# Momentum Bot Specification Document

Overview

This document provides the detailed specifications for a trading bot that will execute trades on a 1 second chart basis. The bot's strategy is designed to optimize returns by capitalizing on the volatility of each second candle while minimizing risks associated with sharp market drops.

The bot is NOT RELATED TO PUMPS. But it can use major parts of the pump bot code. Therefore I hope for a reasonable price.

There is no chart UI required, only if there are no further costs you can use the UI of pump bot.

Base Trading Strategy

- **Trade Frequency**: On a per-second candle basis.

- **Entry Point: Check box to <u>choose</u> between "market order" OR "buy limit order" (slider same as pump bot)**

  `Market 1 →  [ ]  Limit 0 →  [ ]  Treshold: 4%`
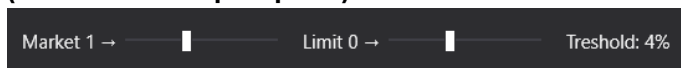
  - **A. Entry Point "market buy order"**: Purchase COIN at market price [market buy order] at the opening of each second candle. Means place a buy order at exactly candle opening which happens at millisecond 000 and goes on to ms 999. So first tick of every second candle

  - **B. Entry Point "Buy Limit" order:** Purchase COIN using buy limit order with THRESHOLD [X%] BELOW CLOSING PRICE OF CURRENT second candle. Means when current candle closes at millisecond 999, then place a buy limit order [X%] below this closing price of current 1 sec candle (assuming that next second candle will drop a bit and execute the buy limit order)

    B2: incremental buy limit orders: placing up to 5 buy limit orders below closing price of current candle, each with an incremental increase of the buy limit threshold.

Code for all the orders types is already existing in pump bot. Only the logic of second candle opening and closing needs to be added.

- **Exit Point**:

  - **A**. Exit Point "market sell order": Sell COIN at the market price at the closing of the same second candle.

  - **B**. Exit point "buy limit sell order" (TPs as pump bot): Sell COIN at TPs above opening price. Eg same as pump bot, 5 TPs. When bot opens buy position, it immediately places 5 TPs at defined TP thresholds. Same code as pump bot.

Aexit and Bexit can be mixed with Aentry and Bentry:

Aentry but with Bexit or Aexit. Or Bentry with Aexit or with Bexit. Reason: so far its unclear which strategy works best

HARD STOP - Risk Management: Avoiding Sharp Drops

A. Cumulative Return: A running total of the profits and losses from each trade, which gives us an ongoing total of the bot's performance.

SMA of Cumulative Returns: track the total profit or loss over time and apply a Simple Moving Average (SMA) to these cumulative figures. The SMA smooths out short-term fluctuations and provides a view of the longer-term trend in your trading performance.

Risk Management: stop trading if the cumulative return falls below the SMA, which would indicate a significant and sustained downturn in performance relative to the historical average.

Characteristics: This method is less reactive to immediate market movements and more focused on general trends, potentially avoiding the noise of short-term volatility.

B. Incremental Return: change in return from one trade to the next (from one candle to the next, in your case)

Approach: Instead of looking at the overall cumulative return, measure the change in return from one trade to the next (from one candle to the next, in your case).

Risk Management: stop trading if the returns decrease consistently over a predefined number of periods, indicating a streak of losing trades.

Characteristics: This method is more sensitive to immediate price action and can react quickly to consecutive losses, potentially avoiding continued trading during a downturn.

In essence, the SMA of cumulative returns provides a smoothed metric of overall performance over time, which could help in avoiding larger, more sustained drops in the market. On the other hand, tracking the incremental change of returns is a way to monitor immediate performance from trade to trade, allowing for quicker responses to a series of losses.

Combining Both Approaches A and B:

combine both methods to benefit from their different perspectives:

Use the incremental change of returns to stop trading after a certain number of consecutive losses, protecting from rapid downturns.

Use the SMA of cumulative returns to assess longer-term trends and avoid periods when the trading strategy underperforms over a more extended period.

In bot settings, this would involve having parameters for both methods:

For SMA: Window size for SMA & threshold for stopping trading based on SMA crossover.

For Incremental Changes: Number of periods to track, threshold for the acceptable decrease in returns before stopping trading.

C. Stop Loss:

Hard Stop Loss (HSL): fixed value below opening price

Trailing Stop Loss (TSL): sliding stop loss always X% below highest market price of coin since entry. Only moving to upside, but not to the downside. Example: if TSL is 10% and highest price was 1, TSL is moving up to 0.9 even if price of COIN goes down to 0.91. Stop doesn't move 10% below 0.91, but only 10% below the HIGHEST coin price since entry.

D. **Maximum Drawdown:** Define a maximum percentage or absolute value from a peak in equity. If the drawdown exceeds this value, halt trading.
E. **Consecutive Losses:** Stop opening new trades after a certain number of consecutive losing trades.
F. **Volatility-Based Stops:** Measure market volatility using indicators like the "Average True Range" (ATR) of each second candle and halt trading if AVERAGE VOLATILITY (SMA) of a predefined amount of candles (eg 10 candles) goes below a predefined threshold.
G. **Time-Based Exits:** Stop trading after a certain time has elapsed without significant profits, which could indicate the strategy is not effective under current market conditions

Trade Resumption Rules:

- **After Positive Trend Reversal**: Trading may resume when the cumulative return crosses back above the SMA and/or incremental return for [Z] seconds or after a set number [W] of positive-return candles.

Coin Pick Strategy

- Using same code for Telegram and Discord Scraper. 1to1

- When any coin name is sent on Telegram or Discord, above momentum bot is activated

This is just the basis. I am thinking of further strategies to enter the market (eg when a coin momentum starts), but I need to develop methods how to measure that. So something sophisticated like that will come later in case the whole bot even works. Until then I will just manually open the coin or just send a coin name via Telegram (in case I am not at home but see a coin start to run up)

REQUIRED INPUT FIELDS IN SETTINGS

Trading Pair: The cryptocurrency pair to be traded (e.g., COIN/USDT).

Trading Frequency: Interval at which the bot will execute trades (e.g., every second).

Capital Allocation: Amount of capital allocated per trade or total capital for trading.

SMA Window Size: Number of periods over which the SMA of cumulative returns is calculated.

Sustained Drop Periods: Number of consecutive periods the cumulative return must be below the SMA to signal a stop in trading.

Incremental Returns Periods and % to stop trading if dropped below

Consecutive Loss Amount

Time for Time based exit

True Range threshold in % to stop trading if drops below, periods for SMA of true range,

Stop-Loss Percentage: Percentage below the buy price at which a stop-loss order is placed to limit losses on a trade.

Trailing Stop Loss conditions.

Profit Target Percentage: Percentage above the buy price at which a sell limit order is placed to secure profits.

Resume Trading Condition: Criteria for when trading should resume after a pause, which could be based on time elapsed, positive price movements, or SMA crossover.

Maximum Drawdown Percentage: Maximum allowable percentage drop in the cumulative PnL from a peak before the bot pauses trading.

Logging Level: Degree of detail for logging bot activity (e.g., errors, warnings, info, debug).

Emergency Stop: A manual override to stop all trading activity immediately.