

Directional Energy Asymmetry

Expert Advisor Documentation

PLATFORM

MetaTrader 5 (MT5)

TYPE

Order-Flow Energy (Directional)

TIMEFRAME

H1 (M15–H4)

WEBSITE

www.algoBot.live

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Overview

Directional Energy Asymmetry is an original, first-principles system built entirely from raw OHLCV data. It is not an indicator system, not a price-action pattern library, and shares no logic with SMC, ICT, or Wyckoff. Instead, it borrows a single idea from physics: *net price change tells you where price went, but not with how much force.*

The model treats every completed bar as a physical impulse. Each bar is given a **mass** equal to its tick volume and a **velocity** equal to its signed body move (`Close - Open`). Borrowing the kinetic-energy form $E = m \cdot v^2$, each bar carries an energy that is always non-negative, with its direction taken from the sign of the body:

$$e[i] = \text{TickVolume}[i] \times (\text{Close}[i] - \text{Open}[i])^2$$

Over a rolling window this energy is pooled into an **up-reservoir** and a **down-reservoir**, and the imbalance between them — the *directional energy asymmetry* — is measured. A persistent energy surplus on one side is interpreted as latent, impatient order flow that has not yet fully expressed itself in price, so drift is hypothesised to follow in that direction until the reservoirs re-balance.

Why energy, not momentum? Directional Energy Asymmetry is deliberately *not* a momentum measure. Two windows with an identical net move can produce opposite readings: a slow grind higher on many small, low-volume up-bars — punctuated by a few violent, high-volume down-bars — produces a *negative* asymmetry even while price rose. The model measures the **conviction of participation** (volume-weighted squared thrust), not simply the direction of the last move.

How It Works

1. The energy model

For each closed bar the EA computes a kinetic-style energy from only two raw inputs — tick volume and the signed body:

- **Mass** $m = \text{TickVolume}$ (with a fallback of `1.0` when a broker reports no volume).
- **Velocity** $v = \text{Close} - \text{Open}$ (signed — positive for an up-bar, negative for a down-bar).
- **Energy** $e = m \times v^2$ — always ≥ 0 , with direction taken from `sign(v)`.

Squaring the velocity means a small number of large, high-volume bars dominate the reading far more than a long series of tiny bars — exactly the "force" signature the model is designed to detect.

2. Directional asymmetry

Over the last `EnergyWindow` bars, energy is pooled by direction and the normalised imbalance is computed:

```
E_up = sum of e[i] over bars that closed UP
E_dn = sum of e[i] over bars that closed DOWN

A    = (E_up - E_dn) / (E_up + E_dn)    → bounded in [-1, +1]
```

An `A` near `+1` means almost all the recent energy was expended pushing price up; an `A` near `-1` means the opposite; a value near `0` means the reservoirs are balanced.

3. Self-adaptive standardisation

Raw `A` is not comparable across symbols, timeframes, or volatility regimes, so it is standardised against its *own* recent behaviour. The EA keeps a series of `A` (one value per closed bar) and computes a running z-score over the last `AdaptLookback` values:

```
S = (A - mean_L(A)) / std_L(A)
```

All entry and exit thresholds are expressed in these adaptive standard-deviation (σ) units, so the model retunes itself as the energy distribution widens or narrows. There are **no fixed price or pip constants anywhere in the signal** — only ATR-based risk sizing uses absolute price distances.

Warm-up. The EA needs at least 20 stored `A` -values before it will trade, and it standardises against up to `AdaptLookback` of them. If the energy series is completely flat (standard deviation near zero), no signal is produced.

4. Entry rules

The EA rides a significant, persistent energy surplus once the standardised signal `S` pushes beyond its normal range:

- **Long** when `S ≥ +EntryThreshold` — energy skewed up beyond its typical range.
- **Short** when `S ≤ -EntryThreshold` — energy skewed down beyond its typical range.

Long and short use fully distinct logic. Only **one position per Magic number** is held at a time; re-entry is only evaluated on a later closed bar.

5. Exit rules

A position is closed when either of the following occurs:

- **Reservoirs re-balance:** `|S| ≤ ExitBand` — the energy edge is considered spent.
- **Opposite entry-grade signal:** a long is closed if `S ≤ -EntryThreshold`, and a short is closed if `S ≥ +EntryThreshold`.

If neither condition is met, the trade is left to run under its stop-loss and take-profit.

6. Risk management

Risk is dynamic and volatility-scaled using the Average True Range (ATR) of the recently closed bar:

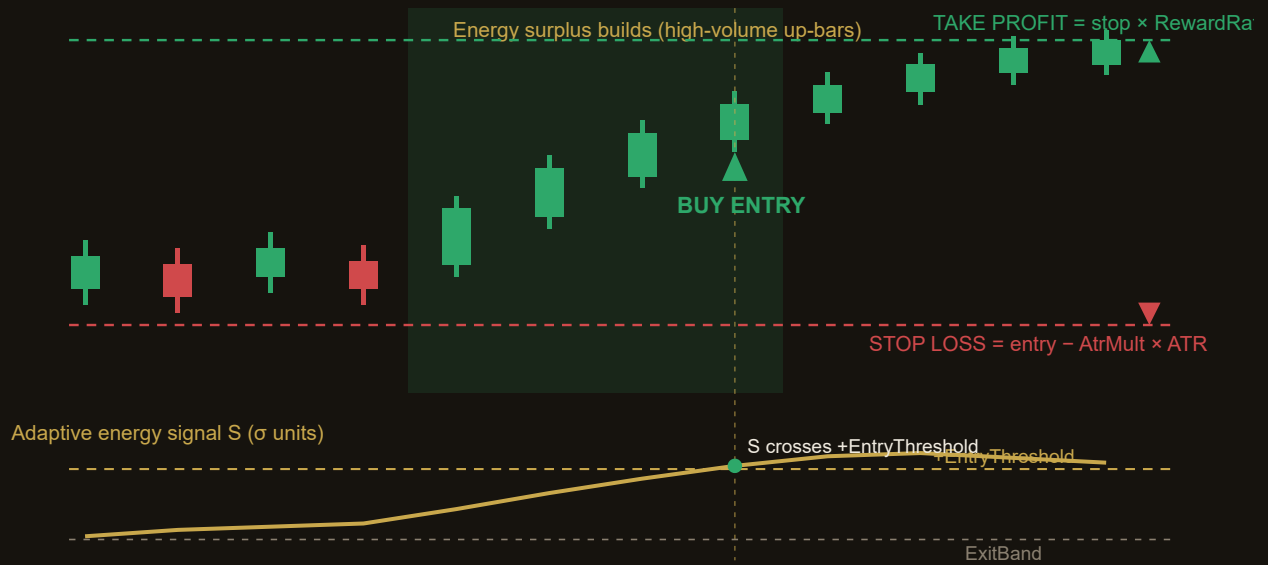
- **Stop-loss distance** = `AtrMult × ATR`.
- **Take-profit distance** = stop distance `× RewardRatio`.

Because the stop and target both scale with ATR, position risk automatically adapts to the instrument's current volatility rather than relying on a fixed pip value.

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.

Directional Energy Asymmetry — long setup



Illustrative example only. Actual market behaviour varies.

Reading the illustration

A run of high-volume up-bars pours energy into the up-reservoir, so the directional asymmetry A rises. Once standardised against its own recent range, the signal S climbs above $+EntryThreshold$ — a **long**

is opened. The stop is placed $AtrMult \times ATR$ below entry and the take-profit at $RewardRatio$ times that distance above. The trade is closed if the energy edge is spent ($|S| \leq ExitBand$), if the opposite entry-grade signal appears, or by the stop/target.

Parameters

Parameter	Default	Description
EnergyWindow	20	Number of bars over which bar energy is pooled into the up/down reservoirs. Range 6–60, step 2. Smaller = more reactive; larger = smoother.
AdaptLookback	120	Lookback (in closed-bar A-values) used for the running z-score that standardises the asymmetry. Range 40–300, step 10. Larger = more stable adaptive baseline.
EntryThreshold	1.2	Entry trigger in adaptive standard-deviation (σ) units. Long when $S \geq +\text{value}$, short when $S \leq -\text{value}$. Range 0.5–3.0, step 0.1. Higher = fewer, stronger signals.
ExitBand	0.3	$ S $ band (σ units) within which the reservoirs are treated as re-balanced and the position is closed. Range 0.0–1.5, step 0.1.
AtrPeriod	14	Period of the ATR used for volatility-scaled risk sizing. Range 7–40, step 1.
AtrMult	2.0	Stop-loss distance as a multiple of ATR (stop = AtrMult \times ATR). Range 0.5–4.0, step 0.1.
RewardRatio	1.6	Take-profit distance as a multiple of the stop distance (TP = stop \times RewardRatio). Range 0.5–5.0, step 0.1.
Lots	0.10	Fixed trade volume in lots. Range 0.01–1.0, step 0.05. Size to your account risk.
Magic	8821	Magic number identifying this EA's positions. Use a unique value per chart/instance so position management stays isolated.

Recommended Settings

The defaults above are a balanced starting point. Because every signal threshold is expressed in adaptive σ units, the strategy is designed to travel reasonably well across symbols and timeframes without hand-tuning fixed price levels.

- **Symbol:** Liquid instruments with meaningful tick-volume activity (major FX pairs, index CFDs). Reliable volume matters because it is the "mass" term in the energy model.
- **Timeframe:** H1 is the reference timeframe; M15 through H4 are reasonable. Lower timeframes react faster but carry more noise.
- **EntryThreshold:** Raise toward 1.5–2.0 for fewer, higher-conviction entries; lower toward 0.8–1.0 for more frequent trading.
- **AtrMult / RewardRatio:** Widen `AtrMult` for choppy instruments; adjust `RewardRatio` to match how far your instrument typically trends after a surge.

Tip: Always run a walk-forward backtest in the MT5 Strategy Tester on your target symbol and timeframe before going live. Confirm that the broker supplies usable tick volume — if volume is flat or synthetic, the energy signal degrades toward a plain body-move measure.

How to Install on MetaTrader 5

- 1 Copy `DirectionalEnergyAsymmetry.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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