

Standard Error Band Trend

Expert Advisor Documentation

PLATFORM

MetaTrader 5 (MT5)

TYPE

Trend Following (Pullback)

TIMEFRAME

H1 / H4

WEBSITE

www.algobot.live

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Overview

Standard Error Band Trend is a trend-following pullback Expert Advisor built on Jon Andersen's *Standard Error Bands* (published in *Stocks & Commodities*, 1996). Unlike the more familiar volatility bands, Standard Error Bands are drawn around a least-squares regression line and their width is set by the **standard error of estimate (SEE)** — the root-mean-square of price's residuals about that line. In plain terms, they measure how cleanly price actually *fits* a straight-line trend.

This distinction matters. It is easy to confuse Standard Error Bands with two other constructs, but they are fundamentally different:

- **Bollinger Bands** — width is the standard *deviation* of price about its moving average.
- **Regression channel** — width is the single *maximum* deviation of price from the fitted line.
- **Standard Error Bands** — width is the standard *error of estimate*, i.e. the RMS of every residual about the least-squares line — a true goodness-of-fit measure.

The core idea: when price marches in an orderly trend, the residuals are tiny, so **SEE** is small relative to **ATR** and the bands pinch in. When price chops, the residuals blow up and the bands flare out. The ratio **SEE / ATR** therefore acts as a genuine **regime gate** — the EA only trades when the fit is tight (a real, low-noise trend), which is precisely where trend pullbacks tend to pay. Trade direction is taken from the sign of the

regression slope, normalised by ATR so the same settings behave consistently across symbols and volatility levels.

How It Works

1. Fitting the trend line

On each newly-formed bar, a least-squares line is fit to the last `RegPeriod` closes ($x = 0$ for the oldest bar in the window, up to $x = N-1$ for the most recent). From this fit the EA derives:

- the **slope** and **intercept** of the regression line;
- the **endpoint** — the regression value at the most recent bar ($x = N-1$);
- the **standard error of estimate (SEE)** = $\sqrt{(\sum \text{residual}^2 / (N-2))}$, the RMS spread of price about the line.

2. The Standard Error Bands

The bands are placed symmetrically around the regression endpoint at a half-width of `BandMult` standard errors:

```
upper band = endpoint + BandMult × SEE
lower band = endpoint - BandMult × SEE
```

A tight, clean trend produces narrow bands; a noisy, choppy market produces wide bands.

3. The regime gate and direction filter

Two derived ratios drive the decision, both scaled by ATR so they are symbol- and volatility-independent:

- **Fit ratio** = `SEE / ATR`. The EA only trades when this is `≤ FitThreshold` (small ratio $\Rightarrow$ price hugs the line $\Rightarrow$ a clean trend).
- **Slope (ATR units)** = `slope / ATR`. A direction is declared only when $|\text{slope}| \geq \text{SlopeAtrMin}$: an up-trend when the normalised slope is positive, a down-trend when it is negative.

4. Entry — with-trend pullback and reclaim

Once the fit is tight and a direction is confirmed, the EA waits for price to pull back into the far band and then *reclaim* it on the same bar:

- **Long:** slope up + tight fit + the just-closed bar's *low* dipped to or below the **lower** band, yet the bar *closed back above* it — a buy-the-dip reclaim inside a clean up-trend.
- **Short:** slope down + tight fit + the just-closed bar's *high* poked to or above the **upper** band, yet the bar *closed back below* it.

Why the reclaim? Merely touching the band is not enough. Requiring the bar to close back inside the band confirms that the pullback was rejected and the trend is resuming — it filters out bars that are simply breaking down through the band.

5. Exit — ATR stops and an active regime exit

Every position is protected by a fixed ATR-based stop-loss and take-profit set at entry:

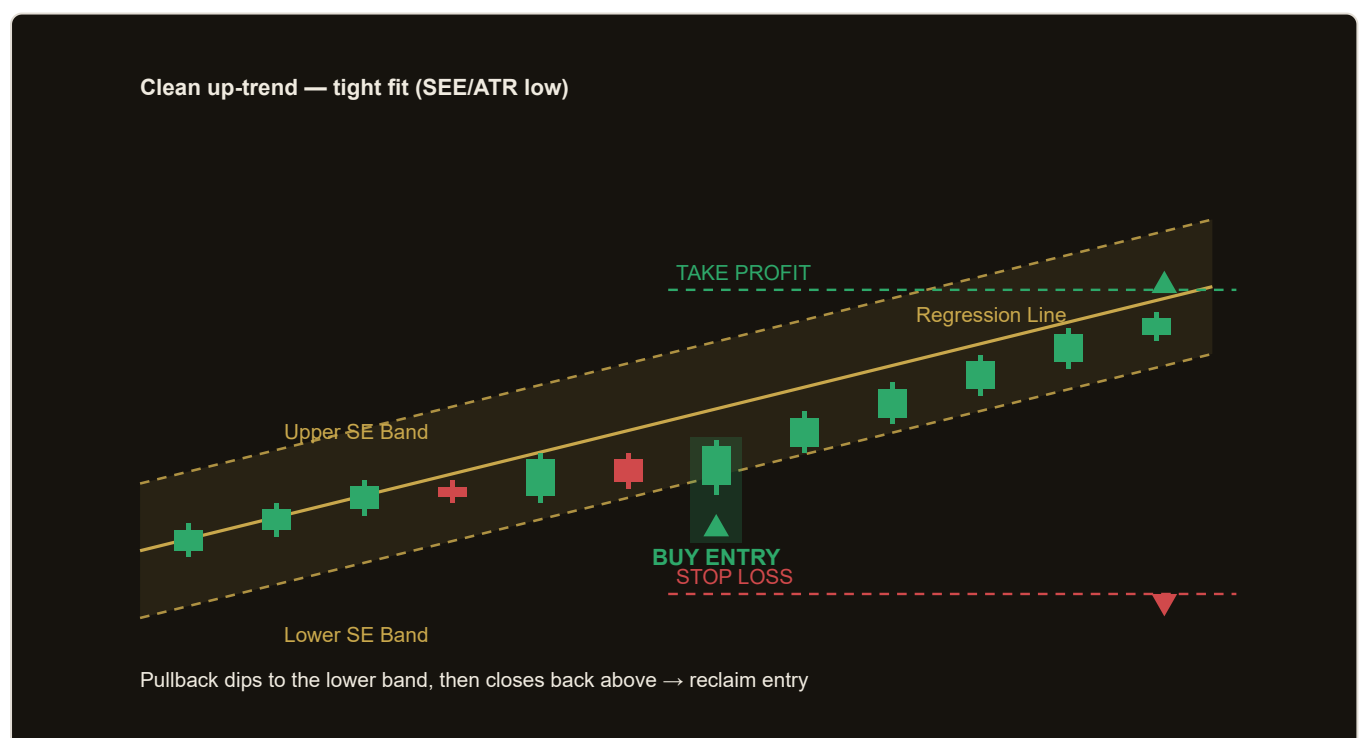
Long : $SL = \text{entry} - \text{AtrSlMult} \times \text{ATR}$ $TP = \text{entry} + \text{AtrTpMult} \times \text{ATR}$
Short: $SL = \text{entry} + \text{AtrSlMult} \times \text{ATR}$ $TP = \text{entry} - \text{AtrTpMult} \times \text{ATR}$

In addition, the EA runs an **active regime exit**: if the regression slope flips against an open position (a buy while the slope has turned down, or a sell while it has turned up), the trend that justified the trade is gone, so the position is closed immediately — without waiting for the stop.

One position at a time. The EA holds at most a single open position per symbol/magic. While a position is open it manages only the regime exit; new entries are considered only when flat. It also operates on a **single timeframe** — every price read uses the chart's current period, so the strategy runs on whatever timeframe you attach it to.

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.



Parameters

Parameter	Default	Description
RegPeriod	20	Number of bars in the least-squares regression window. Range 10–60, step 2. Longer windows track slower, more established trends.
BandMult	2.0	Band half-width in standard errors of estimate. Range 1.0–3.0, step 0.25. Wider bands demand a deeper pullback before a reclaim qualifies.
FitThreshold	0.60	Trend-quality gate: trade only when $\text{SEE} / \text{ATR} \leq$ this value. Range 0.20–1.50, step 0.10. Lower is stricter (cleaner trends only).
SlopeAtrMin	0.05	Minimum slope per bar, in ATR units, required to declare a direction. Range 0.00–0.50, step 0.05. Higher demands a steeper trend.
AtrPeriod	14	Averaging period for the ATR used in the fit ratio, slope normalisation, and stops. Range 5–30, step 1.
AtrSIMult	2.0	Stop-loss distance as a multiple of ATR. Range 0.5–5.0, step 0.25.
AtrTpMult	3.0	Take-profit distance as a multiple of ATR. Range 0.5–8.0, step 0.25.
Lots	0.10	Fixed trade volume in lots. Range 0.01–1.0, step 0.05.
Magic	5417	Magic number used to tag and identify this EA's positions.

Recommended Settings

The defaults above are a balanced starting point. The two levers that most change the EA's character are the **fit gate** and the **reward-to-risk ratio**:

- **FitThreshold** controls how selective the EA is. Tighten toward **0.30–0.50** for fewer, higher-quality trades in clean trends; loosen toward **0.80–1.00** to trade more often in less orderly conditions.
- **AtrTpMult / AtrSIMult** sets the reward-to-risk profile. The default **3.0 / 2.0** targets a 1.5:1 payoff. Widen the target for stronger trending pairs; tighten the stop cautiously, as pullback entries need room to breathe.
- **RegPeriod** scales with your timeframe. Shorter windows (10–16) react faster on lower timeframes; longer windows (30–60) smooth out noise on H4 and above.

Suggested baseline: majors such as EURUSD or GBPUSD on **H1** or **H4**, with `RegPeriod = 20` , `BandMult = 2.0` , `FitThreshold = 0.60` , `SlopeAtrMin = 0.05` , and ATR stops at `2.0 / 3.0` . Always validate on your broker's data in the Strategy Tester before trading live.

Example — a long trade

On H1 EURUSD the regression slope is positive and `SEE/ATR` reads 0.42 (below the 0.60 gate), so the trend is clean and rising. A pullback bar dips its low to the lower Standard Error Band but closes back above it. The EA buys at the Ask, placing the stop $2 \times \text{ATR}$ below and the target $3 \times \text{ATR}$ above. Price resumes higher and the target is hit — or, if the slope had flipped negative first, the regime exit would have closed the trade early.

How to Install on MetaTrader 5

- 1 Copy `StandardErrorBandTrend.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

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