

Schaff Trend Cycle Momentum Breakout

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Momentum Breakout (Oscillator)	H1 (recommended)	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 **Schaff Trend Cycle Momentum Breakout** Expert Advisor trades launches out of stretched momentum extremes using the Schaff Trend Cycle (STC) oscillator. The STC applies a *double stochastic normalisation* to a MACD line, compressing raw MACD momentum into a smooth 0–100 oscillator that cycles faster than the underlying MACD and therefore tends to signal earlier.

Because the oscillator is bounded, its **oversold** and **overbought** thresholds isolate momentum that has been genuinely exhausted rather than noise spikes. The EA waits for the STC to sit in one of these zones and then *turn back*, treating that reversal of the oscillator as the launch of a sustainable momentum breakout — upward from oversold, or downward from overbought.

Every position is protected with an **ATR-based stop-loss** and a **fixed reward-to-risk take-profit**, so risk is defined the moment the trade is opened. The EA processes exactly one closed bar at a time, holds at most one position per symbol, and reconstructs all of its EMAs iteratively (bar-by-bar) so that the MQL5 build reproduces the C# research engine tick-for-tick.

What makes STC different? A classic MACD reacts slowly and gives no fixed scale. By passing the MACD through two stochastic normalisations — each smoothed with a short EMA — the STC produces a responsive, range-bound signal. This lets the strategy define precise oversold/overbought launch zones instead of guessing at raw momentum levels.

How It Works

1. Building the STC oscillator

On every newly closed bar the EA updates the oscillator through the following pipeline:

- **MACD line** — a fast EMA (`EmaFast` , default 23) minus a slow EMA (`EmaSlow` , default 50), both computed iteratively on the bar close.
- **First %K** — a stochastic normalisation of the MACD over the last `CycleLen` bars (default 10), then smoothed with a short iterative EMA of period `SmoothPeriod` (default 3).
- **Second %K** — a second stochastic normalisation, this time of the *smoothed first-%K series* over `CycleLen` bars, again smoothed with the same short EMA.
- **STC** — the output of that second smoothing pass is the final 0–100 Schaff Trend Cycle value.

The EA retains the two most recent STC readings (`stcPrev` and `stcCurr`) so it can detect the exact bar on which the oscillator turns.

2. Entry logic

A signal requires two conditions on the just-closed bar — the oscillator must have been in an extreme zone *and* it must have reversed direction:

- **Long (buy):** the previous STC was *below* the oversold level (`OversoldLevel` , default 25) and the current STC is now *higher* than the previous STC — momentum is breaking out to the upside.
- **Short (sell):** the previous STC was *above* the overbought level (`OverboughtLevel` , default 75) and the current STC is now *lower* than the previous STC — momentum is breaking out to the downside.

Worked long example

On the prior bar the STC printed 18 (below the oversold level of 25). On the newly closed bar it prints 24 — still under 25 but rising. Because `stcPrev < OversoldLevel` and `stcCurr > stcPrev` , the EA opens a buy at the ask, places the stop one ATR-multiple below entry, and sets the take-profit at the configured reward-to-risk multiple above entry.

3. Exit logic — stop-loss and take-profit

The EA does not use a discretionary exit; every trade carries a fixed stop and target defined at entry from the current ATR:

- **Stop distance** = `AtrStopMult` × ATR(`AtrPeriod`) — default $1.5 \times \text{ATR}(14)$.
- **Take-profit distance** = stop distance × `RRMultiple` — default a 2.0 reward-to-risk ratio.
- **Long:** SL = entry – stopDist, TP = entry + tpDist.
- **Short:** SL = entry + stopDist, TP = entry – tpDist.

The trade then runs to whichever level is reached first; the broker closes it at the stop or the target with no further intervention from the EA.

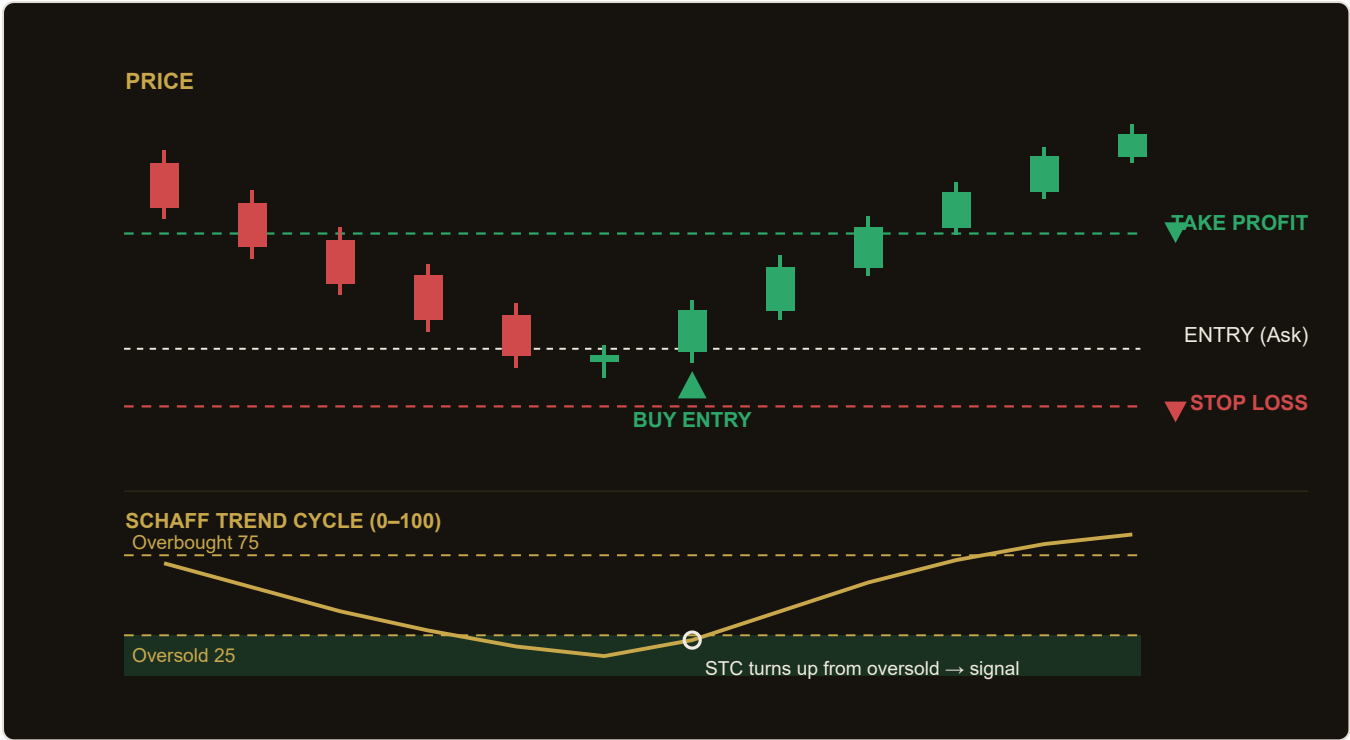
4. Trade & state management

- **One bar at a time** — all logic runs on new-bar detection using the just-closed bar (shift 1); intrabar ticks are ignored.
- **One position per symbol** — while a position identified by the `Magic` number is open, no new orders are sent. The STC oscillator, however, keeps advancing so that state is continuous when the position closes.
- **Warm-up** — the EA waits until it has at least `max(CycleLen, AtrPeriod) + EmaSlow` MACD bars before it evaluates any signal, ensuring the EMAs and stochastics are seeded.
- **Iterative EMAs** — every EMA (MACD fast/slow and both smoothing passes) is a running update, exactly mirroring the C# reference implementation.

⚠ **Order validity checks** Before sending, the EA verifies that the stop and target sit on the correct side of entry (`entry > sl` and `tp > entry` for longs, reversed for shorts). If the levels are invalid — or if ATR returns zero during warm-up — the trade is skipped for that bar.

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
EmaFast	23	Fast EMA period for the MACD line. Range 5–50, step 1.
EmaSlow	50	Slow EMA period for the MACD line. Range 20–100, step 2.
CycleLen	10	Stochastic lookback for the double-%K normalisation of MACD. Range 5–30, step 1.
SmoothPeriod	3	Smoothing period for each %K pass (iterative EMA). Range 2–10, step 1.
OversoldLevel	25.0	STC oversold level — STC rising from below this value triggers a LONG. Range 5.0–45.0, step 5.0.
OverboughtLevel	75.0	STC overbought level — STC falling from above this value triggers a SHORT. Range 55.0–95.0, step 5.0.
AtrPeriod	14	ATR lookback used for stop sizing. Range 5–30, step 1.
AtrStopMult	1.5	Stop distance as a multiple of ATR. Range 0.5–4.0, step 0.25.
RRMultiple	2.0	Take-profit distance as a multiple of the stop distance (reward-to-risk ratio). Range 1.0–5.0, step 0.5.
Lots	0.10	Order volume in lots. Range 0.01–1.0, step 0.05.
Magic	9260	Magic number identifying this EA's positions. Range 0–9,999,999, step 1.

Recommended Settings

The defaults are tuned as a balanced starting point. Because the STC compresses momentum into a fast oscillator, the strategy suits liquid instruments on intraday-to-swing timeframes where breakouts have room to run.

- **Timeframe:** H1 is the recommended baseline. Higher timeframes (H4) reduce signal frequency and whipsaw; lower timeframes increase both.
- **Symbols:** major FX pairs and liquid indices with steady volatility. Avoid thin, gap-prone instruments where ATR stops behave erratically.
- **Oversold / Overbought:** the 25 / 75 defaults are symmetric. Widening them (e.g. 20 / 80) yields fewer, higher-conviction signals; narrowing them yields more.

- **Risk (ATR & RR):** keep `AtrStopMult` around 1.5 and `RRMultiple` at 2.0 for a 1:2 profile. Raising the RR increases per-trade payoff but lowers hit rate.
- **Position size:** set `Lots` conservatively relative to account equity; the EA does not scale size to balance.

Tip: Always run a walk-forward backtest on your chosen symbol and timeframe before going live. Optimise `CycleLen` and the oversold/overbought levels together — they jointly control how often the oscillator reaches an extreme and reverses.

How to Install on MetaTrader 5

- 1 Copy `SchaffTrendCycleMomentumBreakout.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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