

# Impulse Efficiency Pullback

Expert Advisor Documentation

## PLATFORM

MetaTrader 5 (MT5)

## TYPE

Momentum Continuation

## TIMEFRAME

M15 – H1

## WEBSITE

[www.algotbot.live](http://www.algotbot.live)

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## Overview

**Impulse Efficiency Pullback** is a pure price-action and momentum continuation strategy that uses **no indicators whatsoever**. Instead of relying on a library oscillator or moving average, it measures momentum directly from raw bar data using a hand-rolled metric called *path efficiency*.

The core idea is simple and intuitive: strong trends move in clean, one-directional thrusts — they cover a lot of net ground without much back-and-forth. The EA quantifies exactly that, detects a genuine impulse leg, then patiently waits for a **shallow** pullback before joining the move on the resumption bar. Stops and targets are taken straight from market structure, never from a smoothed indicator.

Because every bar reference uses the chart's primary timeframe, the EA is timeframe-agnostic and runs on whatever period the chart selects. It was designed with momentum-rich intraday FX and index trends in mind — for example EURUSD or US100 on the M15–H1 range — but no timeframe is ever hardcoded.

# How It Works

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## 1. The Efficiency Gauge

For a window of the last `ImpulseLookback` completed bars, the EA computes *path efficiency* — how much net ground price covered (displacement) versus how far it actually travelled along its zig-zag path:

$$\text{efficiency} = |\text{close}[\text{now}] - \text{close}[\text{N ago}]| / \sum |\text{close} - \text{prevClose}|$$

- A value near **1.0** means a clean, one-directional thrust with little overlap — a genuine impulse leg.
- A value near **0** means choppy, going-nowhere noise where price travelled far but ended up where it started.

This is raw price geometry only — no ATR, no smoothing, no indicator handles.

## 2. Detecting an Impulse

When the EA is flat and idle, it scans the most recent window. If the efficiency meets or exceeds `EfficiencyMin`, an impulse is confirmed and its High/Low envelope is recorded:

- Net **up** displacement → a **bullish** impulse → the EA begins waiting for a long.
- Net **down** displacement → a **bearish** impulse → the EA begins waiting for a short.

## 3. Waiting for a Shallow Pullback

After an impulse, price typically drifts back for a few bars. The EA tracks the pullback extreme (the lowest low for a long setup, the highest high for a short setup) and measures the retracement against the impulse range. If price retraces deeper than `MaxPullbackFrac` of the impulse range, the thrust is considered failed and the setup is **abandoned**. A shallow pullback keeps the setup alive.

**Why shallow only?** A deep retracement usually means the impulse was a one-off spike rather than the start of a trend. By demanding a shallow pullback, the EA filters for continuation rather than reversal.

## 4. Entry on Resumption

The trade is triggered by a **resumption bar** that closes back through the prior bar's extreme in the impulse direction. The long and short rules are fully symmetric:

- **Long:** a completed bar closes *above* the previous bar's High.
- **Short:** a completed bar closes *below* the previous bar's Low.

If no resumption occurs within `MaxPullbackBars` bars, the setup expires and the EA returns to scanning. The EA never holds more than one position at a time per magic number.

## 5. Exit Logic — Stop & Target from Structure

Risk is taken straight from market structure rather than an indicator:

- **Stop loss:** placed just beyond the pullback extreme, with a buffer sized as `StopBufferFrac` × the impulse range. For longs the stop sits below the pullback low; for shorts, above the pullback high.
- **Take profit:** a reward:risk multiple of the actual stop distance, set by `RewardRiskRatio`.

If the computed risk distance is non-positive (structure already violated at entry), the trade is skipped entirely.

### Worked example (long)

Suppose an impulse range is 100 points and the pullback low sits at 1.10250. With `StopBufferFrac = 0.15`, the buffer is 15 points, so the stop is placed at 1.10235. If entry fills at 1.10285, the risk is 50 points. With `RewardRiskRatio = 1.8`, the take profit is set 90 points above entry at 1.10375.

## Bar Processing & Position Management

- **New-bar driven:** logic runs once per completed bar, never intrabar. The bar that just closed is evaluated at shift 1.
- **One setup at a time:** the EA resolves any pending setup before scanning for a new impulse, so a freshly detected impulse can only trigger on a genuinely later bar.
- **One position per magic:** no new entry is taken while a position with the EA's magic number is live.

## Strategy in Action

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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
ImpulseLookback	5	Number of completed bars that define the impulse window over which path efficiency is measured. Range 3–12, step 1.
EfficiencyMin	0.62	Minimum path efficiency (0–1) for the window to qualify as an impulse. Higher = stricter, cleaner thrusts only. Range 0.40–0.90, step 0.02.
MaxPullbackBars	4	Maximum number of bars the EA keeps waiting for a resumption after an impulse before abandoning the setup. Range 1–8, step 1.
MaxPullbackFrac	0.55	Deepest allowed retracement of the impulse range before the thrust is deemed failed and the setup is dropped. Range 0.20–0.85, step 0.05.
StopBufferFrac	0.15	Stop-loss buffer placed beyond the pullback extreme, expressed as a fraction of the impulse range. Range 0.0–0.60, step 0.05.
RewardRiskRatio	1.8	Take-profit distance as a reward:risk multiple of the stop distance. Range 1.0–4.0, step 0.2.
Lots	0.10	Fixed order volume (lot size) for each trade. Range 0.01–1.0, step 0.05.
Magic	4242	Expert magic number used to identify and manage this EA's own positions.

## Recommended Settings

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The defaults are a balanced baseline tuned for momentum-rich intraday trends. Use them as a starting point and tune to your instrument and timeframe.

- **Symbols:** trending instruments such as EURUSD or US100 (NASDAQ 100).
- **Timeframe:** M15 to H1, where clean impulse legs form most reliably.
- **Account:** test on a demo account first and confirm the default lot size suits your balance and risk tolerance.

**Tuning tips.** Raise `EfficiencyMin` (e.g. 0.70–0.80) to take fewer but cleaner trades in strongly trending markets; lower it for more frequent setups in choppier conditions. Tighten `MaxPullbackFrac` for stricter continuation, and increase `RewardRiskRatio` only if your instrument trends far enough to reach the more distant targets.

**Always backtest and optimise before going live.** Run the Strategy Tester across a representative date range and across your chosen symbol/timeframe before committing real capital. Parameters that work on one instrument may not transfer to another.

## How to Install on MetaTrader 5

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- 1 Copy `ImpulseEfficiencyPullback.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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