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Range Percentile Reversion

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Mean Reversion	M15 / M30	www.algobot.live

Overview

Range Percentile Reversion is a counter-trend, mean-reversion Expert Advisor that trades the edges of a horizontal price range. It uses no oscillator and no moving average — the only "indicator" is the raw geometry of the last `RangeLookback` bars, treated as a rolling support/resistance band.

For every freshly-closed bar, the EA measures where that bar's close sits inside the band as a **percentile position**:

```
pos = (close − bandLow) / (bandHigh − bandLow)   in [0, 1]

pos ≈ 1.0  →  price pinned to the TOP of the range (overbought-in-range)
pos ≈ 0.0  →  price pinned to the BOTTOM of the range (oversold-in-range)
```

Being at the edge is not enough — ranges are made to be broken. The EA therefore demands a same-bar **rejection wick** as proof the edge was probed and refused before fading the move back toward fair value: the band **midline**, the natural magnet of a balanced range. Stops sit just beyond the band extreme, where the range thesis is invalidated, padded by a fraction of ATR so normal noise does not clip the trade.

The strategy was designed with EUR/USD and AUD/USD on M15/M30 in mind — rotational, range-prone sessions — but it is symbol- and timeframe-agnostic and will run on whatever chart it is attached to.

How It Works

The Rolling Range Band

On each new bar, the EA scans the last `RangeLookback` closed bars and records the highest high (`bandHigh`) and the lowest low (`bandLow`). These two levels form the range; the **midline** is their average:

```
band     = bandHigh - bandLow
midline = (bandHigh + bandLow) / 2
```

Entry Logic

The EA evaluates the bar that just closed against two conditions — an extreme *percentile position* and a dominant *rejection wick* on the same bar:

- **Short setup:** `pos ≥ ExtremePct` (close in the upper 15% of the band at default settings) **AND** the upper wick is at least `WickRatio` of the bar's total range — buyers were rejected at the highs.
- **Long setup:** `pos ≤ 1 - ExtremePct` (close in the lower 15% of the band at default settings) **AND** the lower wick is at least `WickRatio` of the bar's total range — sellers were rejected at the lows.

The rejection wick is measured from the candle body:

```
upperWick = high - max(open, close)
lowerWick = min(open, close) - low
barRange  = high - low
```

> **Note — one trade at a time.** The EA holds at most one open position per its magic number (`5821`). While a position is live, no new setups are taken until it closes at the stop or target.

Exit Logic — Stop Loss & Take Profit

Both exits are placed at entry and require no active management:

- **Take Profit** is the band **midline** — the trade fades back toward fair value rather than chasing a full reversal.
- **Stop Loss** sits just beyond the band extreme, padded by `AtrStopMult × ATR`:
  - Short → `SL = bandHigh + pad`
  - Long → `SL = bandLow - pad`

A short is only sent when price is currently above the midline (so reward to the target is positive) and a long only when price is below it; otherwise the setup is skipped:

```
// short
risk   = SL − entry      // distance to stop
reward = entry − TP      // distance to midline
if (risk ≤ 0 || reward ≤ 0) return;   // need price above the midline to fade down
```

Worked example — long setup

Over the last 20 bars the band runs from `bandLow = 1.08200` to `bandHigh = 1.08800`, so the midline is `1.08500`. A bar closes at `1.08280` → `pos = (1.08280 − 1.08200) / 0.00600 = 0.13`, inside the lower 15%. That same bar has a long lower wick worth 45% of its range (≥ the 0.40 default). With ATR ≈ 0.00100 and `AtrStopMult = 0.50`, the pad is 5 pips. The EA buys at the ask, sets

TP = 1.08500

(midline) and

SL = 1.08150

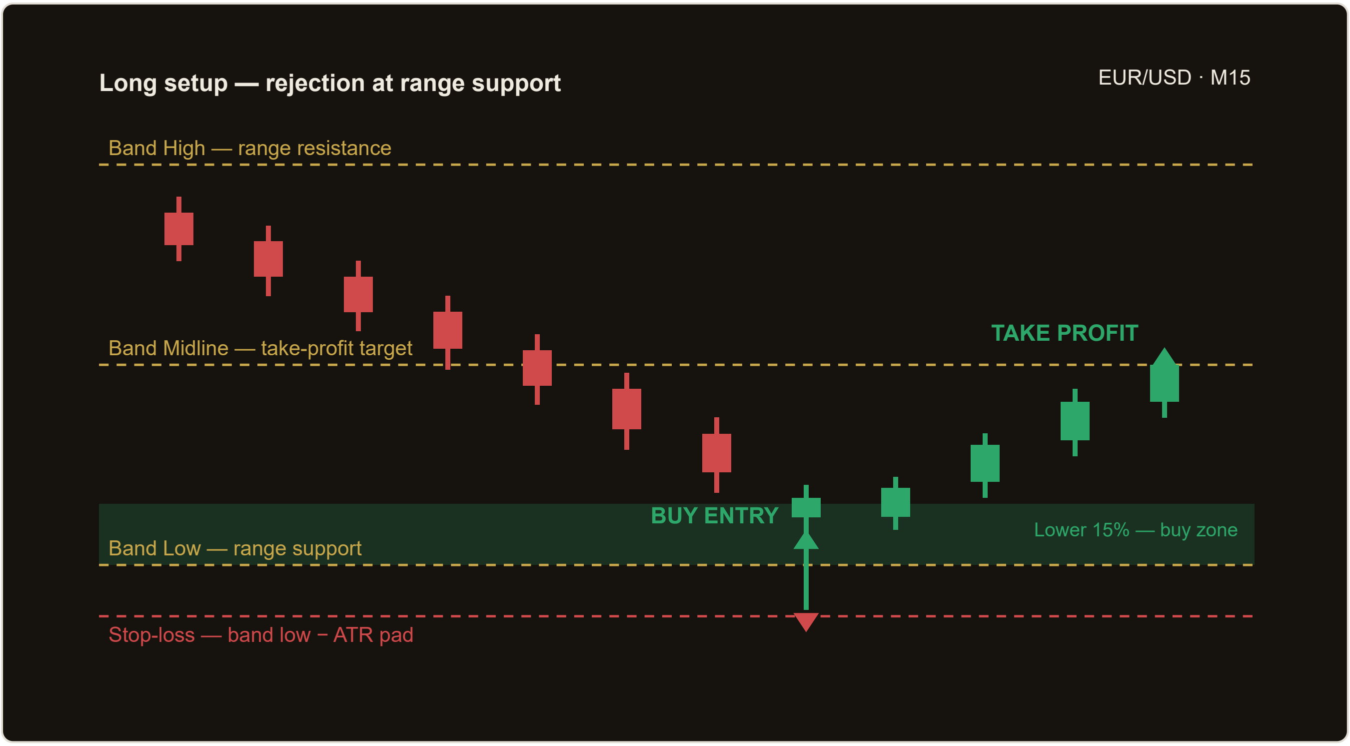
(band low − 5 pips).

Processing Cadence

All logic runs once per freshly-closed bar (detected via a new-bar check on the current timeframe). The EA needs a warm-up of `max(RangeLookback, AtrPeriod) + 2` bars before it will evaluate any setup, and it reads the ATR value of the just-closed bar to size the stop pad.

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
Lots	`0.10`	Fixed trade volume in lots for each position (range 0.01–1.00, step 0.01).
RangeLookback	`20`	Number of closed bars used to build the rolling high–low band (range 10–60, step 5). Larger values define a wider, slower range.
ExtremePct	`0.85`	Percentile threshold for an “extreme” close (range 0.70–0.95, step 0.05). A short needs `pos ≥ 0.85` ; a long needs `pos ≤ 0.15` .
WickRatio	`0.40`	Minimum rejection-wick size as a fraction of the bar’s total range (range 0.20–0.70, step 0.05). Higher demands a more dominant rejection.
AtrPeriod	`14`	Averaging period for the ATR used to pad the structural stop (range 7–30, step 1).
AtrStopMult	`0.50`	Multiplier applied to ATR to size the stop pad beyond the band extreme (range 0.20–1.50, step 0.10).
Magic	`5821`	Magic number identifying this EA’s positions, so it manages only its own trades and holds one at a time.

Recommended Settings

The defaults are tuned for rotational, range-prone instruments and intraday timeframes.

- **Symbols:** EUR/USD or AUD/USD (other range-prone majors also suit it).
- **Timeframe:** M15 or M30.
- **Core defaults:** `RangeLookback = 20`, `ExtremePct = 0.85`, `WickRatio = 0.40`, `AtrPeriod = 14`, `AtrStopMult = 0.50`.

> **Tuning tips.** Raise `ExtremePct` (e.g. 0.90–0.95) and `WickRatio` for fewer, higher-conviction signals. Increase `AtrStopMult` to give the structural stop more breathing room on noisier symbols. Widen `RangeLookback` when the instrument ranges over longer, slower swings.

> **Mean reversion warning.** Counter-trend strategies perform worst when a market is trending or breaks out of its range. Favour calm, rotational sessions and avoid running the EA across high-impact news, where ranges break violently against the fade.

How to Install on MetaTrader 5

1. Copy `RangePercentileReversion.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.