Algobot
Maximize Your Profits

Directional Coherence Emergence

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Momentum / Regime Emergence	H1 (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

Directional Coherence Emergence is a momentum strategy built on a single first-principles idea: the *order parameter* of a bar-return sign sequence. Instead of using a moving average, oscillator, band, or chart pattern, it measures how *ordered* recent price action is by counting how often the direction of consecutive bars flips.

Each closed bar produces a return — the change in closing price — and only its **sign** (up or down) is kept. Over a window of `N` bars the strategy counts the number of **alternations**: the places where the sign flips from one bar to the next. In a purely random ("memoryless") market where up and down are equally likely, the expected number of alternations is exactly `(N−1)/2`. Comparing the observed alternations against this random baseline yields a dimensionless **Directional Coherence** value `C`:

```
C = 1 − A / ((N−1)/2) = 1 − 2A / (N−1)
```

- **C → +1** — almost no alternations, long coherent runs. The market is **ordered**: a directional regime is physically present.
- **C → 0** — alternations match the random baseline. There is **no structure**.
- **C → −1** — alternations everywhere. The micro-structure is **anti-persistent** (choppy, mean-reverting).

The core hypothesis is that coherence is *not static*: markets breathe between ordered and disordered phases. The tradable event is the **emergence** of order — the moment `C` rises through a self-calibrated barrier. At that instant, the net displacement of the window reveals which way the freshly-formed order points, and the EA trades *with* it.

> **Original, self-derived measure.** Directional Coherence is a pure combinatorial measure of run structure derived directly from the random-walk null hypothesis. It is *not* an autocorrelation, moving average, oscillator, band, pivot, or borrowed indicator — there are no hand-tuned price levels anywhere in the logic.

How It Works

1. Measuring coherence

On every newly-closed bar the EA appends the closing price to a rolling history and, once at least `CoherenceWindow + 1` closes are available, computes `C` over the most recent window. It simultaneously records the window's **net displacement** (last close minus the close `N` bars ago); the sign of that displacement is the direction of the emerging order. A flat bar (zero return) is treated as a continuation of the previous sign rather than a flip, so noise does not inflate the alternation count.

2. The self-calibrated barrier

Every symbol and timeframe has its own coherence distribution, so a fixed cut-off would be meaningless. Instead the entry barrier **floats**, measured over a trailing window of the coherence signal itself:

```
θ = mean(C) + K × std(C)
```

Here the mean and standard deviation are taken over the last `AdaptLookback` coherence readings. The barrier therefore continuously recalibrates to whatever "unusually ordered" means for the current market. A higher `ThresholdK` demands a rarer, stronger emergence; a lower (even negative) value fires more readily.

3. Entry — the emergence event

With no position open and a valid barrier available, the EA looks for coherence rising *up through* the barrier between the previous bar and the current one:

```
emerged  =  prevCoherence ≤ θ   AND   coherence > θ
```

When an emergence is detected and the window has a non-zero net displacement, a trade is opened **in the direction of that displacement** — a **Buy** if the window is net higher, a **Sell** if net lower.

4. Dynamic stop and stretched target

Risk is framed in units of Average True Range (ATR). The stop distance is a fixed volatility budget, while the profit target **stretches** with the strength of the order measured at entry:

```
stopDist =  ATR × StopAtrMult
tpDist   =  ATR × TpAtrMult × (1 + max(0, C_entry))
```

Strongly-ordered births (high `C`) are given room to run, while weak ones are effectively scalped with a tighter target. Both SL and TP are placed as absolute prices on the order.

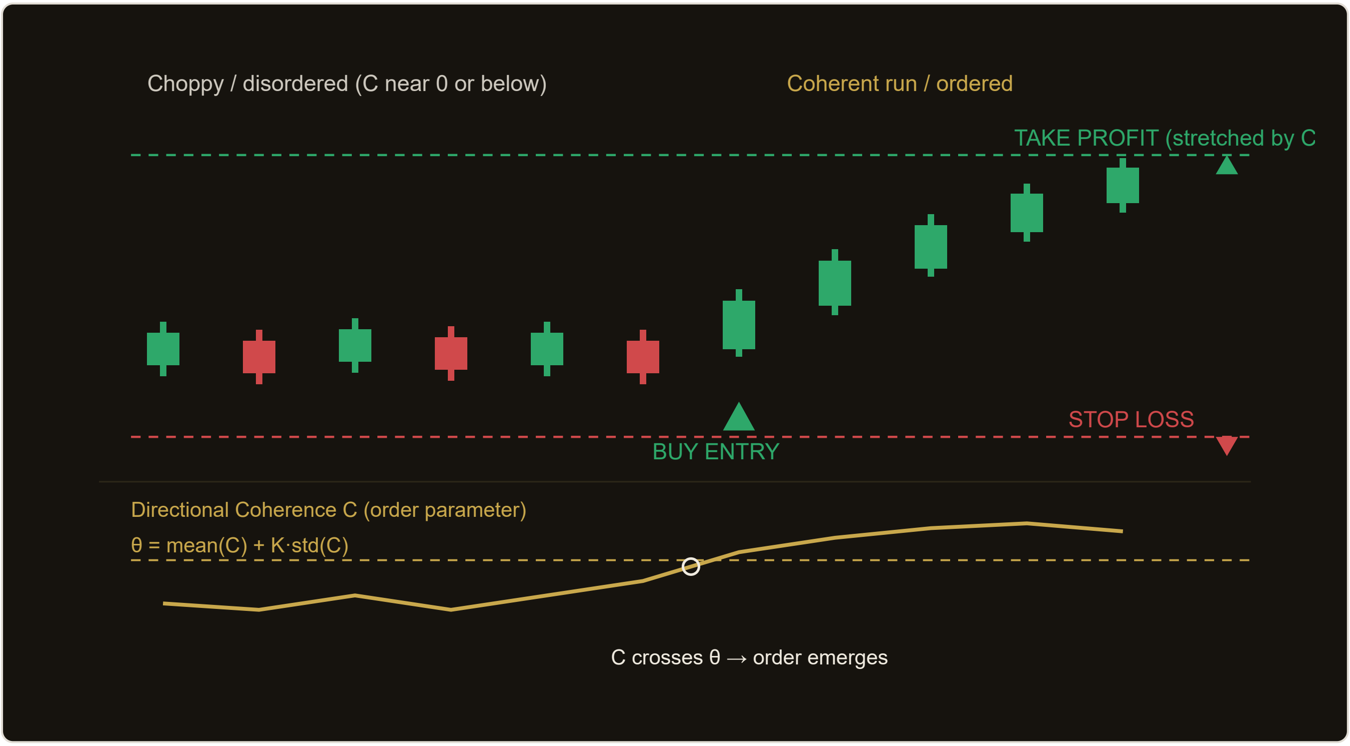
5. Exit — order decay

Beyond the hard SL/TP, every open position is monitored on each closed bar. The moment coherence **collapses below zero** — meaning order has decayed back into randomness or anti-persistence — the position is closed immediately. The rationale: a run that has stopped being coherent has spent its directional energy.

> **Once per closed bar.** All measurement and decisions happen a single time per finished bar (via new-bar detection), acting on the just-closed bar. Intrabar ticks do not generate signals, which keeps behaviour deterministic and reproducible between the C# engine and the MQL5 build.

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

On the left, bar directions alternate almost every bar — coherence `C` sits near or below zero and no trade is taken. As a directional run forms, alternations vanish and `C` climbs. The instant `C` rises through the adaptive barrier `θ`, order has *emerged*: a Buy is opened in the direction of the window's net rise, with the stop a fixed ATR distance below and the take-profit stretched upward by the strength of the coherence at entry.

Parameters

Parameter	Default	Description
CoherenceWindow	`20`	Number of bar-return signs used to measure run coherence. Range 8–60, step 2. Smaller windows react faster but are noisier.
AdaptLookback	`60`	Trailing window over which the coherence signal's own mean and standard deviation are computed for the barrier. Range 20–150, step 5.
ThresholdK	`0.6`	Barrier sensitivity: θ = mean(C) + K×std(C). Higher K demands rarer, stronger emergences. Range −0.5 to 2.5, step 0.1.
AtrPeriod	`14`	ATR period used as the raw volatility budget for stop sizing. Range 5–30, step 1.
StopAtrMult	`1.6`	Stop-loss distance as a multiple of ATR (fixed volatility budget). Range 0.5–4.0, step 0.1.
TpAtrMult	`2.4`	Base take-profit multiple of ATR, stretched at entry by (1 + max(0, C)). Range 1.0–6.0, step 0.1.
Lots	`0.10`	Fixed trade volume in lots. Range 0.01–1.0, step 0.01.
Magic	`730114`	Magic number identifying this EA's positions so it manages only its own trades.

Recommended Settings

The defaults are a balanced starting point. Because the entry barrier self-calibrates to each market, the same parameters transfer reasonably across instruments — but the settings below reflect sensible expectations by timeframe and appetite.

SYMBOLS & TIMEFRAME

- **Timeframe:** H1 is the primary target. M30 to H4 also work; below M30 signals become noisier and spread-sensitive.
- **Instruments:** Trending-prone majors and indices where directional regimes form and persist (e.g. EUR/USD, GBP/USD, XAU/USD, major index CFDs).

TUNING GUIDANCE

- **Fewer, higher-conviction trades:** raise `ThresholdK` toward 1.0–1.5 and/or increase `CoherenceWindow` so only strong, sustained order triggers entries.

- **More frequent trades:** lower `ThresholdK` toward 0.0 (or slightly negative) and shorten `CoherenceWindow`.
- **Wider trends:** increase `TpAtrMult` to let stretched targets ride; keep `StopAtrMult` around 1.5–2.0 for breathing room.
- **Barrier stability:** keep `AdaptLookback` comfortably larger than `CoherenceWindow` so the barrier reflects a stable distribution rather than a single run.

> **Tip — validate before live.** Because the strategy has no hand-tuned price levels, its behaviour is driven entirely by these parameters and the local coherence distribution. Backtest and forward-test on a demo account for each symbol/timeframe before committing real capital, and confirm the barrier warms up (needs at least `AdaptLookback` coherence readings before it can trade).

How to Install on MetaTrader 5

1. Copy `DirectionalCoherenceEmergence.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

> **Note.** The EA acts once per closed bar, so allow it to run through several bars after attaching — and long enough to accumulate its adaptive lookback — before expecting the first signal. If you have the source `DirectionalCoherenceEmergence.mq5`, compile it in MetaEditor (F7) to produce the `.ex5`.

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.