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Momentum Percentile Breakout

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Adaptive Momentum Breakout	M15 – H1	www.algobot.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

Momentum Percentile Breakout is an adaptive momentum-breakout Expert Advisor. Its defining idea is *how* the trigger threshold is set. Instead of a fixed number — RSI 70, a raw rate-of-change level, or a fixed pip move — it uses the **percentile rank** of momentum inside that instrument's own recent distribution. That makes the signal self-calibrating: a "strong" push on quiet EURUSD and a "strong" push on wild XAUUSD are judged on the same scale (the top X% of each instrument's recent momentum), so a single parameter set can travel across symbols and timeframes without re-tuning.

The strategy trades fully symmetrically, long and short. It looks for the *first* bar on which ranked momentum crosses a band — a fresh expansion rather than an already-extended reading — and demands that price agree with the larger trend via an EMA baseline. A fresh top-decile push that also sits on the right side of the baseline is momentum shifting gear, which tends to lead the next directional leg. That is the edge the EA rides.

> **Why a percentile, not a fixed level?** Ranking momentum against its own history isolates the rare, genuine regime shifts from the constant low-grade noise that fixed-threshold momentum systems keep mistaking for signals. Because the rank always lives in the range [0, 1], it is inherently scale-free — the same `UpperPct` means "stronger than 85% of recent history" on any market.

How It Works

1. The signal engine

On every closed bar the EA takes one reading:

- **Momentum** — net displacement over `MomentumPeriod` bars: `m = Close[0] − Close[k]`.
- **Rolling history** — each bar's momentum value is stored, one per closed bar.
- **Percentile rank** — the fraction of the previous `RankWindow` momentum values that are less than or equal to the current `m`.

```
rank = fraction of last RankWindow momentum readings that are ≤ current m

rank = 0.90  →  stronger up-push than 90% of the recent past
rank = 0.05  →  more negative than 95% of the recent past
rank ∈ [0, 1]  and is scale-free (self-calibrating per symbol)
```

2. Entry logic

An unusually strong push *can* be exhaustion, so the EA only acts on the first bar the rank crosses the band (fresh expansion) and only when price agrees with the EMA baseline trend.

- **Long** — the rank crosses *up* through `UpperPct` (`prev < UpperPct ≤ now`) **and** Close is above the EMA baseline.
- **Short** — the rank crosses *down* through `LowerPct` (`= 1 − UpperPct`; `prev > LowerPct ≥ now`) **and** Close is below the EMA baseline.

3. Exit logic

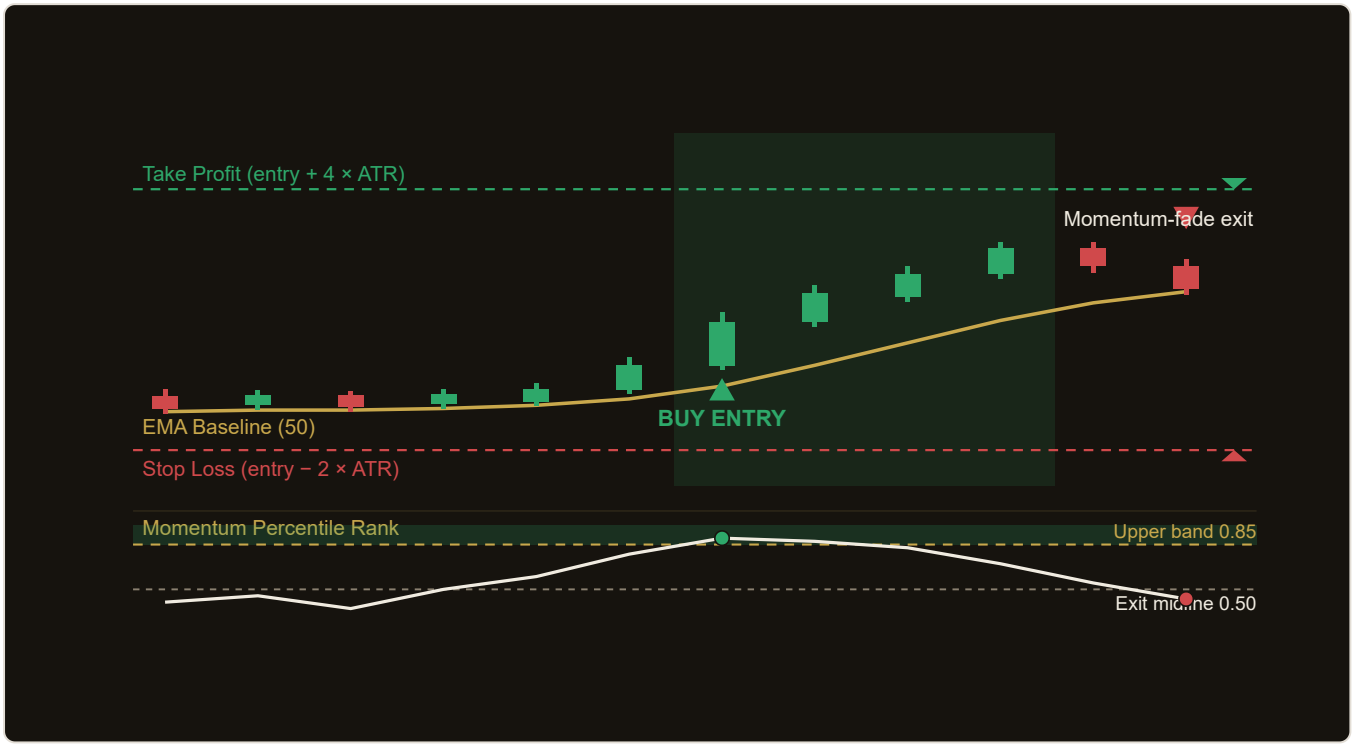
Momentum is a fading asset, so a live trade is closed the moment its rank drops back through the midline — the EA banks the impulse and steps aside rather than round-tripping it.

- **Momentum-fade exit** — a long is closed once the rank falls to or below `ExitPct`; a short is closed once the rank rises to or above `1 − ExitPct`.
- **ATR stop-loss** — caps the loss if the push reverses hard: `AtrMultSl × ATR` from entry.
- **ATR take-profit** — a wider backstop for a runaway move that never fades: `AtrMultTp × ATR` from entry.
- **One position per magic** — while a trade is open, no new entries are taken; the ATR stop and target guard the rest.

> **Spread gate.** Fresh entries are skipped whenever the current spread (in points) exceeds `MaxSpreadPoints`. Set it to `0` to disable the filter entirely.

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

Parameter	Default	Description
MomentumPeriod	`12`	Bars over which net displacement (momentum) is measured. Range 4–40, step 1.
RankWindow	`100`	How many prior momentum readings define the distribution the current reading is ranked against. Range 30–300, step 10.
UpperPct	`0.85`	Upper band the rank must fresh-cross to fire a long; the short band is `1 - UpperPct`. Range 0.60–0.95, step 0.05.
BaselinePeriod	`50`	EMA baseline period that gates trades to the prevailing trend side. Range 10–200, step 5.
ExitPct	`0.50`	Momentum-fade exit: close a long once rank falls below this (a short closes once rank rises above `1 - ExitPct`). Range 0.30–0.65, step 0.05.
AtrPeriod	`14`	ATR period used for the protective stop and target. Range 5–40, step 1.
AtrMultSl	`2.0`	Stop-loss distance as a multiple of ATR. Range 0.5–6.0, step 0.1.
AtrMultTp	`4.0`	Take-profit distance as a multiple of ATR (backstop for runaway moves). Range 0.5–10.0, step 0.1.
MaxSpreadPoints	`30`	Skip entries when the spread (points) is wider than this; `0` disables the filter. Range 0–200, step 5.
Lots	`0.10`	Trade volume in lots. Range 0.01–1.00, step 0.05.
Magic	`7731`	Magic number identifying this EA's positions. Range 0–9,999,999, step 1.

Recommended Settings

The strategy was designed around a liquid trending instrument on intraday timeframes, in a momentum / breakout style. Because the percentile rank is scale-free, the same defaults are a reasonable starting point on other liquid symbols.

- **Symbols:** a liquid trender — GBPUSD or XAUUSD work well.
- **Timeframes:** M15 to H1.
- **Style:** adaptive momentum breakout, fully symmetric long and short.
- **Defaults:** the shipped defaults (`MomentumPeriod 12`, `RankWindow 100`, `UpperPct 0.85`, `BaselinePeriod 50`) are the intended baseline.

Example — a long setup

On GBPUSD M15, momentum has been quiet and the rank sits near the middle. A strong bullish bar pushes the rank from 0.78 up to 0.90, crossing the 0.85 upper band for the first time, while price closes above the 50-period EMA baseline. The EA buys, sets a stop at 2×ATR below entry and a target at 4×ATR above. Several bars later the rank fades back through 0.50 — the EA closes the trade and banks the impulse rather than round-tripping it.

Tuning tips. Raising `UpperPct` toward 0.95 makes the EA more selective (rarer, stronger pushes); lowering it toward 0.60 trades more often. A longer `RankWindow` ranks against a broader history and reacts more slowly to regime change. Widen `AtrMultSl` in volatile conditions to avoid being stopped on noise.

How to Install on MetaTrader 5

1. Copy `MomentumPercentileBreakout.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

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