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Maximize Your Profits

Efficiency Gated Breakout

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Trend-Following Breakout	H1 / H4	www.algobot.live

Overview

Efficiency Gated Breakout is a Donchian-style channel breakout that only trades when the market is genuinely trending. Most breakout systems suffer from a single weakness: in a sideways, choppy range price pokes above the recent high and immediately reverses, handing the trader a string of false breaks. This strategy addresses that directly by placing a *regime filter* in front of every signal — the **Kaufman Efficiency Ratio (ER)**.

The Efficiency Ratio measures how much straight-line progress price made relative to the total distance it actually travelled: `ER = |net travel| / |total path|` over a lookback window. A reading near **1.0** means a clean, one-directional move; a reading near **0.0** means the market churned back and forth and went nowhere. By requiring ER to clear a threshold before any breakout is allowed, the EA skips the ranges where false breaks live and only engages when momentum is efficient.

On top of that gate, three classic filters refine each entry: an **EMA baseline** enforces trend agreement, an **RSI cap** blocks chasing an already over-extended spike, and the **ATR** drives the stop-loss, take-profit, and an automatic move to breakeven. The EA is single-timeframe and acts on **closed bars only** — no repainting, no intrabar noise — and holds at most one position per magic number at a time.

How It Works

The Regime Gate — Efficiency Ratio

On every newly closed bar the EA computes the Efficiency Ratio over the last `ErPeriod` bars. If `ER < ErThreshold` the bar is discarded outright — no channel is even checked. This is the core of the strategy: it refuses to trade choppy, mean-reverting conditions and waits for the market to commit to a direction.

```
ER = |close[now] − close[now − ErPeriod]|
     ─────────────────────────────────────
     Σ |close[k] − close[k−1]|   (over ErPeriod bars)
```

Entry Logic

Once the efficiency gate passes, the EA evaluates a prior-N **Donchian channel** built from the highest high and lowest low of the `BreakoutPeriod` bars *preceding* the signal bar (the breakout bar itself is excluded). A trade is opened only when all conditions align on the just-closed bar:

- **Long:** close breaks *above* the prior-N highest high, *and* close is above the `TrendPeriod` EMA baseline, *and* RSI is below `RsiCap` (not over-bought).
- **Short:** the exact mirror — close breaks *below* the prior-N lowest low, *and* close is below the EMA, *and* RSI is above `100 − RsiCap` (not over-sold).

> **Why three confirmations?** The Efficiency Ratio confirms the market is *moving*; the EMA confirms it is moving *in the direction of the breakout*; and the RSI cap prevents entering after price has already stretched too far, where the reward-to-risk of a fresh entry is poor. All three must agree, so entries are deliberately selective.

Exit Logic — SL, TP & Breakeven

Risk is defined entirely in terms of volatility using the ATR of the closed bars:

- **Stop-loss** is placed `SlAtrMult × ATR` away from entry.
- **Take-profit** is placed `TpAtrMult × ATR` away from entry (a 1.5 / 3.0 default gives a 2:1 reward-to-risk target).
- **Automatic breakeven:** once price has run `BeAtrMult × ATR` in the trade's favour, the stop is moved to the entry price, removing the initial risk from the position. Trade management runs on every closed bar, even before there is enough history to open new trades.

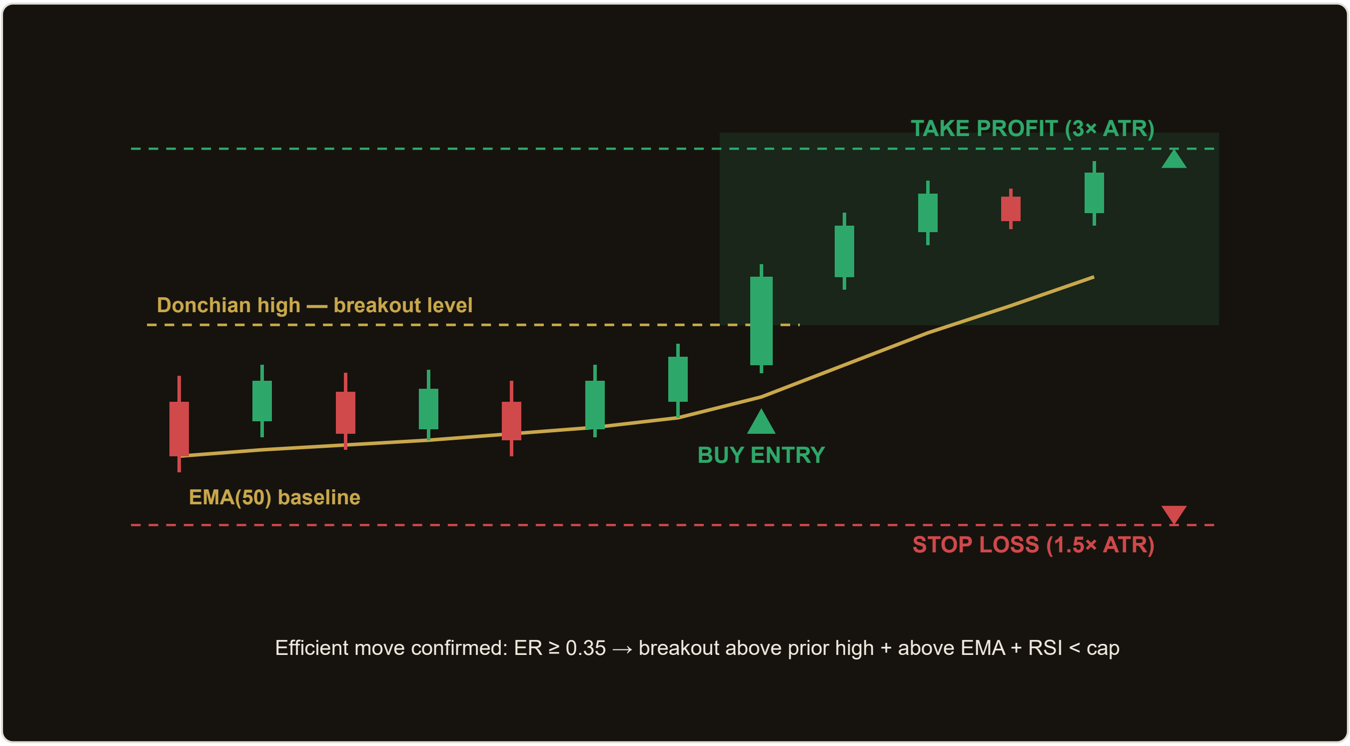
Execution Discipline

- **Closed-bar only:** the EA acts once per freshly opened bar, reading indicator values at shift 1 (the last fully formed bar). This eliminates intrabar repainting.

- **One position per magic:** the EA never stacks — while a trade tagged with its magic number (`7420`) is open, no new entry is taken.
- **History guard:** the EA waits until enough closed bars exist to evaluate every filter with margin before it will open a trade.

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
ErPeriod	`10`	Lookback for the Kaufman Efficiency Ratio, in closed bars. Range 5–30, step 1. Shorter reacts faster to fresh moves; longer demands sustained efficiency.
ErThreshold	`0.35`	Minimum Efficiency Ratio required to allow a breakout (0 = pure noise, 1 = perfectly straight move). Range 0.20–0.60, step 0.05. Higher = stricter regime filter, fewer but cleaner trades.
BreakoutPeriod	`20`	Donchian channel length — the number of prior bars whose highest high / lowest low define the breakout level. Range 10–60, step 5.
TrendPeriod	`50`	Period of the EMA baseline that enforces trend agreement (longs above it, shorts below). Range 20–200, step 10.
RsiPeriod	`14`	RSI lookback used for the over-extension filter. Range 7–21, step 1.
RsiCap	`72`	Upper RSI limit for longs (mirrored as 100 − RsiCap for shorts). Blocks chasing an already-stretched move. Range 60–85, step 1.
AtrPeriod	`14`	ATR lookback driving the stop, target, and breakeven distances. Range 7–21, step 1.
SlAtrMult	`1.5`	Stop-loss distance as a multiple of ATR from entry. Range 0.5–3.0, step 0.1.
TpAtrMult	`3.0`	Take-profit distance as a multiple of ATR from entry. Range 1.0–6.0, step 0.5. Default 3.0 vs 1.5 stop ≈ 2:1 reward-to-risk.
BeAtrMult	`1.0`	Favourable move (in ATR multiples) required before the stop is pulled to breakeven. Range 0.5–3.0, step 0.5.
Lots	`0.10`	Fixed order volume in lots. Range 0.01–1.0, step 0.05.
Magic	`7420`	Magic number identifying this EA's positions. Used for the one-position-per-magic rule and trade management; keep it unique per chart.

Recommended Settings

The strategy is designed for liquid, trending instruments where breakouts carry follow-through. It performs best where the Efficiency Ratio gate has meaningful moves to confirm rather than constant range-bound noise.

- **Symbols:** major FX pairs (EURUSD, GBPUSD, USDJPY, AUDUSD) and other liquid, trend-prone markets.

- **Timeframe: H1** or **H4** — long enough for breakouts to develop cleanly and for ER to be meaningful, while still giving regular signals.
- **Regime filter:** keep `ErThreshold` at 0.35 as a balanced default. Raise toward 0.45–0.50 on noisier pairs to demand stronger trends; lower toward 0.25–0.30 to trade more frequently.
- **Risk:** the 1.5 / 3.0 ATR stop/target keeps a 2:1 target. Size `Lots` conservatively so a full stop is a small fraction of account equity.

Example — EURUSD H1, default settings

After a quiet range, EURUSD begins a clean push higher. The Efficiency Ratio over the last 10 bars rises above 0.35, confirming the move is efficient. On the next closed bar price breaks above the highest high of the prior 20 bars, closes above the 50-EMA, and RSI reads 63 (below the 72 cap). A long is opened with the stop 1.5× ATR below and the target 3.0× ATR above. Once price advances 1.0× ATR in profit, the stop jumps to breakeven — from that point the trade cannot lose.

Tip: Because entries require the Efficiency Ratio, EMA, and RSI to all agree, this EA trades selectively and can sit idle through choppy sessions — that inactivity is by design. If you want more frequent signals, lower `ErThreshold` and/or shorten `BreakoutPeriod`, and re-optimise on a backtest before going live.

How to Install on MetaTrader 5

1. Copy `EfficiencyGatedBreakout.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: To edit or recompile the source, place `EfficiencyGatedBreakout.mq5` in `MQL5\Experts\`, open it in MetaEditor, and press **Compile (F7)** to produce the `.ex5`. Always validate on a demo account and in the Strategy Tester before trading live.

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.