

# Asymmetric Capture Momentum

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Momentum Continuation	H1 (default)	<a href="http://www.algotbot.live">www.algotbot.live</a>

**⚠ 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

**Asymmetric Capture Momentum** is a single-timeframe momentum-continuation Expert Advisor built entirely from first principles on raw price data. Rather than reading levels, moving averages, candle shapes, or classical support and resistance, it studies only the stream of bar-to-bar returns and splits them into two populations: up-returns and down-returns.

Its central idea is that in a genuinely directional regime the two populations differ not in *count* but in *magnitude*. The side that owns the move advances price in large, aggressive bursts, while the counter-side only nibbles it back in small, passive steps. By comparing the **average size** of an up-step against a down-step, the strategy forms a clean directional gauge — the **capture asymmetry** — that is distinct from net change (momentum), gain/loss sums (RSI), and the third moment (skewness).

The EA acts once per completed bar, arms entries only on a fresh threshold crossing confirmed by the most recent return, flips its position on an opposite signal, and manages risk with a fully dynamic, ATR-scaled stop and an asymmetric reward multiple.

## How It Works

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### The Capture Asymmetry

On each newly completed bar the EA appends the relative return and recomputes the asymmetry over a rolling window `W` of the most recent returns:

```
r_i = (C_i - C_{i-1}) / C_{i-1}           // bar-to-bar relative return

G+  = mean( r_i for r_i > 0 )           // average up-step magnitude
G-  = mean( -r_i for r_i < 0 )         // average down-step magnitude

A   = (G+ - G-) / (G+ + G-)  ∈ [-1, +1] // capture asymmetry
```

- When up-steps dwarf down-steps, `A` is strongly positive → buyers are the aggressors → continuation up.
- When down-steps dwarf up-steps, `A` is strongly negative → sellers are the aggressors → continuation down.
- When the two magnitudes equalise, `A ≈ 0` → nobody is in control → no edge (chop).

### Self-Adapting Trigger

The entry threshold is not fixed. It scales with how noisy the asymmetry series itself has recently been:

```
T = ThresholdK × stdev( A over recent history ) // clamped to [0.05, 0.90]
```

The model therefore demands **more** asymmetry when the asymmetry stream is volatile and reacts to **less** when it is calm. Until enough history has accumulated (fewer than 5 samples), a fixed fallback of `0.15` is used.

### Entry Logic

An entry is armed only on a **fresh crossing** of the adaptive band, plus a same-sign **release confirmation** — the most recent return must agree in sign with the asymmetry:

- **Long:** `A` crosses up through `+T` (previous `A ≤ +T`, current `A > +T`) *and* the last return is positive.
- **Short:** `A` crosses down through `-T` (previous `A ≥ -T`, current `A < -T`) *and* the last return is negative.

**Note:** Because the trigger requires a *fresh* crossing rather than merely being beyond the band, the EA does not spam entries while asymmetry stays elevated — it acts only at the moment control shifts.

## Position Handling & Exits

The EA holds at most one position on the symbol (identified by its Magic number). On an opposite signal it first closes any existing position, then opens a new one in the fresh direction (a flip). Each trade carries a protective stop-loss and take-profit set at entry:

```
risk = StopAtrMult * ATR
reward = risk * TpRewardRatio

Long : SL = Ask - risk , TP = Ask + reward
Short: SL = Bid + risk , TP = Bid - reward
```

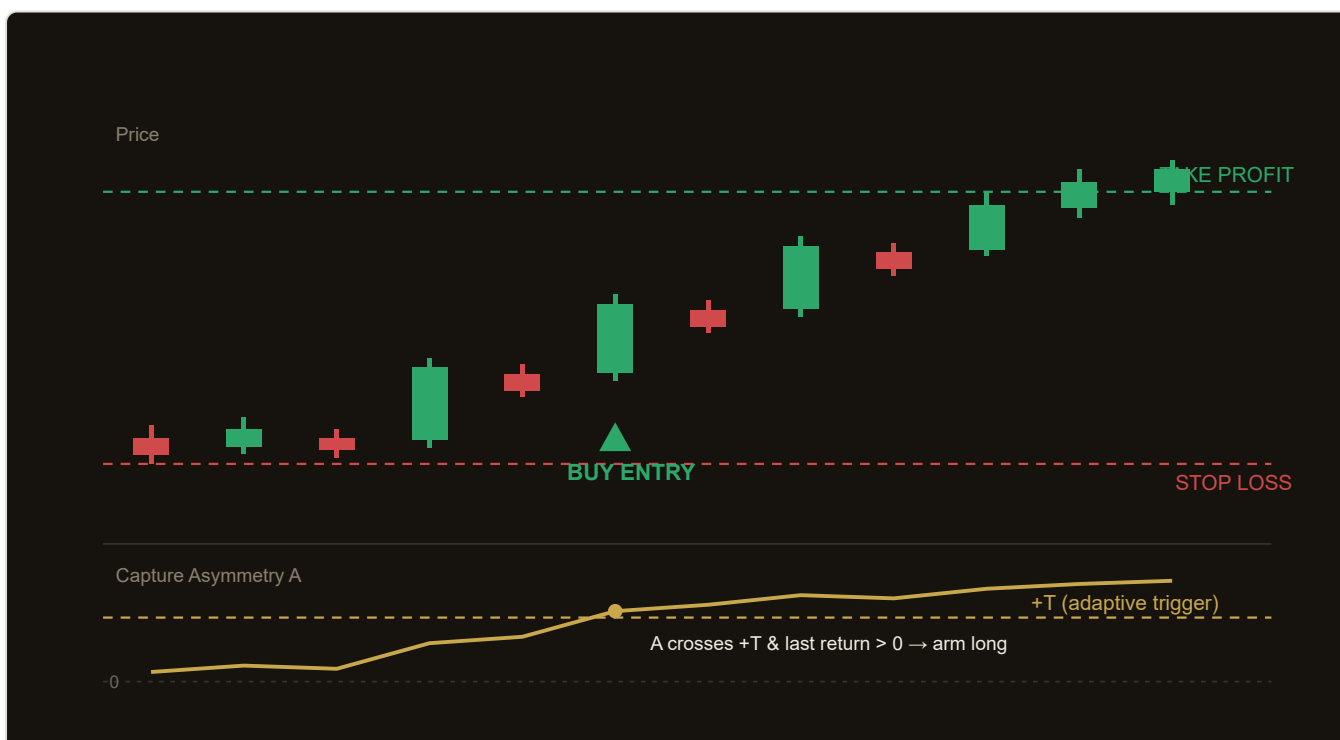
The `ATR` is computed by a self-contained simple mean of True Range over `AtrPeriod` completed bars — it never touches tick volume, and matches the C# and MQL5 implementations exactly. Trades close naturally when price reaches the SL or TP, or when an opposite signal flips the position.

### Worked example (defaults)

Suppose `ATR = 0.00120`, `StopAtrMult = 2.0`, `TpRewardRatio = 1.5`. Then `risk = 0.00240` and `reward = 0.00360`. A long entered at `Ask = 1.10000` gets `SL = 1.09760` and `TP = 1.10360` — a 1.5 : 1 reward-to-risk profile.

## 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.



## Parameters

Parameter	Default	Description
Window	30	Number of recent bar-to-bar returns used to measure up-step and down-step magnitudes. Range 10–100, step 5. Larger values smooth the asymmetry and react more slowly.
ThresholdK	1.0	Sensitivity multiplier for the adaptive trigger $T = \text{ThresholdK} \times \text{stdev}(A)$ . Range 0.3–3.0, step 0.1. Higher values demand stronger asymmetry before entering.
AtrPeriod	14	Number of completed bars used for the self-contained mean-of-True-Range ATR that scales the stop. Range 7–40, step 1.
StopAtrMult	2.0	Stop-loss distance as a multiple of ATR ( $\text{risk} = \text{StopAtrMult} \times \text{ATR}$ ). Range 0.5–5.0, step 0.5.
TpRewardRatio	1.5	Take-profit distance as a multiple of the stop risk ( $\text{reward} = \text{risk} \times \text{TpRewardRatio}$ ). Range 0.5–4.0, step 0.5. Values above 1.0 give an asymmetric, positive reward-to-risk profile.
Lots	0.10	Fixed trade volume in lots. Range 0.01–1.0, step 0.05. Size this to your account risk tolerance.

**Tip:** The MQL5 build also exposes a `Magic` input (default `990210`) used to tag and isolate this EA's positions so it never interferes with other trades or manual orders on the same symbol.

## Recommended Settings

The strategy is designed for a single timeframe and works best on liquid instruments where directional bursts are meaningful relative to spread.

- **Timeframe:** H1 is a balanced default. Lower timeframes generate more signals but are noisier; higher timeframes yield fewer, cleaner bursts.
- **Instruments:** Major FX pairs and liquid indices with tight spreads. Avoid thin, erratic symbols where a few outsized returns can dominate the window.
- **Window / ThresholdK:** Keep the defaults (`30` / `1.0`) as a baseline. Raise `ThresholdK` toward `1.5–2.0` to trade only the most decisive shifts; lower it for more frequent, earlier entries.

- **Risk:** The default `2.0 × ATR` stop with a `1.5` reward ratio is a sensible starting point. Tighten or widen `StopAtrMult` to match the symbol's volatility.

**Always validate first.** Backtest and forward-test on a demo account with your broker's spreads and execution before committing real capital. Optimise `Window`, `ThresholdK`, and the risk multiples per instrument.

## How to Install on MetaTrader 5

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- 1 Copy `AsymmetricCaptureMomentum.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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