

Volatility Band Pin Reversal

Expert Advisor Documentation

PLATFORM

MetaTrader 5 (MT5)

TYPE

Mean Reversion (Pin-Bar Fade)

TIMEFRAME

Any (M15–H1 recommended)

WEBSITE

www.algobot.live

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Overview

Volatility Band Pin Reversal is a conservative, high-selectivity mean-reversion Expert Advisor. It trades the classic “rejection wick off the outer band” setup that discretionary traders love — but it refuses to fade blindly. Most versions of this idea fire on any touch of an outer band and get run over inside strong trends. This EA closes that failure mode by demanding that *three independent conditions* agree before it commits a single trade.

The engine builds a volatility band from a simple moving average of closing prices plus and minus a multiple of the *population* standard deviation. A trade is considered only when a freshly-closed bar (1) pierces one of the outer rails with its wick, (2) closes back inside the band as a dominant-wick rejection (pin) candle, and (3) does so while the band’s mean is essentially *flat* — i.e. the market is genuinely balanced, not trending. The stop is placed structurally just beyond the rejection wick with a small ATR buffer, and the target is the mean itself, which balanced markets revisit frequently.

The result is a system built for a high hit-rate and small per-trade risk: losers are cut immediately at the wick, while winners capture a repeatable, favourable move back to fair value. Because every calculation reads the chart’s primary timeframe, the EA runs on whatever timeframe you attach it to at backtest or deployment time.

Design intent. The flat-mean regime filter is the heart of this strategy. The natural enemy of every reversion system is a real breakout — a market that pierces the band and simply keeps going. By fading *only* when the mean's drift over a lookback is a small fraction of ATR, the EA sidesteps trending conditions where fading is most dangerous, keeping drawdown tight.

How It Works

The Volatility Band

On each newly-closed bar the EA recomputes a band from the last `BandPeriod` closes:

```
mean  = SMA(close, BandPeriod)
sd     = population standard deviation of the same window
upper  = mean + BandMult × sd
lower  = mean - BandMult × sd
```

The **mean** is the middle band (fair value and the profit target); the **upper** and **lower** rails define over-extension. If the standard deviation collapses to zero (a dead, flat window) the bar is skipped.

The Three-Condition Filter

- **1 — Over-extension:** the signal bar's wick must *pierce* a rail. For a long, the bar's low must print below the lower rail; for a short, the high must print above the upper rail.
- **2 — Rejection (pin candle):** the bar must *close back inside* the band, and the wick on the pierced side must be dominant — at least `WickBodyRatio` times the body and at least `WickDominance` times the opposite wick. The close must also finish in the correct half of the bar's range (upper half for a long, lower half for a short). This confirms the extreme was refused.
- **3 — Balanced regime:** the band mean must be flat — the absolute drift between the mean now and the mean `SlopeLookback` bars ago must be no greater than `SlopeMaxAtr × ATR`. If the mean is trending, no trade is taken.

Entry Logic

LONG (BULLISH PIN AT THE LOWER RAIL)

- Low pierces below the `lower` rail.
- Close is back above the `lower` rail.
- Lower wick $\geq$ `WickBodyRatio` × body *and* $\geq$ `WickDominance` × upper wick.
- Close sits in the upper half of the bar's range.
- Mean is flat → **buy at Ask**.

SHORT (BEARISH PIN AT THE UPPER RAIL)

- High pierces above the `upper` rail.
- Close is back below the `upper` rail.
- Upper wick $\geq$ `WickBodyRatio` $\times$ body *and* $\geq$ `WickDominance` $\times$ lower wick.
- Close sits in the lower half of the bar's range.
- Mean is flat $\rightarrow$ **sell at Bid**.

Exit Logic (Stop Loss & Take Profit)

- **Take Profit** = the band `mean` (middle band). Balanced markets revert to fair value frequently, giving a repeatable payoff.
- **Stop Loss** = just beyond the rejection wick: for a long, `wick low - StopBufferAtr  $\times$  ATR`; for a short, `wick high + StopBufferAtr  $\times$  ATR`. A losing trade is cut immediately if the extreme is broken again.
- The position is managed entirely by its SL/TP — there is no trailing or scaling.

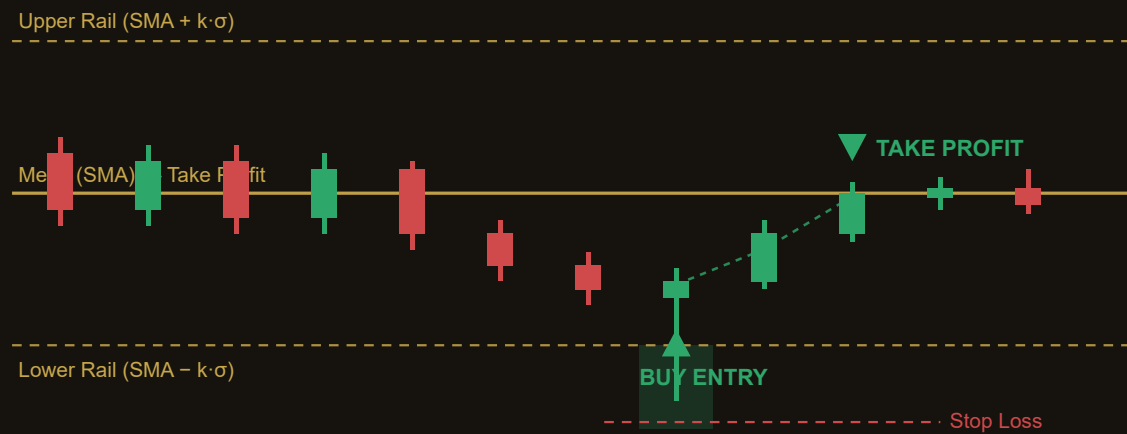
One trade at a time. The EA holds a maximum of one open position per magic number. While a trade is live, no new signals are taken; the SL/TP brackets handle the exit. This keeps exposure predictable and risk bounded per instrument.

Worked example — long setup

Suppose EUR/USD is ranging. The band mean is 1.08500, and over the last `SlopeLookback` bars it has barely moved (well within `SlopeMaxAtr  $\times$  ATR`), so the regime is flat. A bar spikes down, its low printing at 1.08210 — below the lower rail at 1.08300 — then snaps back to close at 1.08360, leaving a long lower wick that dwarfs both its tiny body and its upper wick. That is a valid bullish pin: the EA buys at Ask, sets TP at the mean (1.08500) and SL just under the wick low (e.g. 1.08175 after the ATR buffer). Price drifts back to fair value and the target is hit.

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.



Wick pierces lower rail → closes back inside → flat mean → fade back to the mean

Illustrative example only. Actual market behaviour varies.

Parameters

Parameter	Default	Description
BandPeriod	20	SMA / standard-deviation window for the volatility band. Range 10–60, step 2.
BandMult	2.2	Band width in population standard deviations (rail distance from the mean). Range 1.5–3.5, step 0.1.
WickBodyRatio	1.5	Minimum ratio of the dominant (pierced-side) wick to the candle body. Higher = stricter pin. Range 0.5–4.0, step 0.25.
WickDominance	1.5	Minimum ratio of the pierced-side wick to the opposite wick. Ensures a one-sided rejection. Range 1.0–4.0, step 0.25.
SlopeLookback	10	Bars back used to measure the mean's drift for the flat-regime check. Range 3–30, step 1.
SlopeMaxAtr	0.6	Maximum allowed mean drift as a fraction of ATR (the flat-mean gate). Lower = stricter balance requirement. Range 0.1–2.0, step 0.1.
AtrPeriod	14	ATR period used for stop sizing and the regime scale. Range 5–30, step 1.
StopBufferAtr	0.4	Extra ATR buffer added beyond the rejection wick when placing the stop. Range 0.0–1.5, step 0.1.
Lots	0.10	Fixed trade volume in lots. Range 0.01–1.0, step 0.05.
Magic	7731	Magic number identifying this EA's positions (one open trade per magic at a time).

Recommended Settings

The defaults are tuned for a conservative, high hit-rate profile on liquid FX pairs. Use the guidance below as a starting point and always validate on your own broker's data before live use.

- **Symbols:** liquid, range-prone majors such as EUR/USD, USD/JPY, or AUD/USD, where the mean is often flat.
- **Timeframe:** M15 to H1. Lower timeframes generate more signals but more noise; higher timeframes give cleaner pins with wider stops.
- **Band width (`BandMult`):** keep near 2.2–2.6 for a genuine over-extension. Widening it produces fewer, more selective fades.

- **Regime gate** (`SlopeMaxAtr`): lower it (e.g. 0.3–0.5) if you want to fade only the flattest markets and suppress trades during any drift.
- **Pin strictness** (`WickBodyRatio` / `WickDominance`): raise both toward 2.0–2.5 to require more pronounced rejection candles.
- **Risk**: size `Lots` so that the distance from entry to the wick-based stop represents a small, fixed fraction of account equity.

Tip. Because the profit target is always the mean, the reward on each trade shrinks as the entry gets closer to fair value. Combine a wider `BandMult` with a stricter pin filter to prioritise setups that begin far from the mean, improving the average reward-to-risk.

Avoid trending instruments. This is a fade strategy. On strongly trending symbols the flat-mean gate will correctly block most trades, but forcing `SlopeMaxAtr` very high to “get more trades” defeats the design and exposes you to breakout losses. If you are seeing few signals, that is the filter doing its job — do not disable it.

How to Install on MetaTrader 5

- 1 Copy `VolatilityBandPinReversal.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.

