Algobot
Maximize Your Profits

Directional Change Overshoot

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Event-Driven Momentum	H1 · Flexible	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 Change Overshoot is an event-driven momentum Expert Advisor built on the *Directional Change (DC)* framework from high-frequency finance (Guillaume, Dacorogna, Olsen et al.). Instead of reacting to every calendar bar, it measures the market in *intrinsic time* — it only responds to price **events** of a chosen magnitude.

The core idea is simple. Pick a threshold `θ` expressed as a percentage of price (for example 0.35%). From a running extreme, price is either in an **up run** (making new highs) or a **down run** (making new lows). A **directional change** is confirmed the moment price reverses by `θ` away from that extreme. Each confirmed change is empirically followed by an **overshoot** leg of comparable size, and the EA enters in the direction of the change to harvest it.

Because directional-change events strictly alternate up and down, the system is naturally **stop-and-reverse**: an opposite event flips an open position when `ReverseOnSignal` is enabled. An ATR-scaled stop-loss and take-profit protect every trade in case the overshoot stalls before the next event fires. Since the threshold is a fraction of price, the same logic adapts across instruments and timeframes.

> **What makes it different:** The EA runs on a single chart timeframe, but the timeframe is only a "clock" for sampling closes. The trades themselves are driven by directional-change events — not by any fixed bar count, moving-average cross, or oscillator level.

How It Works

1. Intrinsic time and the directional-change threshold

The EA converts the threshold percentage into a decimal fraction: `θ = ThresholdPercent / 100`. A larger threshold produces fewer, larger events; a smaller threshold produces more frequent, smaller ones. All price reads use the chart's own timeframe (`_Period` in MQL5), so the "bar clock" is whatever chart the EA is attached to.

2. The run & state machine

The strategy tracks a single state variable, `_mode`, together with a running extreme:

- **Up run** (`_mode = +1`): the running high (`_extremeHigh`) is continually extended while price makes new highs. The EA watches for a close that falls `θ` *below* that high.
- **Down run** (`_mode = -1`): the running low (`_extremeLow`) is continually extended while price makes new lows. The EA watches for a close that rises `θ` *above* that low.

On the very first completed bar the machine simply seeds its extremes from that bar's high and low and starts in an up run. All logic acts on the **just-closed bar (shift 1)**; a new-bar check ensures each bar is evaluated exactly once.

3. Confirming a directional change

A directional change flips the trend and generates a trade signal:

```
Up run:   close ≤ extremeHigh × (1 − θ)   →  DOWNTURN  →  SHORT
Down run: close ≥ extremeLow  × (1 + θ)   →  UPTURN    →  LONG
```

When a downturn is confirmed the mode flips to `-1`, the running low is reset to the current bar's low, and a **short** signal fires. When an upturn is confirmed the mode flips to `+1`, the running high is reset, and a **long** signal fires. The EA enters in the direction of the change to ride the following overshoot.

4. Position management (entry, flip, and stand-aside)

When a signal fires, the EA inspects its existing positions for the current symbol and magic number:

- If it already holds a position on the **desired** side, it does nothing — no pyramiding.

- If it holds an **opposite** position and `ReverseOnSignal = 1`, it closes that position and opens a fresh one in the new direction (stop-and-reverse).
- If it holds an opposite position and `ReverseOnSignal = 0`, it simply stands aside and waits until it is flat.

5. Risk: ATR-scaled stop-loss and take-profit

Trade risk is measured from the Average True Range of the just-closed bar over `AtrPeriod`. The stop distance is `risk = AtrStopMult × ATR`, and the take-profit is placed at `RewardRiskRatio × risk`:

```
LONG:   entry = Ask
        SL    = entry − risk
        TP    = entry + RewardRiskRatio × risk

SHORT:  entry = Bid
        SL    = entry + risk
        TP    = entry − RewardRiskRatio × risk
```

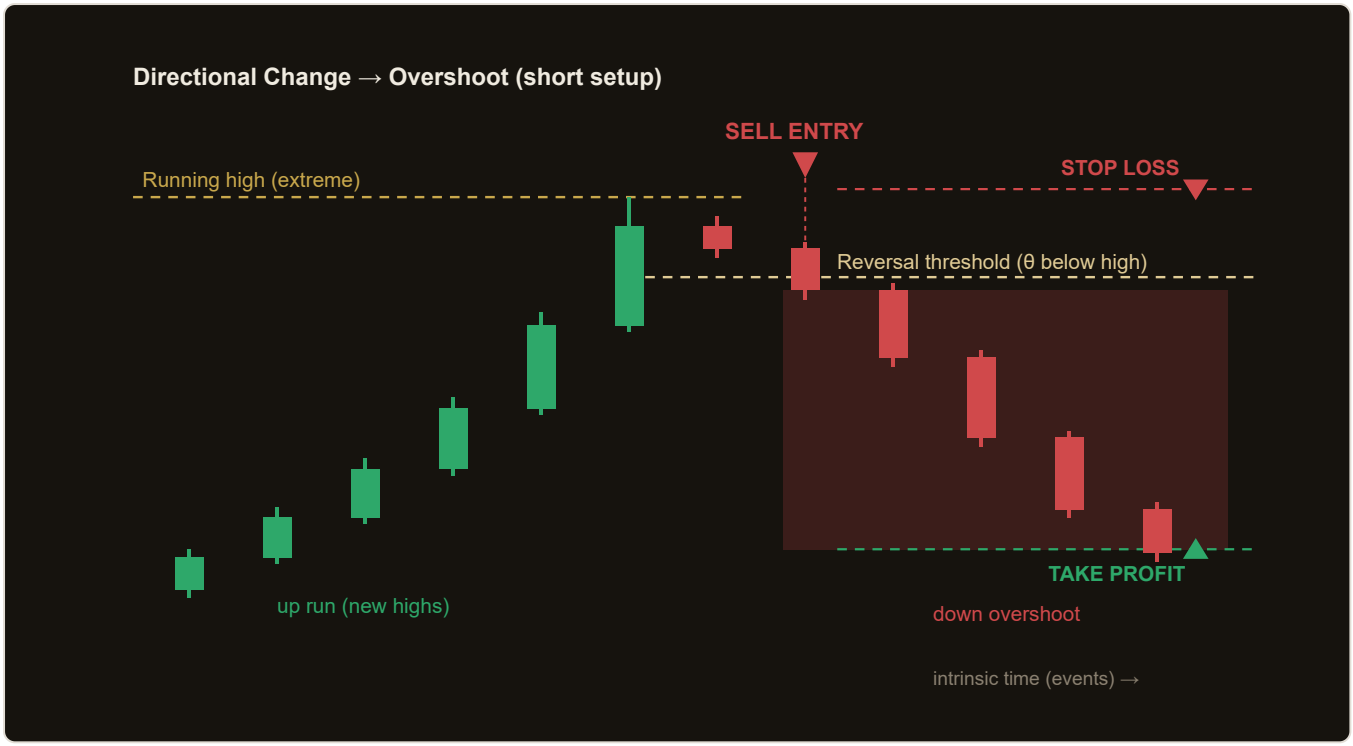
If the ATR cannot be computed yet (not enough history) the trade is skipped. Each trade therefore exits in one of two ways: it reaches its ATR-based stop/target, or the next opposite directional change flips it out (when reversing is enabled).

Worked example (short setup)

Suppose price is in an up run with a running high of 1.10000 and `ThresholdPercent = 0.35`, so `θ = 0.0035`. A downturn is confirmed once a bar closes at or below `1.10000 × (1 − 0.0035) = 1.09615`. With ATR = 0.00120 and `AtrStopMult = 2.0`, the risk distance is 0.00240. The EA sells at the Bid, sets the stop 0.00240 above entry, and targets `1.5 × 0.00240 = 0.00360` below entry.

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. Price climbs in an up run, then a close falls a full threshold (`θ`) below the running high, confirming a downturn and triggering a short to harvest the down overshoot.



Illustrative example only. Actual market behaviour varies.

Parameters

Parameter	Default	Description
ThresholdPercent	`0.35`	Directional-change threshold `θ` as a percent of price. A close reversing this far from the running extreme confirms a change. Larger values yield fewer, bigger events. Range 0.05–2.00, step 0.05.
AtrPeriod	`14`	ATR window used to size the protective stop and target. Range 5–40, step 1.
AtrStopMult	`2.0`	Stop distance in multiples of ATR from the entry price. Range 0.5–5.0, step 0.5.
RewardRiskRatio	`1.5`	Take-profit distance as a reward-to-risk multiple of the stop distance. Range 0.5–4.0, step 0.5.
ReverseOnSignal	`1`	1 = flip the position on the opposite directional-change event (stop-and-reverse); 0 = only enter when flat. Range 0–1.
Lots	`0.10`	Order volume in lots. Range 0.01–1.0, step 0.05.
Magic	`3417`	Magic number identifying this EA's positions so it manages only its own trades.

Recommended Settings

Directional Change works best on liquid instruments with clean, persistent trends. Because the threshold is a fraction of price, the same defaults transfer reasonably well across markets, but the threshold should be matched to each instrument's typical volatility.

INSTRUMENTS & TIMEFRAME

- **Markets:** Major FX pairs (EUR/USD, GBP/USD, USD/JPY) and liquid indices.
- **Timeframe:** H1 is a solid starting point. Lower timeframes (M15) generate more events; higher ones (H4) generate fewer, larger overshoots.

THRESHOLD TUNING

- **Calmer FX majors:** `ThresholdPercent` around 0.20–0.40.
- **More volatile pairs / indices:** raise toward 0.50–1.00 so noise doesn't trigger premature changes.
- Keep `AtrStopMult` near 2.0 and `RewardRiskRatio` near 1.5 as a balanced default, then optimise on out-of-sample data.

> **Tip:** Enable `ReverseOnSignal = 1` in strongly trending regimes so the EA rides directional-change flips continuously. In choppy, range-bound conditions consider `ReverseOnSignal = 0` and a wider `ThresholdPercent` to reduce whipsaw.

> **Always validate first.** Backtest across multiple years and forward-test on a demo account before committing real capital. The threshold that looks optimal on historical data can degrade as volatility regimes shift.

How to Install on MetaTrader 5

1. Copy `DirectionalChangeOvershoot.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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