Algobot
Maximize Your Profits

Mann Kendall Trend Confirmation

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Trend Following	M30 – 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

Mann Kendall Trend Confirmation is a trend-following Expert Advisor whose trend filter is the *Mann-Kendall test* — a nonparametric, rank-based statistic used to detect a monotonic trend in a sequence of numbers. Unlike a moving-average slope or an OLS regression line, the Mann-Kendall test does not care about the *size* of each price move, only about the *order* of the prices. Because of this, a handful of outlier candles cannot fake a trend that isn't there, nor can a single spike hide a trend that is.

The statistic answers one precise question: "*is the sequence of recent closes rising or falling more consistently than random chance would allow?*" When the answer is a statistically significant "yes," the EA treats the market as being in a confirmed trend and then waits for a shallow pullback and reclaim before entering in the trend's direction. Buying dips in a confirmed uptrend — and selling rallies in a confirmed downtrend — avoids chasing extended moves.

The strategy is fully symmetric (distinct long and short rules), single-timeframe (it runs on whichever timeframe the chart or backtest selects), and was designed with trending FX pairs and metals in mind, such as EURUSD or XAUUSD on the M30–H4 range.

How It Works

The Mann-Kendall statistic

Over the last `MkPeriod` completed closes (ordered oldest → newest), the EA computes the Mann-Kendall sum `S` by comparing every earlier close against every later close:

```
S = SUM over all pairs i < j of  sign( close[j] − close[i] )
```

Every later close that is higher than an earlier one adds **+1**; every later close that is lower subtracts **1**. A strongly positive `S` means almost every pair is increasing — a clean uptrend. A strongly negative `S` means a downtrend. A value near zero means there is no directional order — chop.

Under the "no trend" null hypothesis, `S` has a mean of 0 and a known variance:

```
Var(S) = n(n − 1)(2n + 5) / 18
```

The sum is then standardized into a z-score, using the usual ±1 continuity correction:

```
z = (S − 1) / sqrt(Var)   if S > 0
z = (S + 1) / sqrt(Var)   if S < 0
```

A large `|z|` means the monotonic trend is statistically significant. The EA treats `z ≥ +ZThreshold` as a confirmed uptrend and `z ≤ −ZThreshold` as a confirmed downtrend.

> **Reading the threshold.** `ZThreshold` is a one-sided significance level on the z-score. Roughly, `1.28 ≈ 90%` confidence, `1.64 ≈ 95%`, and `2.33 ≈ 99%`. A higher threshold demands a stronger, more consistent trend before any trade is considered — fewer but cleaner signals.

Entry logic — confirmed trend, then pullback and reclaim

A confirmed trend alone is not an entry. The EA waits for a shallow pullback against the trend and then a bar that reclaims the pullback, timing the entry into the continuation rather than the extension.

- **Long entry:** the trend is confirmed up (`z ≥ +ZThreshold`) *and* the prior completed bar was a red pullback bar (`close < open`) *and* the just-completed bar is a bullish reclaim that closes back *above* that pullback bar's High.
- **Short entry:** the trend is confirmed down (`z ≤ −ZThreshold`) *and* the prior completed bar was a green pullback bar (`close > open`) *and* the just-completed bar is a bearish break that closes *below* that pullback bar's Low.

All evaluation happens once per bar, on the first tick after the prior bar has fully closed. The EA never stacks a fresh entry on top of a position it already holds.

Exit logic — stops, targets, and trend-flip exit

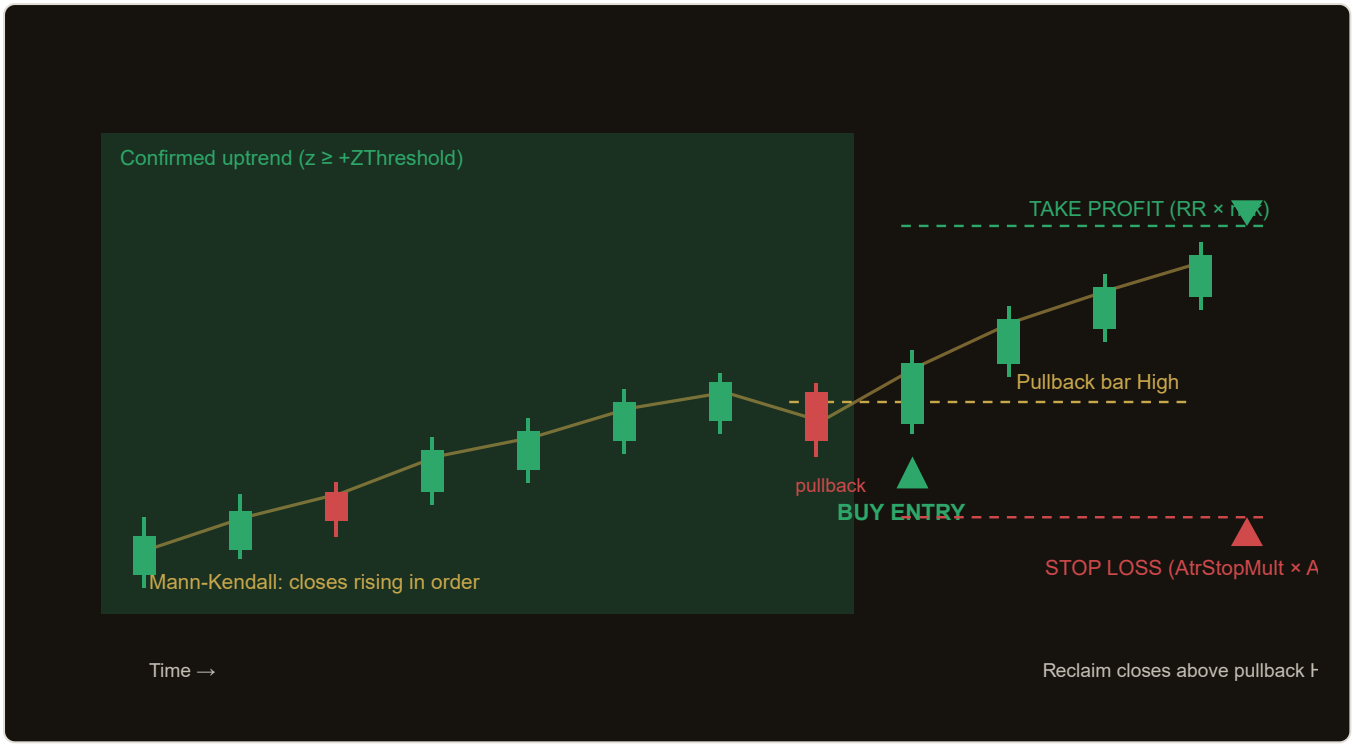
Every position is protected by a fixed stop-loss and take-profit set at entry, plus an active trend-reversal exit:

- **Stop loss:** placed `AtrStopMult × ATR` away from entry, where ATR is measured over `AtrPeriod` bars. This adapts the stop distance to current volatility.
- **Take profit:** set at a `RewardRiskRatio` multiple of the stop distance. With the defaults, a stop of 1.5 × ATR pairs with a target of 1.8 × that distance.
- **Trend-flip exit:** a live position is closed early if the Mann-Kendall z-score flips and becomes significant in the *opposite* direction — a long is closed when `z ≤ −ZThreshold`, a short when `z ≥ +ZThreshold`. This means the trend that justified the trade has statistically reversed.

> **Worked example — a long trade**
>
> Suppose on EURUSD H1 the last 20 closes are climbing steadily. The Mann-Kendall z-score comes out at `+2.1`, above a `ZThreshold` of 1.64 — a confirmed uptrend. Price then dips: one red bar closes lower (the pullback). The next bar rallies and closes back above the red bar's high — the reclaim. The EA buys at the Ask, sets the stop 1.5 × ATR below entry, and the target 1.8 × that distance above. If price instead had kept sliding until z fell to −1.7, any open long would be closed immediately on the trend flip.

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
MkPeriod	`20`	Number of completed closes fed into the Mann-Kendall test. Range 8–40, step 1. Larger windows demand longer, more sustained trends.
ZThreshold	`1.64`	Significance threshold on `|z|`. Range 0.80–3.00, step 0.10. Approx. 1.28 = 90%, 1.64 = 95%, 2.33 = 99% one-sided confidence.
AtrPeriod	`14`	ATR window used for stop sizing. Range 5–30, step 1.
AtrStopMult	`1.5`	Stop distance as a multiple of ATR (stop = AtrStopMult × ATR). Range 0.5–4.0, step 0.1.
RewardRiskRatio	`1.8`	Take-profit distance as a reward:risk multiple of the stop distance. Range 1.0–4.0, step 0.2.
Lots	`0.10`	Order volume in lots. Range 0.01–1.0, step 0.05.
Magic	`20260719`	Magic number used to tag and manage this EA's positions independently of other trades.

Recommended Settings

The defaults are a balanced starting point for trending FX and metals. The following guidance helps adapt the EA to different instruments and trading styles.

SYMBOLS & TIMEFRAMES

- **Instruments:** trending FX majors (e.g. EURUSD, GBPUSD) and metals (e.g. XAUUSD).
- **Timeframe:** M30 to H4. The strategy is single-timeframe — it runs on whatever timeframe the chart or backtest selects — so it is never hardcoded.

TUNING NOTES

- **Signal strictness:** raise `ZThreshold` toward 2.33 for fewer, higher-conviction trades in strong trends; lower it toward 1.28 to trade earlier, emerging trends at the cost of more noise.
- **Trend memory:** increase `MkPeriod` to require a longer, more established trend; decrease it to react to shorter swings.
- **Risk shaping:** widen `AtrStopMult` for volatile instruments to avoid premature stop-outs; adjust `RewardRiskRatio` to match how far trends typically run on your chosen market.

> **Tip.** Always run a fresh optimization and forward test on the specific symbol and timeframe you intend to trade. Because the Mann-Kendall filter is scale-free, the same parameter set often transfers well across correlated instruments, but risk parameters (`AtrStopMult` , `Lots`) should always be reviewed per market.

How to Install on MetaTrader 5

1. Copy `MannKendallTrendConfirmation.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.