



30-Minute VWAP Methodology

Version 1.6

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History of Amendments to the Rules and Regulations

Date (YYYY-MM-DD)	Description
Effective 29/11/2023	Release of Version 1.0
Effective 22/03/2024	Release of Version 1.5 - Updated Product Naming Conventions
Effective 22/04/2025	Release of Version 1.6 - Updated Product Naming Conventions

1 Introduction

Blocksize produces the 30-Minute VWAP, formerly CLOSING PRICES, Data Feed as part of its product Blocksize Market Data, a comprehensive offering of crypto market information. All data points are converted and delivered in U.S. Dollars, Euros, and various other currencies for an expanding set of cryptocurrencies and other digital asset classes.

The 30-Minute VWAP Data Feed is designed to serve as a transparent and independent pricing source that promotes the functioning of efficient markets, reduces information asymmetries among participants, facilitates trading, and accelerates the adoption of cryptocurrencies and digital assets as an asset class with the highest standards.

The 30-Minute VWAP Data is an essential tool for financial market participants. They are used for a variety of purposes, including pricing securities, executing trades, managing risk, and conducting research.

1. Compliance: Closing prices are used by compliance tools to monitor the compliance with best-execution-policies, market abuse regulation as well as Market Conformity Checks (MCC), etc.
2. Performance Evaluation: The closing price is the most widely used benchmark for evaluating the performance of a security over a specific trading day. It serves as a reference point to compare the day's performance against other days, weeks, months, or years.
3. Index Calculation: Closing prices are used to calculate the values of various market indices.

4. **Portfolio Valuation:** The closing price is used to determine the net asset value (NAV) of mutual funds, exchange-traded funds (ETFs), and other investment portfolios. NAV is a crucial metric for investors to understand the value of their holdings.
5. **Trading Strategies:** Closing prices are used by traders to develop and implement various trading strategies. For instance, technical analysts use closing prices to identify trends and patterns in a security's price movement.
6. **Risk Management:** Closing prices are used to calculate various risk measures, such as volatility and value at risk (VaR). These measures help financial institutions and investors assess and manage their exposure to market risks.
7. **Settlement and Clearing:** Closing prices are used to settle and clear transactions in the financial markets. This ensures that buyers and sellers receive the correct value for the securities they have traded.
8. **Derivatives Pricing:** Closing prices are used to price derivative contracts, such as options and futures and might be used to trigger events in smart contracts.
9. **Benchmark for Contracts:** Closing prices are often used as benchmarks for various contracts, such as employee stock option plans (ESOPs) and performance-based compensation agreements.

The 30-Minute VWAP Data Feed is calculated using a transparent and robust methodology with a clear framework of policies and procedures adhering to international best practices.

This methodology is governed by the Blocksize Data Committee and is part of the Blocksize Manifest (see Appendix A.1) to ensure that the price feeds serve as a source of transparent and reliable pricing.

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2 Calculation Algorithm

2.1 Definitions

Blocksize defines the following elementary terminology.

Trade Event: We use this term for the data about a trade which is observed by the Blocksize software on an exchange. In the context of the closing price algorithm below, the data that defines a trade is its price, volume, and its timestamp. To denote a trade event, its price, size, and timestamp, respectively, we use the symbols ϵ, p, v, t :

$$\epsilon = \{p, v, t\}$$

Closing Times: The closing times considered are 00:00:00 UTC ([hours]:[minutes]:[seconds]) and multiples of 00:30:00 (thirty minutes) thereafter. For example, 00:30:00 UTC, 01:00:00 UTC, 01:30:00 UTC, etc.

Closing Price Data Interval: Trade events observed within the 00:30:00 (thirty minutes) interval preceding the *closing times* defined above are taken into account for the evaluation of the Closing Prices that enter the Closing Price Data Feed.

2.2 Algorithm

The calculation of the Closing Prices in the 30-Minute VWAP product for a given instrument (see Appendix A.2 for an up-to-date list) are done as follows. Here and in the remainder of this document, we use the *italic font* to signal a reference to our definitions in Section 2.1.

1. The algorithm is executed 00:00:05 (five seconds) after the *Closing Times*, because some of the accepted exchanges (see Appendix A.3 for an up-to-date list) report *trade events* with a small delay.
2. For every exchange E on which *trade events* were observed within the *Closing Price Data Interval*, the last *trade event* before the *closing time* is considered. For every *closing time* t , a set $\mathcal{S}(t)$ of prices, volume, and timestamps is obtained:

$$\mathcal{S}(t) = \{\epsilon^E; E \in \Omega\}$$

Here, we used Ω to denote the set of all exchanges with *trade events*.

3. The closing prices $P_C(t)$ distributed are computed as the volume-weighted average price of the *trade events* in the set $\mathcal{S}(t)$ as follows:

$$P_C(t) = \sum_{E \in \Omega} \frac{P_E \times v_E}{V}$$

Here, we used the shorthand $V = \sum_{E \in \Omega} v_E$ to denote the total aggregated size of the *trade events* in the set $\mathcal{S}(t)$.

3 Data Contingency Rules

The following contingency rules are followed to address situations where data is delayed, missing, or unavailable due to periods of low liquidity such as extraordinary market circumstances or outside factors beyond the control of Blocksize.

1. If observable *trade events* from an accepted exchange are unable to be collected due to technical problems specific to the accepted exchange during the *closing price data interval* (such as malformed data, cf. Section 4.), the *trade events* are excluded from the calculation of the specific instance of the given 30-Minute VWAP Data Feed.
2. If no *trade events* from a specific accepted exchange exist during the *closing price data interval*, the value of the 30-Minute VWAP Data Feed will rely on the on various other accepted exchanges for its calculation as described in Section 2.
3. In the highly unlikely event that none of the accepted exchanges in Appendix A.3 report *trade events*, the 30-Minute VWAP Data Feed will report the closing price of the previous *closing time*.

4 Data Exclusion Rules

All observable *trade events* from accepted exchanges are verified for integrity. If potential errors in the data are detected, the data input is not included in the calculation of the 30-Minute VWAP Data Feed. If *trade events* are incomplete – for instance, if a volume or a timestamp is missing – they are not considered. If errors emerge, that cannot reliably be identified by our software implementation, the next steps are to be determined by the expert judgment of the Blocksize Data Committee to continue including or excluding the data from the accepted exchange until the anomaly is resolved. Any exercise of expert judgment must be approved by staff members.

5 30-Minute VWAP Data Quality Assurance

All observable transactions from accepted markets are evaluated using algorithmic anomaly and outlier detection methods. If potential errors or anomalies in the transaction data are detected, it is not included in the calculation of the 30-Minute VWAP Data Feed.

Complementary to the algorithmic anomaly and outlier detection approaches, the Blocksize Data Committee weighs in its expert judgment to maintain and improve the data quality of the 30-Minute VWAP Data Feeds. The Data Committee may decide to include the transaction data from new sources that are vetted for data integrity and quality. Alternatively, the Data Committee may decide to exclude previously accepted markets that started to deliver erroneous or anomalous data. Any exercise of such expert judgment must be approved by staff members.

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