



US Futures Multiple Depth Guide

version 2.2 (Jul 2021)



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

This document describes the format for algoseek's Futures Market Depth data from US exchanges. The data includes 10 levels of the order book for all bids and asks (including sizes).

The contract specifications such as underlying asset, the quantity of the asset or contract size, expiration months, delivery location, and the delivery date upon execution can be found on the US futures products list, which is available on the following link: <http://www.cmegroup.com/trading/products/>.

Market Depth Data

algoseek's service allows clients to query data by date for each trading session which spans an entire week. The dates of the session are cut using UTC time. For example, all messages with UTC timestamp for 2014-03-12 will be posted under the 2014-03-12 date.

It is also possible to have multiple snapshots for the same millisecond resolution of very actively traded instruments as updates are delivered upon completion of the incremental FIX batch book update transaction. The book snapshots allow the seamless carryover of the previous day's book into the new day past midnight in UTC. Hence, if a client wishes to download the session for the whole week, they will get a consistent book spanning the entire week.

DATA ORGANIZATION AND FILE FORMAT

algoseek provides Futures market data in plain-text CSV files. The first row of the CSV file is a fixed header, and then rows of data corresponding to individual events (see Table 1). By default, data is organized into one file per symbol per trading day. For example, all events for ticker GEH3 on Sep 9, 2019, are stored in one CSV file.

Due to the large data size, CSV files are gzip-compressed (having a csv.gz extension) with a compression ratio of about 8:1.

Table 1. Sample Futures Multiple Depth Data

Local Date	Local Time	Ticker	Side	Flags	Depth	L1 Price	L1 Size	L1 Orders	L2 Price	L2 Size	L2 Orders
------------	------------	--------	------	-------	-------	----------	---------	-----------	----------	---------	-----------



2019 0922	19000 0000	GEH3	B	1	2	98.490	1204	0	98.485	2973	0
2019 0922	19000 0000	GEH3	S	1	2	98.500	163	0	98.505	5479	0
2019 0922	19000 0116	GEH3	S	1	2	98.500	163	0	98.505	5480	0
2019 0922	19000 1217	GEH3	S	1	2	98.500	163	0	98.505	5483	0
2019 0922	19000 1224	GEH3	S	1	2	98.5000	163	0	98.505	5482	0
2019 0922	19001 6609	GEH3	S	1	2	98.500	163	0	98.505	5478	0
2019 0922	19001 6609	GEH3	S	1	2	98.500	163	0	98.505	5474	0
2019 0922	19001 6609	GEH3	S	1	2	98.500	163	0	98.505	5470	0

Note: SecurityID and data fields for levels 3-10 are not shown on the table.

Each row has 10 levels for Price, Size and Orders columns but there will only be data for the number of Depth levels. In means that if Depth = 5, then columns for levels 6-10 will be filled with zeros.

Table 2 (below) provides the name, description, and data type for each data field (column) in a Futures Multiple Depth dataset.

Table 2: CSV File Fields Schema

Field	Type (Format)	Description
UTCDate	string (yyyymmdd)	the month, day, and year that the transaction has been made
UTCTime	string (HHMMSSmmm)	the trade time in Coordinated Universal Time (UTC) format
LocalTime	string (yyyymmdd)	the trade time in Central Standard Time (CST) format
LocalDate	string (HHMMSSmmm)	the trade date based on the current local time
Ticker	string	the name of the instrument with a maximum of 20 characters
SecurityID	string	CME security identifier
Side	string	B (Buy) or S (Sell) side of the book



Flags	integer	may be implied (1) or regular book (0)
Depth	integer	number of levels being shown in the book for this instrument
L1Price	decimal	level 1 price
L1Size	integer	number of contracts on level 1
L1Orders	integer	number of orders on level 1
L2Price	decimal	level 2 price
L2Size	integer	number of contracts on level 2
L2Orders	integer	number of orders on level 2
L3Price	decimal	level 3 price
L3Size	integer	number of contracts on level 3
L3Orders	integer	number of orders on level 3
L4Price	decimal	level 4 price
L4Size	integer	number of contracts on level 4
L4Orders	integer	number of orders on level 4
L4Price	decimal	level 4 price
L4Size	integer	number of contracts on level 4
L4Orders	integer	number of orders on level 4
L6Price	decimal	level 6 price
L6Size	integer	number of contracts on level 6
L6Orders	integer	number of orders on level 6
L7Price	decimal	level 7 price
L7Size	integer	number of contracts on level 7
L7Orders	integer	number of orders on level 7
L8Price	decimal	level 8 price
L8Size	integer	number of contracts on level 8
L8Orders	integer	number of orders on level 8
L9Price	decimal	level 9 price
L9Size	integer	number of contracts on level 9
L9Orders	integer	number of orders on level 9
L10Price	decimal	level 10 price



L10Size	integer	number of contracts on level 10
L10Orders	integer	number of orders on level 10

The “Flags” field marks a regular or implied event. An Implied Quote is based on relationships between futures contracts. It is not the actual price of the Futures' bid or ask but is rather implied from another trade (e.g., as part of a spread). It is often away from the current regular bid or ask value. To learn more about implied orders, see for example <http://www.cmegroup.com/confluence/display/EPICSANDBOX/Implied+Orders>

The field “Depth” or the number of levels shown in algoseek’s Futures Multiple Depth dataset depends on the type of instrument. It may contain the value 1, 2, 5, or 10 wherein 10 is the maximum depth, the standard number of possible levels in all instruments. However, the field will be filled with 0 if a level is left unused.

TIMESTAMP AND MAINTENANCE PERIODS

Daily File

Each symbol has one file per contract on each trading day containing quotes, trades, open interest, settlement prices, etc. A trading day means UTC time from 00:00 to 24:00.

UTC Timestamps

The field “UTCTime” contains timestamps based on a 24-hour system and follows an HHMMSSZZZ format wherein HHMMSS represents 2-digit values for hours, minutes, and seconds, while ZZZ indicates a 3-digit millisecond value.

Local Timestamps

The field “LocalTime” reflects the current time in Chicago (CST). During winter, the local timestamp is adjusted to UTC –6 and is changed to UTC –5 during daylight saving time (DST). For example, an algoseek Futures timestamp of 181514415 is 18:15:14.415 UTC. During daylight saving time, this converts to 13:15:14.415 CST.