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Tirone Level Range 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

Tirone Level Range Reversion is a mean-reversion Expert Advisor built on **Tirone Levels** — a classic, under-used support/resistance construction that divides a lookback price range into *thirds*. Over the last `N` closed bars the EA takes the highest high (HH) and lowest low (LL) of the window and draws three horizontal lines:

```
Top    = HH − (HH − LL) / 3     (the 2/3 line — upper resistance third)
Center = (HH + LL) / 2          (the mid-range magnet / target)
Bottom = LL + (HH − LL) / 3     (the 1/3 line — lower support third)
```

Inside a **balanced, non-trending range**, price tends to oscillate: the outer thirds repeatedly reject incoming pushes, and the center acts as the gravitational fair value the market keeps returning to. This strategy **fades the outer thirds back toward the center** — buying rejections of the lower support third and selling rejections of the upper resistance third.

The design is engineered to keep drawdown contained (targeting roughly ~1%). It only acts when the market is genuinely ranging: a **drift-ratio gate** (net displacement across the window divided by range) must be small, keeping the EA out of the trending breakouts that blow up naive level-faders. The take-profit is the center line — a real structural magnet, giving a high-probability, modest target — while the stop sits just beyond the signal bar's rejecting extreme (tight and structural). Once price has traveled a configurable fraction of the way to target, the stop is pulled to breakeven so winners cannot turn into losers.

> **Core idea:** Tirone Levels turn a raw high/low range into a three-line map. In a ranging market the edges (the outer thirds) are where reversals cluster and the center is where price gravitates. The EA only trades that map when statistical evidence says the market is actually ranging — never during a directional run.

How It Works

Building the Tirone Levels

On every newly closed primary-timeframe bar, the EA scans the last `Lookback` closed bars to find the highest high (HH) and lowest low (LL). From these it computes the range and the three lines (Top, Center, Bottom) shown above. Everything is self-scaling — the lines automatically adapt to the current range, so no fixed price levels are ever hard-coded.

The Ranging-Regime Gate

Before any trade is considered, the EA measures whether the window is balanced or trending. It computes the **drift ratio**:

```
driftRatio = | close[newest] − close[oldest in window] | / range
```

If this ratio exceeds `RangeThreshold`, the window has trended across its span and **no trade is taken**. A small ratio means price ended roughly where it started despite the swings — the signature of a range. This single filter is what keeps the strategy out of the directional moves that destroy mean-reversion systems.

Range-Significance Filter

The EA also requires the range to be a real, tradable size. Using ATR over `AtrPeriod` bars, it demands that the range be at least `MinRangeAtr` multiples of ATR wide. Dead, noise-only windows that are too thin to offer a worthwhile move are skipped.

Entry Logic

Entries are mirror-image long/short signals, each evaluated on a freshly closed bar:

- **LONG** — the regime is ranging, the signal bar's *low* pierces down to or through the **Bottom** line, but the bar *closes back above* it (a rejection of the lower support third). The close must still be *below Center* (leaving room to run to the magnet) and the bar must be bullish (close > open). The EA buys at Ask, targets Center, and places the stop just below the signal low.
- **SHORT** — the regime is ranging, the signal bar's *high* pierces up to or through the **Top** line, but the bar *closes back below* it (a rejection of the upper resistance third). The close must still be *above Center* and the

bar must be bearish (close < open). The EA sells at Bid, targets Center, and places the stop just above the signal high.

Exit Logic — Stops, Targets & Breakeven

- **Take Profit** — the Center line, a high-probability structural magnet. This modest, high-hit-rate target is what smooths the equity curve.
- **Stop Loss** — placed `AtrStopMult × ATR` beyond the signal bar's rejecting extreme (below the low for longs, above the high for shorts). Tight and structural.
- **Reward/Risk floor** — a setup is rejected if the reward (distance to Center) divided by the risk (distance to stop) is below `MinRewardRisk`, and if either distance is inside the broker's minimum stop distance.
- **Breakeven lock** — managed on *every tick*. Once price has traveled `BreakevenFrac` of the entry-to-Center distance (and a real cushion beyond the broker's minimum stop distance exists), the stop is moved to the entry price. This is the key mechanism keeping drawdown small — a winner cannot flip into a loss.

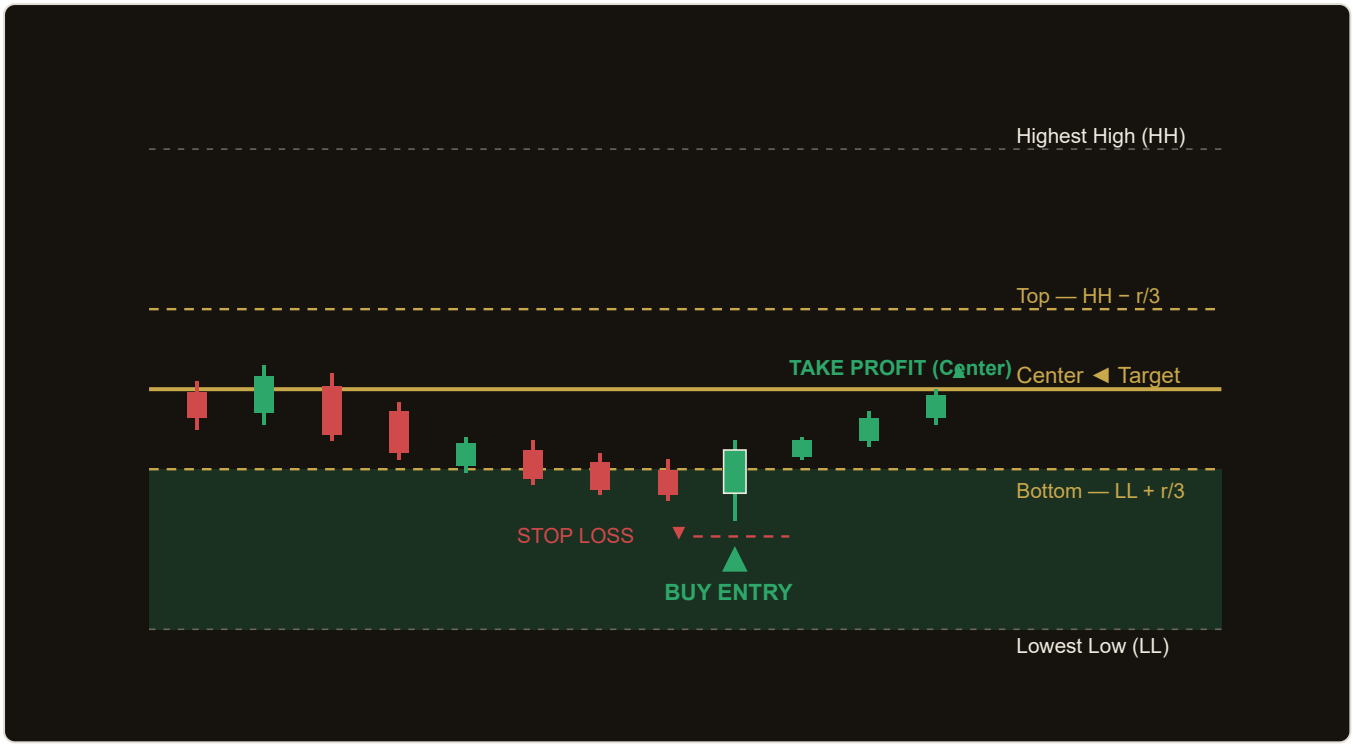
Trade & Execution Controls

- Only **one position per magic number** is held at a time; the structural stop and Center target manage the exit.
- New entries are skipped while the **spread** (in points) is wider than `MaxSpreadPoints`.
- Order volume is snapped to the symbol's volume step and clamped to its min/max limits before submission.

> **Why drawdown stays contained:** three layers work together — (1) the drift-ratio gate refuses to fade a trending market, (2) the center target is a genuine structural magnet with a high hit rate, and (3) the every-tick breakeven lock protects winners the moment they develop a cushion.

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.

Reading the illustration

Price oscillates inside a balanced range and drifts down toward the lower support third. The highlighted signal candle spikes its low *below* the Bottom line but closes back *above* it — a rejection of the lower third. Because the window's drift ratio is small (a genuine range) and the bar is bullish, the EA buys, sets the stop just below the signal low, and targets the Center magnet. Price reverts to Center and the take-profit is hit; the breakeven lock had already protected the trade once it cleared its cushion.

Parameters

Parameter	Default	Description
Lookback	`40`	Number of closed bars used to build the Tirone HH/LL range and its thirds. Range 15–120, step 5. Larger = broader, slower-moving levels.
RangeThreshold	`0.55`	Ranging gate. The drift ratio (|net displacement across the window| / range) must be at or below this value. Small = balanced/ranging; large = the window has trended, so the trade is skipped. Range 0.20–0.90, step 0.05.
MinRangeAtr	`4.0`	Requires the range to be at least this many ATRs wide — filters out dead, noise-only windows too thin to trade. Range 1.5–10.0, step 0.5.
AtrPeriod	`14`	ATR lookback (bars) used for both the range-significance filter and stop sizing. Range 5–30, step 1.
AtrStopMult	`0.6`	Stop buffer as a multiple of ATR, placed beyond the signal bar's rejecting extreme. Smaller = tighter stop. Range 0.2–2.5, step 0.1.
MinRewardRisk	`0.7`	Rejects setups whose reward (distance to Center) divided by risk (distance to stop) falls below this floor. Range 0.3–3.0, step 0.1.
BreakevenFrac	`0.5`	Moves the stop to breakeven once price has traveled this fraction of the entry-to-Center distance. Range 0.1–0.95, step 0.05.
MaxSpreadPoints	`60`	Skips new entries while the spread (in points) is wider than this. Set 0 to disable the check. Range 0–500, step 5.
Lots	`0.10`	Order volume in lots. Snapped to the symbol's volume step and clamped to its min/max. Range 0.01–1.00, step 0.05.
Magic	`7742`	Magic number identifying this EA's positions. Range 0–9,999,999, step 1. Use a unique value per EA instance on the account.

Recommended Settings

The strategy is built for **range-reversion day-trading** and runs on whatever single timeframe the chart/backtest selects (it uses only the primary timeframe).

- **Symbols:** liquid FX majors that spend meaningful time ranging, such as **EURUSD** or **GBPUSD**.
- **Timeframe: M15 to H1** suits range-reversion day-trading best.
- **Regime tuning:** a lower `RangeThreshold` (e.g. 0.40) makes the ranging gate stricter — fewer but cleaner setups; a higher value admits more trades in choppier conditions.

- **Range quality:** raise `MinRangeAtr` to trade only wider, more meaningful ranges; lower it to trade tighter consolidations.
- **Risk control:** keep `AtrStopMult` tight (structural) and `BreakevenFrac` around 0.5 to protect winners early. Confirm `MaxSpreadPoints` matches your broker's typical spread on the chosen symbol.

> **Tip:** Always backtest and forward-test on a demo account with your own broker's spread, commission, and execution before considering live use. Optimize `Lookback`, `RangeThreshold`, and `MinRangeAtr` together — they jointly define what the EA considers a tradable range.

How to Install on MetaTrader 5

1. Copy `TironeLevelRangeReversion.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

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