



QuantQuote
historical intraday stock data

Minute Market Data

Technical Data Summary

August 2012

INFORMATION IN THIS DOCUMENT IS PROVIDED IN CONNECTION WITH QUANTQUOTE™ PRODUCTS. EXCEPT AS PROVIDED IN QUANTQUOTE'S TERMS AND CONDITIONS OF SALE FOR SUCH PRODUCTS, QUANTQUOTE ASSUMES NO LIABILITY WHATSOEVER AND QUANTQUOTE DISCLAIMS ANY EXPRESS OR IMPLIED WARRANTY RELATING TO SALE AND/OR USE OF QUANTQUOTE PRODUCTS, INCLUDING LIABILITY FOR WARRANTIES RELATING TO FITNESS FOR A PARTICULAR PURPOSE, MERCHANTABILITY, OR INFRINGEMENT OF ANY PATENT, COPYRIGHT, OR OTHER INTELLECTUAL PROPERTY RIGHT.

QuantQuote may make changes to specifications and product descriptions at any time, without notice. QuantQuote reserves these for future definition and shall have no responsibility whatsoever for conflicts or incompatibilities arising from future changes to them.

The Intraday Market Data product series may contain design defects or errors known as errata which may cause the product to deviate from published specifications.

Please contact QuantQuote sales department or affiliated distributors to obtain the latest specification before placing your product order.

Copies of documents which have an ordering number and are references in this document, or any other QuantQuote literature may be obtained by emailing support@quantquote.com

Copyright © 2012, QuantQuote, Inc. All rights reserved.

Contents

Revision History	4
QuantQuote Minute Market Data	5
Overview	5
Data Format	5
Splits.....	6
Earnings.....	6
Dividends.....	7
Symbol Change Tracking	8

Revision History

Version	Description	Date
001	Initial release	May, 2005
002	Merged with Internal Document 3050-1.	December, 2008
003	Edited for external distribution through QuantQuote.	September, 2009
004	Expanded extrapolation section to include gaps. Copyrights updated.	May, 2011
005	Expanded earnings section to include details about extrapolated earning times.	August, 2011
006	Overview updated	January, 2012
007	Edited to reflect expanded data availability	August, 2012

QuantQuote Minute Market Data

Overview

The QuantQuote Minute Resolution Market Database contains data on all NASDAQ, NYSE, and AMEX securities from 1998 to the present. Numerous ETFs traded on NYSE ARCA are also included in the collection. Survivorship bias free lists of major indexes are maintained. For all trading days, data from 9:30AM to 4:00PM is available. When available, before and after hours quotes are also provided. Finally, an updated list of all trading days from the 1960's to the present day is maintained along with a list of historical stock market holidays and closures.

Our intraday data offers comprehensive dividend, splits, and earning announcement data which allow for rigorous quantitative analysis. The database is updated daily with data from multiple sources and is carefully cross checked. Multiple error correction algorithms are employed to filter out erroneous ticks and compensate for varying latency between multiple sources. Technical details regarding these algorithms can be found in Documents 3044-4, 3024-2, and 3068-5. While no database can be guaranteed to be perfect, the QuantQuote Minute database, in its current and previous forms, has been in development for nearly a decade and has over time, evolved to be extremely accurate. In the past fiscal year, bug reports have been very rare and when they occur, are fixed immediately.

The smaller data size compared to TickView and QuantQuote Second Resolution Market Data makes the minute data quicker to analyze without requiring extensive computational resources. Furthermore, minute data files are by default automatically adjusted for splits and dividends, meaning less work needs to be performed before this data can be used for financial analysis. As a result of its smaller size and lower resolution, minute data can also be offered at a lower price point making this a more cost effective solution for many customers who don't require high resolution data.

Data Format

By default, the data is provided in comma separated (CSV) format with separate files for each stock or ETF. Unix standard ASCII format encoding is used (e.g. no carriage returns). In addition to raw price data, minute resolution data files also provide comprehensive dividends, earnings, and splits information for each stock. The data is provided in the following format described below:

Date, Time, Open, High, Low, Close, Volume, Split Factor, Earnings, Dividends, Extrapolation

Date – This provides the date as an integer where 20100527 would represent May 27th, 2010.

Time – This gives the time as an integer where 1426 would represent 2:26PM EST.

Open – The open price.

High – The high price.

Low – The low price.

Close – The close price.

Volume – The trading volume during the interval. Note that it is extremely difficult to get accurate volume information. The volume is adjusted for splits so that the total value of shares traded remains constant even if a split occurs.

Split Factor – Multiplying the prices by this factor gives the actual price if splits were not taken into account.

Earnings – See description in the earnings section.

Dividends – This lists the amount of the dividend payment on the ex-dividend date. Please see the dividends section for more details.

Extrapolation – Oftentimes, the data available from the exchanges is not complete or includes flawed ticks. Sophisticated algorithms are used to automatically correct for these errors. A very basic description of the algorithms used and the meaning of the values in the extrapolation column are given in the extrapolation section. For QuantQuote branded products, our proprietary extrapolation data is not available unless specifically requested.

Splits

When a stock split occurs, the data is adjusted to reflect this so that the data is more or less continuous. If the stock price is 20 and then a 2:1 split occurs, bringing the price to 10, all data before the split date is divided by 2. The split factor data column is then multiplied by 2. The data thus reflects how much money an investor would expect to make by investing at the beginning of a period and selling at the end of the period without having to take split discontinuities into account. The true price of the stock on any day can be recovered by multiplying the listed price by the split factor. The open, high, low, close, volume, and dividend columns are all split-adjusted.

Earnings

When an earnings announcement occurs, stocks behave quite differently from regular trading periods. In particular, volatility can greatly increase and prices may be dictated by a separate set

of dynamics. For this reason, earnings data is provided to allow one to distinguish these special periods of trading. Because it is impossible to predict beforehand, we do not distinguish between “good” and “bad” earnings announcements. The earnings column contains an integer that gives the time of the earnings announcement (using a 24-hour clock). Sometimes, the exact time is not known. A time of 2500 indicates that the time of the announcement is not known. For announcements where the time is not provided, proprietary algorithms are employed to scan price data to predict the time of the announcements. A time of 759 indicates the announcement takes place sometime before regular market hours. Likewise, a time of 2001 indicates the announcement takes place sometime after regular market hours. If the announcement time is determined using our proprietary algorithms, values of 10759 and 12001 are used for before hours and after hours respectively. If no announcement is scheduled to take place on a particular day, the earnings column has a value of 0. On the day before an earnings announcement, the earnings column has a value that is the negative of the earnings time. This is used to identify the day before an earnings announcement.

Dividends

When a dividend occurs, the data is similarly adjusted in the past to be more or less continuous. Dividends are paid to all shareholders on record at the close of regular markets on the day before the ex-dividend day (The day before the ex-dividend date is also referred to as the Record Date in some literature). Thus, all shares purchased on the ex-dividend day are not entitled to the dividend payout. Because of this, share prices will typically drop by the amount of the dividend on the ex-dividend date. However, this does not represent a loss of equity because the owner of the stock during this period would receive a dividend payment to compensate for this drop. In effect, the shareholder sees no profit or loss due to dividends. For this reason, perform a dividend adjustment to keep prices continuous when a dividend is paid. If a stock gives out a 5 cent dividend on May 1, then all prices before May 1 are multiplied by a dividend factor which is equal to the following:

$$\frac{\textit{Close Price on Record Date} - \textit{Dividend Amount}}{\textit{Close Price on Record Date}}$$

Dividend adjustment affects the open, high, low and close columns. This formula ensures relative continuity between the record date and the ex-dividend date. It also ensures that the relative percentage increase and decreases in stock prices before the dividend payment remains constant.

The value of the dividend itself is stored in the dividend column. This dividend value is split adjusted, but the original price can be recovered by multiplying by the split factor.

Because of the nature of the dividend adjustment, previous dividends must also be dividend adjusted in the same fashion as the price data. Our volume information is also adjusted to keep Price · Volume a constant.

Symbol Change Tracking

QuantQuote minute resolution data has automated symbol change tracking. Thus, if a stock symbol changes for any reason, we automatically merge the old data with the data for the new symbol and make this change to all existing filenames and stocklists. The QuantQuote team tracks market events through collaboration with over a dozen trading firms and hedge funds. These special events include instances when trading of a particular symbol is halted (e.g. special announcements, SEC investigations, NASDAQ circuit breakers), and mergers and acquisitions activity.

If a symbol name is reused (for example, symbol AAA is traded from 1998-1999 and then delisted, but in 2004, another company is listed using symbol AAA), the QuantQuote ticker for the first symbol AAA will be changed to AAA.1 to avoid confusion between the two symbols.

If a symbol changes names, say from AAA to BBB, the QuantQuote ticker will always be the last traded ticker (in this case, BBB, unless BBB is reused again in which case it becomes BBB.1 or BBB.2).

