US Options Trade Only Minute Bar Guide

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algoseek | the market data company

We provide research market data for machine learning and quantitative trading

CONTACT US

We are here to help you do great things with our market and reference data. For questions, feedback, and other concerns, you may reach our team of experts using the following contact information:

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INTRODUCTION

algoseek's Trade Only Minute Bar dataset for US Options on Equity, ETF, ETN, and ADRs is based on the top-of-book quotes (bids and asks) and all trades from the Options Pricing Authority (OPRA) feed, which includes the consolidated last sale and quotation information from the 16 option exchanges that the Securities and Exchange Commission has approved.

All Trade Only Minute Bar data files are organized into a single format feed where bars are ordered by the time. The entire trading session includes market hours from 9:30:00 to 16:15:00 EST.

MINUTE BAR CALCULATIONS

Excluded Trade Events

Please see the table below for the trade events that are excluded.

Table 1: Excluded Trades

Trade Condition	Description
A	Previously reported
B	Reported late and out of sequence
C	Transaction last reported and now canceled
F	Late report of opening and out of sequence
G	Transaction only one reported for day and is to be canceled
N	Transaction is at price agreed by floor personal
O	Cancel of stopped transaction
T	Benchmark trade

Event-based Bars

Options activity varies from contracts with multiple events per millisecond (e.g. SPY in-the-money Options), to contracts without any trades during the market hour.

algoseek's options bars are event-based, which means a bar is only created when there was at least one trade event during the bar period. If there is only one trade during the bar period, the event fields will have the same values. For example:

```
OpenTradePrice = HighTradePrice = LowTradePrice = CloseTradePrice
```

A bar will not be available for a Call+Strike or Put+Strike option if there is no trade event.

Underlying Quote Event

Table 2 describes logics for underlying quotes.

Table 2: Underlying Bid/Ask of the First and Last Event

Field	Description
UnderOpenBidPrice	Underlying security NBBO bid price at millisecond time of first option bid, ask, or trade event.
UnderOpenAskPrice	Underlying security NBBO ask price at millisecond time of first option bid, ask, or trade event.
UnderCloseBidPrice	Underlying security NBBO bid price at millisecond time of last option bid, ask, or trade event.
UnderCloseAskPrice	Underlying security NBBO ask price at millisecond time of last option bid, ask, or trade event.

There can be one or more of these events in a bar. Each bar will show the underlying ticker's bid/ask price at the millisecond time of the first and last events for the bar. If there is only one event in the bar then this data will be the same.

The bid/ask price is the NBBO price of the underlying asset at the millisecond time of the event.

DATA ORGANIZATION AND FILE FORMAT

algoseek provides Options market data in plain-text CSV files. Data files have fixed headers on top and rows of data corresponding to individual bars. Data is organized with one file per ticker per trading day per ticker and per option chain (ticker+expiration date). It means, for example, that Trade Only bars for all the AAPL call and put options for every strike on the expiration date March 3, 2020, for trading date February 27, 2020, are consolidated in one file. Due to the large dataset size, each CSV file is gzip-compressed, so the uncompressed data is on average 7 times larger than compressed.

Table 3 below provides the name, base event, default value, brief description, and data type for each data field (column) in Options Trade Only Minute Bar CSV file. Table column "Missing" indicates a default behavior in case the data field value is not present or cannot be calculated. The column value "Never" means that the data field value is always present.

Table 3: CSV File Fields Schema

Field	Base Event	Type (Format)	Missing	Description
Date	-	string (yyyymmdd)	Never	Trading date in yyyymmdd format

TimeBarStart	-	string (time)	Never	Start Time of the Bar. For minute bar format is HHMM. For second bar format is HHMMSS.
Ticker	-	string	Never	Symbol name
CallPut	-	string	Never	Option type (Call or Put) displayed as "C" or "P"
Strike	-	decimal	Never	Fixed price for buying or selling an option contract
ExpirationDate	-	string (yyyymmdd)	Never	Expiration date of option in yyyymmdd format
OpenTradePrice	Trade	decimal	Blank	Price of the first trade
HighTradePrice	Trade	decimal	Blank	Price of the highest trade
LowTradePrice	Trade	decimal	Blank	Price of the lowest trade
CloseTradePrice	Trade	decimal	Blank	Price of the last trade
UnderOpenBid Price	Under lying	decimal	Never	Underlying ticker's NBBO bid price at the time of OpenTradePrice.
UnderOpenAsk Price	Under lying	decimal	Never	Underlying ticker's NBBO ask price at the time of OpenTradePrice
UnderCloseBid Price	Under lying	decimal	Never	Underlying ticker's NBBO Bid price at the time of CloseTradePrice
UnderCloseAs kPrice	Under lying	decimal	Never	Underlying ticker's NBBO Ask price at the time of CloseTradePrice
VWAP	Trade	decimal	Never	Volume weighted average price
Volume	Trade	integer	Never	Total number of contracts traded
TotalTrades	Trade	integer	Never	Total number of trades

Time Range

The data starts from the Open Interest publications by the exchanges at 9:30 am to the last published information at 4:15 pm EST. Most options stop trading at 4 pm, while some indexes trade till 4:15 pm.

Bar Notes

Time Bar Start Format: One-second bar 130302 is from time greater than 13:03:01 to 13:03:02. One-minute bar 1104 is from time greater than 11:04 to less than 11:05.

Single Event: For bars with only one trade open/high/low/close price, size and time will be the same.

VolumeWeightPrice: a volume-weighted price is calculated as a sum of a dollar volume for all trades divided by the total number of shares traded

```
((Trade1_Shares x Trade1_Price) + (Trade2_Shares x Trade2_Price) +
                    ...) / TotalShares
```

APPENDIX A. FREQUENTLY ASKED QUESTIONS

Expiration Dates

The last trading days and actual expiration dates of options contracts can be viewed through the Options Industry Council (OIC) options expiration calendar. Simply replace **XXXX** in the following link with the year you need:
http://www.theocc.com/components/docs/about/publications/xcal**XXXX**.pdf

For example, options in the year 2015 can be found here:
http://www.theocc.com/components/docs/about/publications/xcal2015.pdf