



Xena Exchange

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.BTC3_TWAP Index Specification

Effective since **24 April**

The full list of the documents governing the rules of executing transactions related to Xena Listed Perpetuals is located [here](#).

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Outline

The .BTC3_TWAP index is used as the mark index of the XBTUSD Listed Perpetual. The index is calculated as the average price of Bitcoin to USD on three exchanges – Bitstamp, Coinbase Pro, and Kraken – additionally smoothed over time.

Specifications

In the formulas below, $round(value, decimal\ places)$ rounds “half up” (e.g., $round(1.44, 1) = 1.4$, and $round(1.45, 1) = 1.5$).

1. First, the .BTC3 index is calculated as follows:
 - 1.1. Xena Exchange retrieves the price of the last market trade using the public APIs of the exchanges:

Exchange	Symbol
Bitstamp	BTC/USD
CoinBase Pro	BTC/USD
Kraken	XBT/USD

- 1.2. Information about the latest price is collected every second and stored on the Xena Exchange platform.
- 1.3. Every second, the prices at calculation time are used to define the index value:

$$.BTC3 = round(1/3 \text{Bitstamp price} + 1/3 \text{CoinBase Pro price} + 1/3 \text{Kraken Price}, 1)$$

- 1.3.1. The time the snapshots are taken is defined by the internal clock of the Xena Exchange platform.



1.3.2. If, at the moment of a snapshot, there is no connection available to one or more of the source exchanges, the last stored value received from this exchange is used.

1.4. .BTC3_TWAP is calculated as a moving average over the last 30 values of .BTC3:

$$.BTC3_TWAP_i = \text{round}\left(\frac{.BTC3_i + .BTC3_{i-1} + \dots + .BTC3_{i-29}}{30}, 1\right)$$

1.4.1. If, due to any reasons, some of the last 30 10-second values of .BTC3 are missing, only the existing values are used:

$$.BTC3_TWAP_i = \text{round}\left(\frac{.BTC3_i + .BTC3_{i-1} + \dots + (.BTC3_{i-15} \text{ is missing}) \dots + .BTC3_{i-29}}{29}, 1\right)$$

1.4.2. If all last 30 values of .BTC3 are missing, the value of .BTC3_TWAP equals its last known value.