

Baseline Excursion Reversion

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Mean Reversion	M15 – H1	www.algobot.live

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Overview

Baseline Excursion Reversion is a mean-reversion Expert Advisor that fades price when it has stretched unusually far from a slow "fair-value" baseline — but only while the market is *ranging*. The baseline is an exponential moving average (EMA) of the close. The EA treats any continuous run of bars staying on one side of that baseline as a single **excursion**, like a rubber band being pulled taut away from equilibrium.

Rather than simply counting how many closes in a row went up or down, the strategy measures two properties of the live excursion: **how long** it has persisted (bars on one side of the baseline) and **how deep** it has stretched — its peak penetration measured as $|close - baseline| / ATR$, a volatility-scaled distance from fair value. A long-lived, deep excursion signals that price has over-extended and is a candidate to snap back toward the mean.

The EA never fades blindly. It waits for the excursion to begin **curling back** (a fresh bar that closes against the stretch, back toward the baseline) and it only trades when the baseline itself is roughly **flat**. In a strong trend, excursions in the trend direction *are* the trend, not exhaustion — so a flat-regime gate keeps the EA out of trending conditions where mean-reversion fades get run over.

Core idea: A deep, persistent stretch away from a flat EMA baseline is a rubber band pulled taut. When the stretch starts releasing (a curl-back bar), fade it back toward fair value — with a stop just beyond the structural extreme and a take-profit at the baseline itself.

How It Works

The fair-value baseline

On each newly-closed bar the EA folds the close into a recursive EMA of period `MaPeriod`. The EMA is seeded on the first close it sees and then updated as `ema += alpha × (close - ema)` where `alpha = 2 / (MaPeriod + 1)`. This EMA is the fair-value anchor that every trade reverts toward. A rolling series of past baseline values is retained so the EA can measure the baseline's slope.

Tracking the live excursion

Each closed bar is classified by which side of the baseline its close sits on: above (`+1`), below (`-1`) or exactly on it (which resets the excursion). While the side stays the same, the EA accumulates the excursion:

- **Length** — the number of consecutive bars on the same side of the baseline (must reach `MinExcursionBars`).
- **Peak penetration** — the maximum `|close - baseline| / ATR` reached during the excursion (must reach `EntryStretch`).
- **Structural extremes** — the highest High and lowest Low printed during the excursion, used later to place the protective stop.

When the close flips to the other side of the baseline, the excursion resets and a new one begins in the opposite direction.

The flat-regime gate

Before any fade is allowed, the EA checks that the baseline is roughly horizontal. It measures the baseline slope over `SlopeLookback` bars, normalizes it by ATR — `|ema - ema[SlopeLookback ago]| / ATR` — and requires the result to be below `MaxTrendSlope`. If the baseline is sloping too steeply, the market is trending and the trade is skipped.

Entry logic

With a qualifying excursion (long enough, deep enough) inside a flat regime, the EA waits for a **curl-back** bar in the just-closed candle:

- **Bullish excursion (price persistently above the baseline)** → wait for a bearish curl bar (`close < open`) AND `close < previous close`), then **SELL** back toward the mean.

- **Bearish excursion (price persistently below the baseline)** → wait for a bullish curl bar ($\text{close} > \text{open}$) AND $\text{close} > \text{previous close}$), then **BUY** back toward the mean.

Stop-loss, take-profit and the reward filter

- **Take-profit** is the baseline itself — the fair value price is expected to revert to.
- **Stop-loss** sits just beyond the excursion's structural extreme: $\text{peak High} + \text{BufferAtr} \times \text{ATR}$ for a short, or $\text{trough Low} - \text{BufferAtr} \times \text{ATR}$ for a long.
- **Reward filter** — the distance from entry back to the baseline must be at least $\text{MinRewardAtr} \times \text{ATR}$, otherwise the setup is judged not worth taking and is skipped. The trade is also skipped if the computed risk is non-positive.

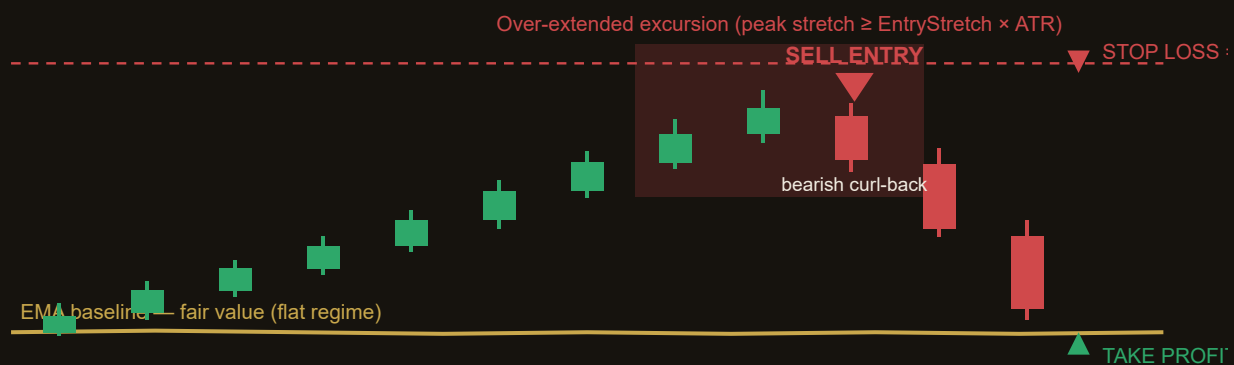
Trade management

Only one position per magic number is held at a time. As an overlay on the fixed SL/TP, an open position is **closed early** as soon as a bar prints its close back across the baseline — a short is closed when $\text{close} < \text{baseline}$ and a long when $\text{close} > \text{baseline}$ — because the mean has effectively already been reached.

Volatility & timing note: Both the EMA baseline and the ATR are computed manually in the MQL5 port to match the C# engine exactly. The ATR here is a *simple mean* of true ranges (not Wilder's smoothed ATR), and the excursion state is warmed up once from history so behaviour is consistent from the first live bar. All logic runs on the single primary chart timeframe — one decision per newly-closed bar.

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.



Price stretches far above the flat baseline, then curls back → fade the excursion toward fair value.

Illustrative example only. Actual market behaviour varies.

Parameters

Parameter	Default	Description
MaPeriod	20	EMA period for the fair-value baseline. Range 5–60, step 5. Longer = slower, smoother anchor.
AtrPeriod	14	ATR period (simple mean of true ranges) used to volatility-scale penetration and to size stops. Range 5–40, step 1.
MinExcursionBars	5	Minimum number of bars the excursion must persist on one side of the baseline before a fade is allowed. Range 2–20, step 1.
EntryStretch	2.0	Minimum peak penetration of the excursion, in ATRs, to qualify as "over-extended". Range 1.0–4.0, step 0.25.
MaxTrendSlope	1.0	Flat-regime gate: normalized baseline slope $ slope / ATR$ over <code>SlopeLookback</code> must be below this. Range 0.2–3.0, step 0.1.
SlopeLookback	10	Number of bars back used to measure the baseline slope for the regime gate. Range 3–40, step 1.
BufferAtr	0.5	Stop buffer beyond the excursion's structural extreme, as a multiple of ATR. Range 0.0–2.0, step 0.1.
MinRewardAtr	0.6	Minimum distance (in ATRs) from entry back to the baseline for the trade to be worth taking. Range 0.2–3.0, step 0.1.
Lots	0.10	Position size in lots. Range 0.01–1.0, step 0.05.
Magic	7420	Magic number used to tag and manage this EA's positions (one position per magic at a time).

Recommended Settings

The defaults are a balanced starting point for major FX pairs on the **M15–H1** timeframes, where mean-reversion behaviour around a slow baseline is common during quieter sessions. Because this is a range-fading system, it performs best in consolidating markets and should be paired with the flat-regime gate rather than relaxed too far.

TUNING GUIDANCE

- **Fewer, higher-quality trades:** raise `EntryStretch` (e.g. 2.5–3.0) and/or `MinExcursionBars` so only deep, persistent stretches qualify.

- **Stay out of trends:** lower `MaxTrendSlope` (e.g. 0.5–0.8) to demand a flatter baseline. Raising it lets the EA trade in gentler drifts but increases trend-fighting risk.
- **Wider protective stops:** increase `BufferAtr` to give the structural stop more room past the excursion extreme in volatile conditions.
- **Skip marginal setups:** raise `MinRewardAtr` so trades are only taken when the baseline is a meaningful distance away.

Example — conservative range-fade profile

`MaPeriod = 20` , `AtrPeriod = 14` , `MinExcursionBars = 7` , `EntryStretch = 2.5` , `MaxTrendSlope = 0.7` , `SlopeLookback = 10` , `BufferAtr = 0.7` , `MinRewardAtr = 0.8` . This demands a deeper, longer excursion inside a flatter baseline before fading, with a roomier stop and a stricter reward filter.

Tip: Always run a backtest and a period of demo-forward testing on your chosen symbol and timeframe before committing real capital. Optimise on one date range and validate on another (out-of-sample) to avoid curve-fitting to a single market period.

How to Install on MetaTrader 5

- 1 Copy `BaselineExcursionReversion.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

First run: The EA performs a one-time warmup from historical bars to rebuild the EMA baseline and the live excursion state, so it needs sufficient chart history to be loaded. It then acts once per newly-closed bar.

Risk Warning

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