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Instantaneous Trendline Cross

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Trend Re-Entry (Crossover)	Any (single TF) — H1 default	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

The **Instantaneous Trendline Cross** Expert Advisor is a with-trend re-entry system built on John Ehlers' **Instantaneous Trendline** (iTrend) and its companion **Trigger** line, drawn from *Cybernetic Analysis for Stocks & Futures*. The iTrend is a near-zero-lag recursive smoother of the median price `(High + Low) / 2`, and the Trigger is a two-bar linear projection of that trendline. Because the Trigger leads the trendline, the exact bar on which the smoothed path turns can be pinpointed by a Trigger/iTrend crossover.

Rather than trade every crossover — which is whipsaw-prone in sideways markets — the EA uses the **slope of the instantaneous trendline itself as a regime filter**. The trendline must already be sloping over a short lookback by at least a fraction of the current ATR before any crossover is trusted. In an up-sloping trendline a fresh Trigger-above-iTrend crossover is treated as a pullback that has just re-turned upward (a long), and in a down-sloping trendline a fresh Trigger-below-iTrend crossover is treated as a short. The trendline defines the regime; the low-lag crossover times the entry.

Risk is handled symmetrically with an ATR-based stop-loss, and the take-profit is placed at a configurable reward-to-risk multiple of that stop distance. The EA operates on a single timeframe — whichever chart or backtest period it is attached to — and holds at most one position at a time.

> **Core idea:** The instantaneous trendline answers *"which way is the market leaning?"* while the leading Trigger crossover answers *"is now the moment to act?"* Combining a regime gate with a low-lag timing signal aims to keep the EA on the right side of a move while entering on constructive pullbacks rather than at exhaustion.

How It Works

The Instantaneous Trendline (iTrend)

Each completed bar updates the trendline recursively from the median price `P = (High + Low) / 2` using Ehlers' smoothing constant `Alpha` (`a`):

```
it = (a - a²/4)·P + 0.5·a²·P[1] - (a - 0.75·a²)·P[2]
     + 2·(1-a)·it[1] - (1-a)²·it[2]
```

The first two bars are seeded with the raw median price, and bars three through six use Ehlers' warm-up seed `(P + 2·P[1] + P[2]) / 4` before the full recursion takes over. A smaller `Alpha` produces a smoother, slower trendline (a longer assumed dominant cycle); a larger value tracks price more closely.

The Trigger Line

The Trigger is a two-bar linear projection of the trendline, so it leads the iTrend:

```
trigger = 2·it - it[2]
```

Because it anticipates the trendline, the bar on which the Trigger crosses the iTrend marks the turn in the smoothed path one step earlier than the trendline itself would reveal it.

Entry Logic

On the close of each new bar (the EA acts once per completed candle), it evaluates the crossover of the Trigger against the trendline over the two most recent completed bars:

- **Cross up:** the Trigger was at or below the trendline and is now above it.
- **Cross down:** the Trigger was at or above the trendline and is now below it.

A crossover alone is not enough. The **regime gate** requires the trendline to already be sloping. The slope is measured as the change in the trendline over `SlopeBars` bars, and its magnitude must be at least `MinSlopeAtrFrac × ATR`:

- **Long:** a fresh cross-up *and* trendline slope ≥ `+MinSlopeAtrFrac × ATR`.
- **Short:** a fresh cross-down *and* trendline slope ≤ `−MinSlopeAtrFrac × ATR`.

When both conditions align, and no position for this EA's magic number is already open, a market order is sent. Setting `MinSlopeAtrFrac` to `0` disables the slope filter and takes every qualifying crossover.

> **Worked example (long)**
>
> Suppose the trendline has risen over the last 5 bars by 0.00120 while the 14-period ATR is 0.00090. With `MinSlopeAtrFrac = 0.10`, the required minimum slope is `0.10 × 0.00090 = 0.00009`. The measured slope (0.00120) comfortably clears it, confirming an up-regime. On the bar where the Trigger crosses back above the trendline, the EA buys at the Ask.

Exit Logic — Stop-Loss & Take-Profit

Every trade is protected by a symmetric ATR stop set at order time. With `risk = AtrStopMult × ATR`:

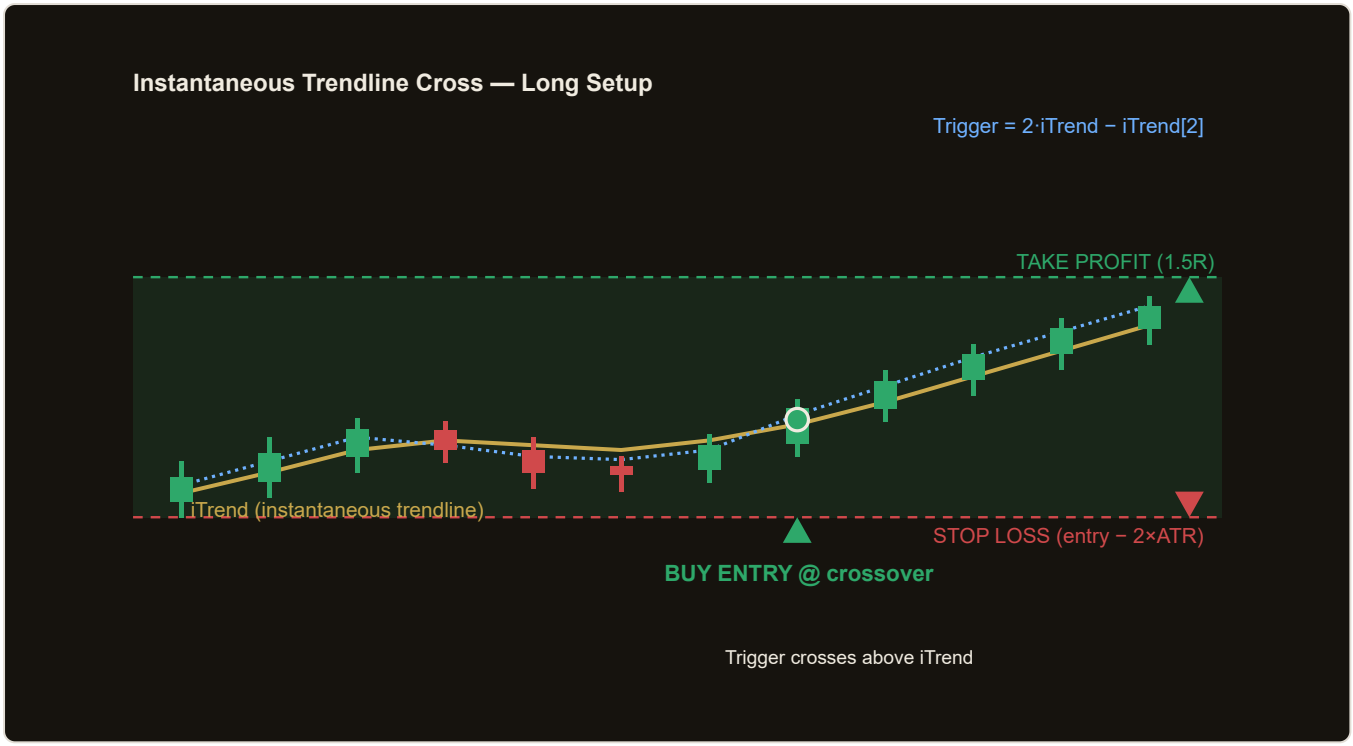
- **Long:** entry at Ask; stop = `Ask − risk`; target = `Ask + RewardRiskRatio × risk`.
- **Short:** entry at Bid; stop = `Bid + risk`; target = `Bid − RewardRiskRatio × risk`.

There is no separate trailing or signal-based exit — each position runs to its fixed stop-loss or take-profit. Because only one position is held at a time, a new crossover is ignored until the current trade has closed.

> **Note:** The ATR used for both the slope gate and the stop distance is read from the just-completed bar (shift 1 in the MQL5 port), keeping the signal calculation consistent with the bar that produced the crossover.

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
Alpha	`0.07`	iTrend smoothing constant (a proxy for the dominant cycle). Smaller = smoother and slower; larger tracks price more tightly. Range 0.03–0.15, step 0.01.
SlopeBars	`5`	Lookback in bars over which the trendline slope is measured for the regime gate. Range 2–15, step 1.
MinSlopeAtrFrac	`0.10`	Trend gate: the absolute trendline slope must be at least this fraction of ATR before a crossover is traded. Set to 0 to disable the filter. Range 0.0–0.60, step 0.05.
AtrPeriod	`14`	ATR window used for both the slope gate and the stop-loss distance. Range 5–30, step 1.
AtrStopMult	`2.0`	Stop-loss distance expressed as this multiple of ATR from the entry price. Range 1.0–5.0, step 0.5.
RewardRiskRatio	`1.5`	Take-profit distance as this reward-to-risk multiple of the stop distance. Range 1.0–4.0, step 0.5.
Lots	`0.10`	Fixed trade volume in lots. Range 0.01–1.0, step 0.05.
Magic	`7071`	Magic number identifying this EA's positions so it manages only its own trades (one open position at a time).

Recommended Settings

The defaults are a balanced starting point. The following notes help tailor the EA to a symbol and timeframe. Always validate any configuration on out-of-sample data before considering live use.

TIMEFRAME & SYMBOL

- The EA runs on the single timeframe of the chart it is attached to. **H1** is a sensible default that balances signal frequency against noise; H4 and M30 are reasonable alternatives.
- Favour liquid instruments with clean, cyclical swings — major FX pairs such as EUR/USD or GBP/USD — where the instantaneous trendline behaves smoothly.

TUNING GUIDANCE

- **Alpha** — lower it (toward 0.03–0.05) on noisier or higher-timeframe charts for a steadier trendline; raise it (toward 0.10–0.15) for faster, more responsive turns on cleaner markets.

- **MinSlopeAtrFrac** — raise it to demand a stronger established trend before entering (fewer, higher-quality signals); lower it (or set 0) to trade more crossovers, accepting more whipsaw in ranges.
- **AtrStopMult / RewardRiskRatio** — widen `AtrStopMult` to give trades more room on volatile symbols; adjust `RewardRiskRatio` to match the follow-through you observe. A ratio above 1.0 keeps the expected payoff asymmetric in the trade's favour.
- **Lots** — size according to your account balance and risk tolerance. Because the stop distance varies with ATR, per-trade monetary risk scales with market volatility at fixed lots.

> **Tip:** Optimise `Alpha` and `MinSlopeAtrFrac` together in the Strategy Tester. They jointly govern how selectively the EA responds — a smooth trendline paired with a firm slope gate typically trades less often but with cleaner entries.

How to Install on MetaTrader 5

1. Copy `InstantaneousTrendlineCross.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

> **Before going live:** Run the EA in the MT5 Strategy Tester and on a demo account first. Confirm the trendline, crossover timing, and ATR-based stops behave as expected for your chosen symbol and timeframe.

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.