

# Modified PMMCandles Strategy

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## Strategy Overview

The **Modified PMMCandles** strategy uses passive market making with dynamic risk management using candlestick data. Key components include:

- **Dynamic Spread Adjustment:** Spreads automatically adjust based on recent volatility:

$$\text{Dynamic Spread} = \max \left( \text{min\_spread}, \min \left( \text{max\_spread}, 0.5 \times \frac{\text{High}_t - \text{Low}_t}{\text{MidPrice}} \right) \right)$$

This ensures competitive pricing while protecting against adverse selection during volatile periods.

- **Position Sizing:** Order sizes are limited to 1% of available balances for risk control:

$$\text{Buy Amount} = \min \left( \text{base\_amount}, 0.01 \times \frac{\text{Quote Balance}}{\text{RefPrice}} \right)$$

$$\text{Sell Amount} = \min (\text{base\_amount}, 0.01 \times \text{Base Balance})$$

- **Technical Indicators:** Incorporates RSI and SMA from 1-minute candles (length=30) for potential future enhancements.

## Why It Works

- **Volatility-Responsive:** Spreads widen during high volatility (protecting against rapid price movements) and tighten in stable conditions (capturing more trades)
- **Risk-Aware Design:** Multiple safeguards including:
  - Budget checking before order placement
  - Position size limits
  - Profit tracking for performance monitoring
- **Transparent Operations:** detailed status reporting includes:
  - Account balances
  - Active orders
  - Cumulative profit
  - Candlestick data with indicators

## Key Advantages

Feature	Benefit
Dynamic spread adjustment	Automatically adapts to market conditions
1-minute candle analysis	Provides timely market insights
Order refresh every 15s	Maintains current market alignment
Budget enforcement	Prevents over-leveraging
Profit tracking	Enables performance monitoring

## Possible Future Enhancements

- Incorporate stop-loss mechanisms using candle patterns
- Optimize refresh rate based on volatility