio` when the instrument tends to run once it moves.
- **Spread discipline:** keep `MaxSpreadPoints` tight on major pairs; loosen it only for wider-spread instruments such as XAUUSD.

**Always test first.** Run the EA in the MT5 Strategy Tester and then on a demo account before going live. Backtest results reflect historical conditions and specific broker data; live spreads, slippage and execution will differ.

## How to Install on MetaTrader 5

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- 1 Copy `TripleSmoothedMomentumShift.ex5` to your MT5 `MQL5\Experts\` folder
- 2 Restart MetaTrader 5 and refresh the Navigator panel
- 3 Drag the EA onto a chart matching the recommended symbol and timeframe
- 4 Configure the input parameters and click **OK**
- 5 Enable **Algo Trading** in the MT5 toolbar

## Risk Warning

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