Algobot
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Modal Price Reversion

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Mean Reversion	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

Modal Price Reversion is a volatility-normalised mean-reversion Expert Advisor that fades price back toward the market's *modal price* — the single most-visited price level of the recent window. Unlike a mean, median, or VWAP (all of which are dragged toward outliers and drift with every new bar), the statistical **mode** marks the price the market has genuinely *accepted and lingered at* the most. That level behaves as a magnet: when price is stretched a long way from it and begins to snap back, the odds favour a return to the crowded zone.

The modal price is discovered without any per-symbol point math. On each closed bar the EA measures ATR, builds a volatility-scaled histogram of recent closing prices, and identifies the fullest bin as the acceptance cluster. Trades are only taken when that cluster is **dense** (a genuine ranging regime), when price is **meaningfully stretched** away from it, and when the most recent candle has begun to **reverse back toward it**. The strategy is built for balanced, range-prone conditions on liquid instruments such as EUR/USD, USD/JPY, or XAU/USD.

> **Core idea:** The mode is the price with the most transacted acceptance, making it a robust equilibrium anchor that ignores spikes. Fading a stretch back to it only pays inside genuine ranges — which is exactly what the density gate enforces before any trade is allowed.

How It Works

On every freshly-closed bar the EA runs the following pipeline. It acts once per bar (the still-forming bar at shift 0 is ignored; the just-completed bar at shift 1 is recorded), and it holds at most **one position at a time** per Magic number.

1. Volatility scaling (ATR)

The Average True Range over `AtrPeriod` bars is computed first. Every distance in the strategy — bin width, stretch threshold, and stop distance — is expressed as a multiple of ATR, so the EA adapts automatically to each instrument's own volatility with zero point-math tuning.

2. Building the modal price

A histogram is built from the last `Lookback` closed closes, using a bin width of `BinAtrFraction × ATR`. The bin containing the most closes is the **modal cluster**. The modal price itself is the *mean of the closes inside that fullest bin* — a de-noised "point of control" rather than a raw bin edge.

3. Density gate (regime filter)

The modal bin must hold at least `MinClusterFraction` of the window's closes. A dense mode means the market is genuinely balanced and ranging around that level (a real acceptance zone worth fading toward). A thin mode means price is trending or scattered — in which case the EA **stands aside** and does not fight a trend.

4. Stretch & snap-back (entry trigger)

The just-closed candle must sit at least `StretchAtr × ATR` away from the modal price *and* print a reversal body pointing back toward it. This confirms that the extension is already starting to fail before an order is sent.

- **Long:** close is `≥ StretchAtr×ATR` *below* the modal price **and** the candle closed up (bullish body) → **BUY**.
- **Short:** close is `≥ StretchAtr×ATR` *above* the modal price **and** the candle closed down (bearish body) → **SELL**.

Exits — Stop Loss & Take Profit

Both exits are attached at order time; there is no active trade management beyond the bracket:

- **Take Profit** is the **modal price itself** — the acceptance zone the move is expected to be drawn back toward.
- **Stop Loss** is placed `StopAtr × ATR` beyond the entry, past the extension, where the reversion thesis is proven wrong.

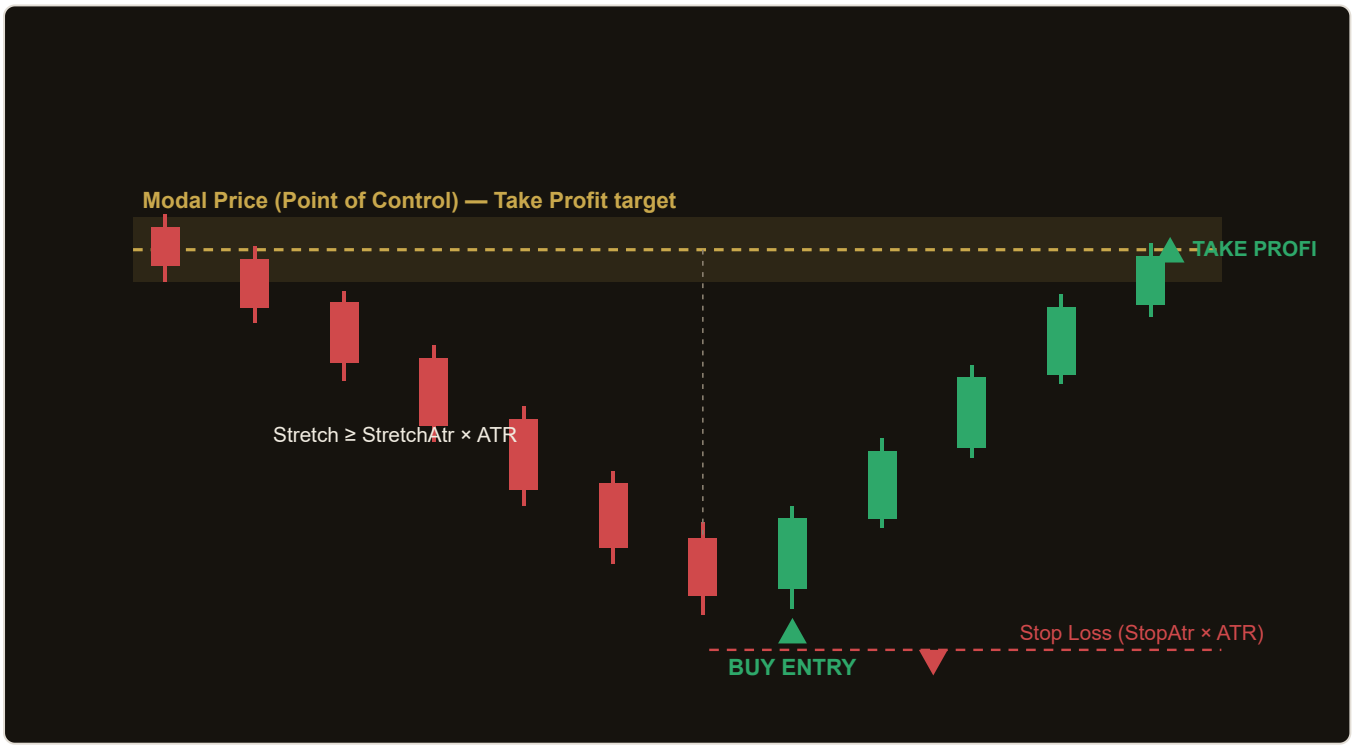
Trade filters

- **Spread gate:** the trade is skipped if the current spread exceeds `MaxSpreadPoints`, keeping fills realistic.
- **One position per Magic:** a new signal is ignored while a position for this Magic is already open.
- **Degenerate-window guards:** dead-flat windows, zero ATR, and pathological bin counts are all rejected before any order.

> **Worked example (long)**
>
> Suppose ATR = 10 pips, `StretchAtr` = 1.8, and the histogram places the modal price at 1.10000 with a dense cluster (22 % of closes > the 15 % gate). Price sells off to a close of 1.09800 — that is 20 pips, or 2.0 ATR, *below* the modal price, clearing the 1.8 ATR stretch. The final candle closes up (bullish body), signalling the snap-back has begun. The EA buys at Ask, sets the stop `1.5×ATR` = 15 pips below entry, and targets the modal price at 1.10000.

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
Lookback	`60`	Number of closed bars used to build the price histogram (the acceptance window). Range 20–150, step 10.
BinAtrFraction	`0.25`	Histogram bin width as a fraction of ATR — finer bins produce a sharper mode. Range 0.10–0.60, step 0.05.
StretchAtr	`1.8`	Minimum distance from the modal price before a fade is allowed, measured in ATRs. Range 1.0–3.5, step 0.1.
AtrPeriod	`14`	ATR period used for all volatility scaling. Range 7–30, step 1.
MinClusterFraction	`0.15`	Fraction of the window's closes the modal bin must hold to count as a dense, ranging acceptance zone (the density / regime gate). Range 0.05–0.40, step 0.05.
StopAtr	`1.5`	Stop-loss distance beyond the entry as a multiple of ATR. Range 0.8–3.0, step 0.1.
MaxSpreadPoints	`25`	Skip the trade if the current spread (in points) is wider than this. Range 1–200, step 1.
Lots	`0.10`	Trade volume in lots. Range 0.01–1.00, step 0.05.
Magic	`4127`	Magic number identifying this EA's positions. Range 0–9,999,999, step 1.

Recommended Settings

Modal Price Reversion is designed for **balanced, range-prone** conditions. It performs best on liquid instruments where price genuinely oscillates around an accepted value rather than trending persistently.

- **Instruments:** liquid FX majors or metals — e.g. EUR/USD, USD/JPY, XAU/USD.
- **Timeframe:** single-timeframe; M15 to H1 tend to give a good balance of signal frequency and clean acceptance zones.
- **Density gate:** keep `MinClusterFraction` at or above the default 0.15 to ensure trades are confined to genuine ranges. Lowering it admits more (and weaker) setups.
- **Stretch:** raise `StretchAtr` toward 2.5–3.0 for higher-conviction, lower-frequency fades; lower it toward 1.0–1.5 for more frequent entries closer to the mode.
- **Spread:** tighten `MaxSpreadPoints` on low-spread accounts; widen it only if legitimate signals are being skipped.

Tuning tip: The trio of `Lookback`, `BinAtrFraction`, and `MinClusterFraction` jointly define what counts as a "mode." A longer lookback with finer bins produces a sharper, more selective acceptance zone; a shorter lookback with wider bins reacts faster but is noisier. Always re-optimise these together, not in isolation.

Regime caution: This EA fades stretches and is deliberately *the wrong tool in a strong trend*. The density gate is its primary defence, but no filter is perfect — validate on out-of-sample data and avoid deploying it through scheduled high-impact news, where acceptance zones break down.

How to Install on MetaTrader 5

1. Copy `ModalPriceReversion.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

Trading foreign exchange, CFDs, and other leveraged financial instruments involves substantial risk of loss and is not suitable for all investors. The strategies and tools described in this document are provided for **educational purposes only** and do not constitute financial advice, investment recommendations, or solicitation to trade. Always consult a qualified financial adviser before making trading decisions. Past backtest performance is not indicative of future results.