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Safe Zone Trend Reversal

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Trend-Following / Reversal	H1 – H4	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

Safe Zone Trend Reversal is an always-in-the-market trend-following and reversal Expert Advisor built on Dr. Alexander Elder's *SafeZone* concept. The core idea is that the part of every bar which pokes *against* the prevailing move is market "noise." In an up-move the noise is the set of downside penetrations (each bar's low dipping below the previous bar's low); in a down-move it is the upside penetrations (each bar's high poking above the previous bar's high).

By averaging *only the bars that actually penetrated* the prior extreme, the EA builds a directional estimate of counter-trend noise. It then places a trailing "rail" a chosen multiple of that noise beyond the current extreme — close enough to catch a genuine reversal, yet loose enough to ride through ordinary chop. The rail **ratchets** in the trend direction and never loosens. A confirmed close through it flips the regime and reverses the position.

Critically, this EA does *not* convert the penetrations into an oscillator (that would collapse into a standard Directional Movement indicator). Instead it uses the penetration noise exactly the way Elder intended: as a volatility-of-the-counter-trend **trailing stop level**.

> **In one sentence:** Safe Zone Trend Reversal measures how much price normally "pokes back" against the trend, sets a noise-scaled trailing rail beyond the recent extreme, rides the trend while the rail holds, and reverses to the opposite side the moment a confirmed close breaks through it.

How It Works

1. Bar-by-bar processing

The EA only acts on **freshly-completed bars**. On every tick it checks whether a new bar has formed; if not, it does nothing. It always evaluates the most recently closed bar (shift 1) and never the still-forming bar (shift 0), which eliminates intrabar repainting and keeps live behaviour identical to the backtest.

2. Measuring directional noise

Over the last `NoisePeriod` completed bars, the EA scans each bar against its predecessor:

- **Downside penetration** = `PrevLow − CurrentLow`, counted only when positive (the bar made a lower low).
- **Upside penetration** = `CurrentHigh − PrevHigh`, counted only when positive (the bar made a higher high).

Each direction is averaged over *only the bars that penetrated*, giving `avgDown` and `avgUp` — the typical size of a counter-move in each direction. If no penetrations occurred recently, the EA falls back to a volatility floor of `0.5 × ATR` so the rail is never zero.

3. Building the trailing rails

Two candidate rails are computed from the last completed bar:

```
rawLong  = Low  − NoiseCoeff × avgDown     (rail below price for a long)
rawShort = High + NoiseCoeff × avgUp       (rail above price for a short)
```

`NoiseCoeff` (typically 2–3) sets how far beyond the extreme the rail sits. A confirmation buffer `buf = ConfirmFrac × ATR` is added on top of the break test to filter whipsaws.

4. Entry logic

SEEDING THE FIRST REGIME

When the EA has no established trend (`trend == 0`), it seeds direction from a short baseline — the average close over `NoisePeriod` bars — and engages immediately:

- If the last close is **at or above** the baseline → go **long**, set the long rail.

- If the last close is **below** the baseline → go **short**, set the short rail.

REVERSAL ENTRIES (THE PRIMARY SIGNAL)

Once in a trend, the rail ratchets each bar in the trend's favour and never retreats:

- **While long:** `longStop = max(longStop, rawLong)`. If the close falls **below** `longStop − buf`, the long is closed, the regime flips to short, and a new short is opened — a full **stop-and-reverse**.
- **While short:** `shortStop = min(shortStop, rawShort)`. If the close rises **above** `shortStop + buf`, the short is closed and a new long is opened.

5. Exit logic & position management

The EA manages exits three ways:

- **Reversal:** a confirmed break of the ratcheting rail closes the current side and immediately opens the opposite side.
- **Trailing stop:** when no flip occurs, the live position's stop-loss is trailed forward to the ratcheting rail via a `Modify` call (long rail only moves up and must stay below the Bid; short rail only moves down and must stay above the Ask). A small epsilon (`ATR × 0.02`) avoids redundant modifications.
- **Take-profit:** each entry is armed with a fixed ATR-multiple target (`AtrTpMult × ATR`). If a take-profit closes the position while the trend is still intact, the EA **re-arms** — it re-enters in the same direction on the next bar so the position is never left idle inside a valid trend.

> **Why the rail ratchets:** By only ever tightening in the trend direction, the SafeZone rail behaves like a Chandelier / SAR-style trailing stop, but its distance is set by the market's *own* measured counter-trend noise rather than a fixed multiple. Quiet trends get tight rails; noisy trends get looser rails automatically.

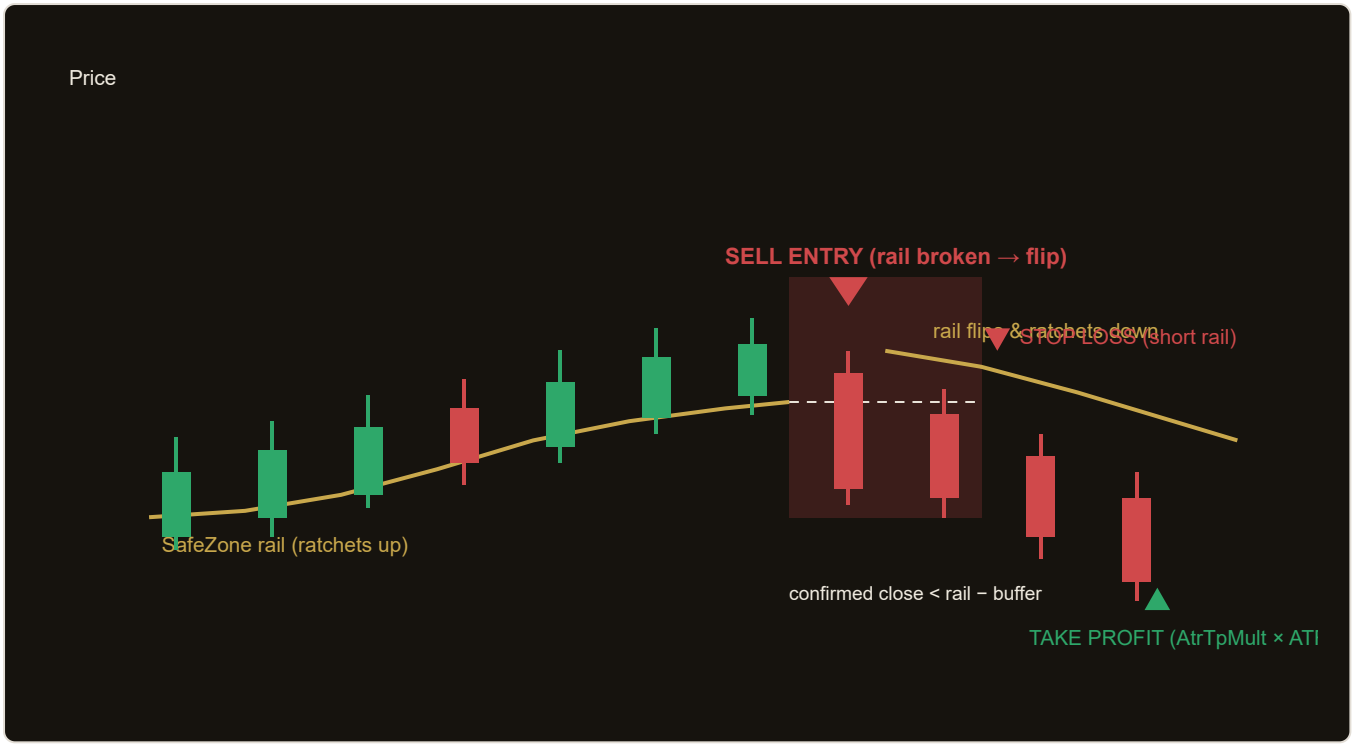
6. Stop-loss & take-profit placement

- **Long entry:** SL = long rail (or `entry − ATR` if the rail would sit above entry); TP = `entry + AtrTpMult × ATR`.
- **Short entry:** SL = short rail (or `entry + ATR` if the rail would sit below entry); TP = `entry − AtrTpMult × ATR`.

The ATR here is a *simple* average of True Range over `AtrPeriod` bars (not Wilder smoothing), computed identically in both the C# engine and the MQL5 build so backtests and live trading match to the tick.

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
NoisePeriod	`10`	Lookback (bars) over which directional penetration noise is averaged. Larger values smooth the noise estimate and produce steadier rails. Range 5–40, step 1.
NoiseCoeff	`2.5`	Multiplier applied to the average noise to place the rail beyond the extreme. Lower = tighter rails (quicker reversals); higher = looser rails (ride more chop). Range 1.0–4.0, step 0.1.
AtrPeriod	`14`	Lookback (bars) for the simple-average True Range used for the volatility floor, take-profit distance, and confirmation buffer. Range 5–40, step 1.
AtrTpMult	`3.0`	Take-profit distance as a multiple of ATR from the entry price. Larger targets let winners run further before the fixed TP triggers. Range 1.0–8.0, step 0.5.
ConfirmFrac	`0.25`	Whipsaw-confirmation buffer as a fraction of ATR. The close must break the rail by this much before a reversal fires. 0 = no buffer; higher = fewer false flips. Range 0.0–1.5, step 0.05.
Lots	`0.10`	Fixed trade volume in lots for every entry. Size this to your account and risk tolerance. Range 0.01–1.0, step 0.05.
Magic	`7420`	Unique magic number identifying this EA's positions, so it manages only its own trades on the symbol.

Recommended Settings

Because Safe Zone Trend Reversal is an always-in-the-market stop-and-reverse system, it performs best on liquid instruments with sustained directional swings and on timeframes where a single bar's noise is meaningful.

STARTING POINT

- **Symbols:** Major FX pairs (EUR/USD, GBP/USD, USD/JPY) or index CFDs with clear trending phases.
- **Timeframe:** H1 or H4 — enough noise per bar for the rails to be meaningful, without over-trading.
- **NoiseCoeff:** 2.5 is a balanced default. Raise toward 3.0–3.5 in choppier conditions to avoid premature flips; lower toward 1.5–2.0 for faster reversals in cleaner trends.
- **ConfirmFrac:** 0.25 filters most single-bar whipsaws. Increase to 0.5–0.75 on noisy pairs.
- **AtrTpMult:** 3.0 gives a wide target; because the trailing rail also protects profit, you can push this to 5–8 to let trends run and rely on the rail for the exit.

Example configuration — EUR/USD H1, moderate filtering

NoisePeriod = 12 | NoiseCoeff = 2.8 | AtrPeriod = 14 | AtrTpMult = 4.0 | ConfirmFrac = 0.35 | Lots = 0.10
This widens the rail slightly and adds confirmation to reduce false reversals on intraday chop, while a 4× ATR target lets clean H1 trends develop before the take-profit or a rail break closes the trade.

Tip: Always run the MT5 *Strategy Tester* across several years and multiple symbols before deploying. Optimise `NoiseCoeff` and `ConfirmFrac` together — they jointly control the trade-off between catching reversals early and being whipsawed out of good trends.

Note — always in the market: This EA holds a position at all times and reverses on rail breaks. In extended ranging conditions it can flip repeatedly and accumulate losses on whipsaws. Use adequate `ConfirmFrac`, appropriate position sizing, and consider disabling it during known low-conviction / high-noise sessions.

How to Install on MetaTrader 5

1. Copy `SafeZoneTrendReversal.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.