HD 2min

What's on this drive

This drive contains ORATS two-minute SMV historical data including monies, strikes, and summaries in gzip-compressed CSV format. The two-minute dataset spans from 2015 through September 2020.

Directory structure

Files are broken down into three types: summaries (one row per ticker), monies (one row per expiration), and strikes (one row per strike). Every file is in a .csv.gz format to reduce storage costs. Each date directory contains one file per underlying symbol with all records for that trading day. Below is a brief description of each type and what you can expect to find.

- Summaries: One row per ticker, providing constant-maturity (10, 20, 30, 60, 90 days; 6-month; 1-year) interpolated implied volatilities at various deltas (5, 25, 50, 75, and 95 call delta), along with additional derived metrics.
- Monies: Each expiration is one row and provides information such as expiration date, dividend yield, residual yield (to make put-call parity match up), and implied volatilities from 0 to 100 delta. Earnings effects and slopes by expiration can also be found here.
- Strikes: Each row in the strikes file lists information about a single standard strike. At each strike are the bid-ask quotes of option prices, bid-ask quotes of implied volatilities, theoretical option prices, theoretical implied volatilities, and

all first-order greeks plus gamma. Since ORATS solves for a residual yield, the greeks will match up for calls and puts (put delta = call delta-1).

```
two-minute-smv/
  monies/
    YYYYMMDD/
      SYMBOL.csv.gz
  strikes/
    YYYYMMDD/
      SYMBOL.csv.gz
  summaries/
    YYYYMMDD/
      SYMBOL.csv.gz
```

Verifying your data

Your order ships on USB drives with checksum manifests so you can confirm the data arrived intact.

Each drive contains:

- **MANIFEST.sha256** — checksum file compatible with standard OS tools
- **MANIFEST.json** — machine-readable manifest used by our verifier

Option 1: orats-verify (recommended)

Each drive includes pre-built binaries in the `tools/` folder. Choose the one for your platform:

Platform	Binary
macOS (Apple Silicon)	`orats-verify-darwin-arm64`
macOS (Intel)	`orats-verify-darwin-amd64`
Linux (x86_64)	`orats-verify-linux-amd64`
Linux (ARM64)	`orats-verify-linux-arm64`
Windows (x86_64)	`orats-verify-windows-amd64.exe`
Windows (ARM64)	`orats-verify-windows-arm64.exe`

Copy the binary for your platform from the drive's `tools/` folder to a local directory (e.g. your Desktop), then open a terminal to run it:

- **macOS**: open Terminal (Applications → Utilities → Terminal)
- **Windows**: open Command Prompt or PowerShell
- **Linux**: open your preferred terminal emulator

Quick check

Confirms every file is present with the correct size:

Windows:

```
orats-verify-windows-amd64.exe --fast --manifest D:\MANIFEST.
json D:\
```

macOS (Apple Silicon):

```
./orats-verify-darwin-arm64 --fast --manifest /path/to/drive/
MANIFEST.json /path/to/drive
```

Full check

Computes SHA256 for every file. Depending on the volume of data on the drive, this may take some time — the tool displays a progress indicator so you can monitor it:

Windows:

```
orats-verify-windows-amd64.exe --full --manifest D:\MANIFEST.
json D:\
```

macOS (Apple Silicon):

```
./orats-verify-darwin-arm64 --full --manifest /path/to/drive/
MANIFEST.json /path/to/drive
```

Use `--workers N` to control parallelism (defaults to number of CPU cores). Run `--help` for all options.

Multiple drives

Run the verify command once per drive. Each drive has its own `MANIFEST.json`.

Reading the output

```
PASS: Drive 1 — all files present with correct sizes
```

or on failure:

```
FAIL: Drive 1
  Missing files (2):
    - strikes/gzip/20201001/AAPL.csv.gz
    - strikes/gzip/20201001/MSFT.csv.gz
  Size mismatches (1):
    ! strikes/gzip/20201002/TSLA.csv.gz (expected 115343872 bytes, got 0)
```

If any drive fails, contact support@orats.com with the output — we'll reship the affected drive(s).

Option 2: Manual verification (advanced)

For advanced users, each drive includes a `MANIFEST.sha256` file compatible with standard OS checksum tools. On Linux: `sha256sum -c MANIFEST.sha256`. On macOS: `shasum -a 256 -c MANIFEST.sha256`.

Errata

2minute_data_issues.csv

This CSV identifies missing trading days, missing minute-level files, and files with low ticker counts. The headers for the CSV are as follows:

- **issue_type:** Indicates why the row is documented in the CSV. Possible values are missing_minute, missing_day, or low_ticker_count. Missing_minute means that the file for the listed date and time is missing. Missing_day means that all files for the listed date are missing. Low_ticker_count means that the file for the listed date and time has fewer than 3,500 tickers.

- **date:** The date of the row that is flagged.
- **time:** The time associated with the flagged issue, formatted as HHMM (24-hour clock). This field is left blank when issue_type equals missing_day, since all minute-level files for the date are missing.
- **ticker_count:** Indicates the number of tickers present in the file at the specified date and time. This field is populated only when issue_type is low_ticker_count.

Below are examples of each issue_type in the CSV for ease of interpretation:

1. For row 1, issue_type is missing_minute. This means that the file corresponding to 09:32 on 2015-01-02 is missing.
2. For row 5830, issue_type is missing_day. This means that the trading day for 2015-01-05 has no files.
3. For row 5852, issue_type is low_ticker_count. This means that the file corresponding to 15:56 on 2015-01-13 has 3,436 tickers.

In addition, for certain low-liquidity tickers, some summary values may be zero. In many of these cases, corresponding strikes and monies data remain available. We encourage users to utilize filtering to eliminate obvious errors based on use cases and report any additional issues by emailing support@orats.com.

Sample data

Snapshot-2019-10-22-14-30.zip

Column Headers

Monies file:

Column	Description
ticker	The underlying symbol that represents the stock or index on which the option is based.
tradeDate	The date on which the option was traded.

Column	Description
expirDate	The date on which the option expires.
stockPrice	The current price of the underlying stock. For indexes, this is the solved implied futures price for each expiration.
riskFreeRate	The continuous risk-free interest rate used to discount cash flows to the option's expiration.
vol100	The implied volatility at the 100-delta call point on the fitted skew curve, corresponding to the deepest in-the-money call (equivalently a 0-delta put).
vol95	The implied volatility at the 95-delta call point on the fitted skew curve, equivalent to a 5-delta put.
vol90	The implied volatility at the 90-delta call point on the fitted skew curve, equivalent to a 10-delta put.
vol85	The implied volatility at the 85-delta call point on the fitted skew curve, equivalent to a 15-delta put.
vol80	The implied volatility at the 80-delta call point on the fitted skew curve, equivalent to a 20-delta put.
vol75	The implied volatility at the 75-delta call point on the fitted skew curve, equivalent to a 25-delta put.
vol70	The implied volatility at the 70-delta call point on the fitted skew curve, equivalent to a 30-delta put.
vol65	The implied volatility at the 65-delta call point on the fitted skew curve, equivalent to a 35-delta put.
vol60	The implied volatility at the 60-delta call point on the fitted skew curve, equivalent to a 40-delta put.
vol55	The implied volatility at the 55-delta call point on the fitted skew curve, equivalent to a 45-delta put.
vol50	The at-the-money implied volatility at the 50-delta point on the fitted skew curve.
vol45	The implied volatility at the 45-delta call point on the fitted skew curve, equivalent to a 55-delta put.
vol40	The implied volatility at the 40-delta call point on the fitted skew curve, equivalent to a 60-delta put.

Column	Description
vol35	The implied volatility at the 35-delta call point on the fitted skew curve, equivalent to a 65-delta put.
vol30	The implied volatility at the 30-delta call point on the fitted skew curve, equivalent to a 70-delta put.
vol25	The implied volatility at the 25-delta call point on the fitted skew curve, equivalent to a 75-delta put.
vol20	The implied volatility at the 20-delta call point on the fitted skew curve, equivalent to an 80-delta put.
vol15	The implied volatility at the 15-delta call point on the fitted skew curve, equivalent to an 85-delta put.
vol10	The implied volatility at the 10-delta call point on the fitted skew curve, equivalent to a 90-delta put.
vol5	The implied volatility at the 5-delta call point on the fitted skew curve, equivalent to a 95-delta put.
vol0	The implied volatility at the 0-delta call point on the fitted skew curve, corresponding to the deepest out-of-the-money call (equivalently a 100-delta put).
quoteDate	The date and time at which the market quote used to calculate the SMV (option's greeks, skew, and other related values) was recorded.
updatedAt	The date and time at which the calculation of the option's greeks, skew, and other related values was completed.
snapShotEstTime	The time of day, in Eastern Time, at which the one-minute intraday snapshot was taken.
snapShotDate	The date and time at which a one-minute snapshot of the SMV strikes was taken.
expiryTod	The time of day at which the option expires, either "am" (morning settlement) or "pm" (afternoon settlement).
tickerId	An internal ORATS identifier assigned to the underlying ticker.
monthId	An internal ORATS identifier assigned to the option's expiration month.
dte	The number of days remaining until the option's expiration date.

Strikes file

Column	Description
ticker	The underlying symbol that represents the stock or index on which the option is based.
tradeDate	The date on which the option was traded.
expirDate	The date on which the option expires.
dte	The number of days remaining until the option's expiration date.
strike	The price at which the option can be exercised.
stockPrice	The current price of the underlying stock. For indexes, this is the solved implied futures price for each expiration.
callVolume	The total number of call option contracts traded on a particular day total at the time observed.
callOpenInterest	The total number of outstanding call option contracts updated by OCC the night before.
callBidSize	The number of call option contracts available at the current national best bid and offer (NBBO) bid price.
callAskSize	The number of call option contracts available at the current NBBO ask price.
putVolume	The total number of put option contracts traded on a particular day total at the time observed.
putOpenInterest	The total number of outstanding put option contracts updated by OCC the night before.
putBidSize	The number of put option contracts available at the current NBBO bid price.
putAskSize	The number of put option contracts available at the current NBBO ask price.
callBidPrice	The NBBO price at which a market maker is willing to buy a call option.
callValue	The theoretical value of a call option based on a smooth volatility assumption.
callAskPrice	The NBBO price at which a market maker is willing to sell a call option.
putBidPrice	The NBBO price at which a market maker is willing to buy a put option.

Column	Description
putValue	The theoretical value of a put option based on a smooth volatility assumption.
putAskPrice	The NBBO price at which a market maker is willing to sell a put option.
callBidIv	The implied volatility of a call option at the current NBBO bid price.
callMidIv	The implied volatility of a call option at the midpoint of the current NBBO bid and ask prices.
callAskIv	The implied volatility of a call option at the current NBBO ask price.
smvVol	The smoothed implied volatility of an option based on the ORATS model.
putBidIv	The implied volatility of a put option at the current NBBO bid price.
putMidIv	The implied volatility of a put option at the midpoint of the current NBBO bid and ask prices.
putAskIv	The implied volatility of a put option at the current NBBO ask price.
residualRate	The implied interest rate that is derived from the option pricing model.
delta	The theoretical increase in an option's price due to a one dollar increase in the underlying price.
gamma	The rate of change of an option's delta with respect to a one dollar increase in the price of the underlying asset.
theta	The rate of time decay of an option's value for one day.
vega	The sensitivity of an option's price to a one percent rise in the implied volatility of the option.
rho	The sensitivity of an option's price to a one percent increase in interest rates for the option.
phi	A measure of the convexity of an option's price with respect to changes in the price of the underlying asset.
driftlessTheta	The rate of time decay of an option's value as the expiration date approaches, without taking into account the drift in the price of the underlying asset.
callSmvVol	The smoothed implied volatility of a call option based on the ORATS model, adjusted for the residual interest rate.

Column	Description
putSmvVol	The smoothed implied volatility of a put option based on the ORATS model, adjusted for the residual interest rate.
extSmvVol	The external implied volatility of the underlying asset, as provided by an external data source. The external data source is from the ORATS forecast volatility.
extCallValue	The external theoretical value of a call option, as provided by an external data source.
extPutValue	The external theoretical value of a put option, as provided by an external data source.
spotPrice	The current market price of the underlying asset. For indexes this is the cash price.
quoteDate	The date and time at which the market quote used to calculate the SMV (option's greeks, skew, and other related values) was recorded.
updatedAt	The date and time at which the calculation of the option's greeks, skew, and other related values was completed.
snapShotEstTime	The time of day, in Eastern Time, at which the one-minute intraday snapshot was taken.
snapShotDate	The date and time at which a one-minute snapshot of the SMV strikes was taken.
expiryTod	The time of day at which the option expires, either "am" (morning settlement) or "pm" (afternoon settlement).
tickerId	An internal ORATS identifier assigned to the underlying ticker.
monthId	An internal ORATS identifier assigned to the option's expiration month.

Summaries file

Column	Description
ticker	The underlying symbol that represents the stock or index on which the option is based.
tradeDate	The date on which the option was traded.
stockPrice	The current price of the underlying stock. For indexes, this is the solved implied futures price for each expiration.

Column	Description
annActDiv	The annualized actual dividend amount paid by the underlying stock.
annIdiv	The annualized dividend amount implied by put-call parity from option prices.
borrow30	The implied hard-to-borrow interest rate at a 30-day horizon.
borrow2y	The implied hard-to-borrow interest rate at a 2-year horizon.
confidence	A weighted measure of the confidence in the fitted volatility surface across monthly expirations, on a 0-to-1 scale.
exErnIv10d	The 10-calendar-day interpolated at-the-money implied volatility, with the earnings effect removed.
exErnIv20d	The 20-calendar-day interpolated at-the-money implied volatility, with the earnings effect removed.
exErnIv30d	The 30-calendar-day interpolated at-the-money implied volatility, with the earnings effect removed.
exErnIv60d	The 60-calendar-day interpolated at-the-money implied volatility, with the earnings effect removed.
exErnIv90d	The 90-calendar-day interpolated at-the-money implied volatility, with the earnings effect removed.
exErnIv6m	The 6-month interpolated at-the-money implied volatility, with the earnings effect removed.
exErnIv1y	The 1-year interpolated at-the-money implied volatility, with the earnings effect removed.
ieeEarnEffect	The implied earnings effect, expressed as a percentage, representing the portion of implied volatility attributed to an upcoming earnings event.
impliedMove	The term-structure implied percentage move in the underlying stock.
impliedNextDiv	The amount of the next dividend payment implied by put-call parity from option prices.
iv10d	The 10-calendar-day interpolated at-the-money implied volatility.
iv20d	The 20-calendar-day interpolated at-the-money implied volatility.
iv30d	The 30-calendar-day interpolated at-the-money implied volatility.

Column	Description
iv60d	The 60-calendar-day interpolated at-the-money implied volatility.
iv90d	The 90-calendar-day interpolated at-the-money implied volatility.
iv6m	The 6-month interpolated at-the-money implied volatility.
iv1y	The 1-year interpolated at-the-money implied volatility.
mwAdj30	The market width, expressed in implied volatility terms, at a 30-day horizon.
mwAdj2y	The market width, expressed in implied volatility terms, at a 2-year horizon.
nextDiv	The amount of the next actual dividend payment.
rDrv30	The skew curvature (the rate of change of the slope) at a 30-day horizon.
rDrv2y	The skew curvature (the rate of change of the slope) at a 2-year horizon.
rSlp30	The skew slope at a 30-day horizon.
rSlp2y	The skew slope at a 2-year horizon.
rVol30	The interpolated at-the-money implied volatility at a 30-day horizon.
rVol2y	The interpolated at-the-money implied volatility at a 2-year horizon.
rip	A dollar threshold used to exclude low-priced options from delta-weighted volatility calculations.
riskFree30	The risk-free interest rate at a 30-day horizon.
riskFree2y	The risk-free interest rate at a 2-year horizon.
skewing	The adjusted difference between 30-day and 2-year at-the-money implied volatility.
contango	The short-term contango of at-the-money ex-earnings implied volatilities.
totalErrorConf	The total weighted squared fit error multiplied by the confidence measure.
dlt5Iv10d	The 10-calendar-day interpolated implied volatility at the 5-delta call point on the fitted skew curve.

Column	Description
dlt5Iv20d	The 20-calendar-day interpolated implied volatility at the 5-delta call point on the fitted skew curve.
dlt5Iv30d	The 30-calendar-day interpolated implied volatility at the 5-delta call point on the fitted skew curve.
dlt5Iv60d	The 60-calendar-day interpolated implied volatility at the 5-delta call point on the fitted skew curve.
dlt5Iv90d	The 90-calendar-day interpolated implied volatility at the 5-delta call point on the fitted skew curve.
dlt5Iv6m	The 6-month interpolated implied volatility at the 5-delta call point on the fitted skew curve.
dlt5Iv1y	The 1-year interpolated implied volatility at the 5-delta call point on the fitted skew curve.
exErnDlt5Iv10d	The 10-calendar-day interpolated implied volatility at the 5-delta call point, with the earnings effect removed.
exErnDlt5Iv20d	The 20-calendar-day interpolated implied volatility at the 5-delta call point, with the earnings effect removed.
exErnDlt5Iv30d	The 30-calendar-day interpolated implied volatility at the 5-delta call point, with the earnings effect removed.
exErnDlt5Iv60d	The 60-calendar-day interpolated implied volatility at the 5-delta call point, with the earnings effect removed.
exErnDlt5Iv90d	The 90-calendar-day interpolated implied volatility at the 5-delta call point, with the earnings effect removed.
exErnDlt5Iv6m	The 6-month interpolated implied volatility at the 5-delta call point, with the earnings effect removed.
exErnDlt5Iv1y	The 1-year interpolated implied volatility at the 5-delta call point, with the earnings effect removed.
dlt25Iv10d	The 10-calendar-day interpolated implied volatility at the 25-delta call point on the fitted skew curve.
dlt25Iv20d	The 20-calendar-day interpolated implied volatility at the 25-delta call point on the fitted skew curve.
dlt25Iv30d	The 30-calendar-day interpolated implied volatility at the 25-delta call point on the fitted skew curve.

Column	Description
dlt25Iv60d	The 60-calendar-day interpolated implied volatility at the 25-delta call point on the fitted skew curve.
dlt25Iv90d	The 90-calendar-day interpolated implied volatility at the 25-delta call point on the fitted skew curve.
dlt25Iv6m	The 6-month interpolated implied volatility at the 25-delta call point on the fitted skew curve.
dlt25Iv1y	The 1-year interpolated implied volatility at the 25-delta call point on the fitted skew curve.
exErnDlt25Iv10d	The 10-calendar-day interpolated implied volatility at the 25-delta call point, with the earnings effect removed.
exErnDlt25Iv20d	The 20-calendar-day interpolated implied volatility at the 25-delta call point, with the earnings effect removed.
exErnDlt25Iv30d	The 30-calendar-day interpolated implied volatility at the 25-delta call point, with the earnings effect removed.
exErnDlt25Iv60d	The 60-calendar-day interpolated implied volatility at the 25-delta call point, with the earnings effect removed.
exErnDlt25Iv90d	The 90-calendar-day interpolated implied volatility at the 25-delta call point, with the earnings effect removed.
exErnDlt25Iv6m	The 6-month interpolated implied volatility at the 25-delta call point, with the earnings effect removed.
exErnDlt25Iv1y	The 1-year interpolated implied volatility at the 25-delta call point, with the earnings effect removed.
dlt75Iv10d	The 10-calendar-day interpolated implied volatility at the 75-delta call point (equivalent to the 25-delta put) on the fitted skew curve.
dlt75Iv20d	The 20-calendar-day interpolated implied volatility at the 75-delta call point (equivalent to the 25-delta put) on the fitted skew curve.
dlt75Iv30d	The 30-calendar-day interpolated implied volatility at the 75-delta call point (equivalent to the 25-delta put) on the fitted skew curve.
dlt75Iv60d	The 60-calendar-day interpolated implied volatility at the 75-delta call point (equivalent to the 25-delta put) on the fitted skew curve.
dlt75Iv90d	The 90-calendar-day interpolated implied volatility at the 75-delta call point (equivalent to the 25-delta put) on the fitted skew curve.

Column	Description
dlt75Iv6m	The 6-month interpolated implied volatility at the 75-delta call point (equivalent to the 25-delta put) on the fitted skew curve.
dlt75Iv1y	The 1-year interpolated implied volatility at the 75-delta call point (equivalent to the 25-delta put) on the fitted skew curve.
exErnDlt75Iv10d	The 10-calendar-day interpolated implied volatility at the 75-delta call point, with the earnings effect removed.
exErnDlt75Iv20d	The 20-calendar-day interpolated implied volatility at the 75-delta call point, with the earnings effect removed.
exErnDlt75Iv30d	The 30-calendar-day interpolated implied volatility at the 75-delta call point, with the earnings effect removed.
exErnDlt75Iv60d	The 60-calendar-day interpolated implied volatility at the 75-delta call point, with the earnings effect removed.
exErnDlt75Iv90d	The 90-calendar-day interpolated implied volatility at the 75-delta call point, with the earnings effect removed.
exErnDlt75Iv6m	The 6-month interpolated implied volatility at the 75-delta call point, with the earnings effect removed.
exErnDlt75Iv1y	The 1-year interpolated implied volatility at the 75-delta call point, with the earnings effect removed.
dlt95Iv10d	The 10-calendar-day interpolated implied volatility at the 95-delta call point (equivalent to the 5-delta put) on the fitted skew curve.
dlt95Iv20d	The 20-calendar-day interpolated implied volatility at the 95-delta call point (equivalent to the 5-delta put) on the fitted skew curve.
dlt95Iv30d	The 30-calendar-day interpolated implied volatility at the 95-delta call point (equivalent to the 5-delta put) on the fitted skew curve.
dlt95Iv60d	The 60-calendar-day interpolated implied volatility at the 95-delta call point (equivalent to the 5-delta put) on the fitted skew curve.
dlt95Iv90d	The 90-calendar-day interpolated implied volatility at the 95-delta call point (equivalent to the 5-delta put) on the fitted skew curve.
dlt95Iv6m	The 6-month interpolated implied volatility at the 95-delta call point (equivalent to the 5-delta put) on the fitted skew curve.
dlt95Iv1y	The 1-year interpolated implied volatility at the 95-delta call point (equivalent to the 5-delta put) on the fitted skew curve.

Column	Description
exErnDlt95Iv10d	The 10-calendar-day interpolated implied volatility at the 95-delta call point, with the earnings effect removed.
exErnDlt95Iv20d	The 20-calendar-day interpolated implied volatility at the 95-delta call point, with the earnings effect removed.
exErnDlt95Iv30d	The 30-calendar-day interpolated implied volatility at the 95-delta call point, with the earnings effect removed.
exErnDlt95Iv60d	The 60-calendar-day interpolated implied volatility at the 95-delta call point, with the earnings effect removed.
exErnDlt95Iv90d	The 90-calendar-day interpolated implied volatility at the 95-delta call point, with the earnings effect removed.
exErnDlt95Iv6m	The 6-month interpolated implied volatility at the 95-delta call point, with the earnings effect removed.
exErnDlt95Iv1y	The 1-year interpolated implied volatility at the 95-delta call point, with the earnings effect removed.
fwd30_20	The forward implied volatility between the 20-day and 30-day tenors.
fwd60_30	The forward implied volatility between the 30-day and 60-day tenors.
fwd90_30	The forward implied volatility between the 30-day and 90-day tenors.
fwd90_60	The forward implied volatility between the 60-day and 90-day tenors.
fwd180_90	The forward implied volatility between the 90-day and 180-day tenors.
fexErn30_20	The forward implied volatility between the 20-day and 30-day tenors, with the earnings effect removed.
fexErn60_30	The forward implied volatility between the 30-day and 60-day tenors, with the earnings effect removed.
fexErn90_30	The forward implied volatility between the 30-day and 90-day tenors, with the earnings effect removed.
fexErn90_60	The forward implied volatility between the 60-day and 90-day tenors, with the earnings effect removed.

Column	Description
fexErn180_90	The forward implied volatility between the 90-day and 180-day tenors, with the earnings effect removed.
ffwd30_20	The flat-forward implied volatility between the 20-day and 30-day tenors.
ffwd60_30	The flat-forward implied volatility between the 30-day and 60-day tenors.
ffwd90_30	The flat-forward implied volatility between the 30-day and 90-day tenors.
ffwd90_60	The flat-forward implied volatility between the 60-day and 90-day tenors.
ffwd180_90	The flat-forward implied volatility between the 90-day and 180-day tenors.
ffexErn30_20	The flat-forward implied volatility between the 20-day and 30-day tenors, with the earnings effect removed.
ffexErn60_30	The flat-forward implied volatility between the 30-day and 60-day tenors, with the earnings effect removed.
ffexErn90_30	The flat-forward implied volatility between the 30-day and 90-day tenors, with the earnings effect removed.
ffexErn90_60	The flat-forward implied volatility between the 60-day and 90-day tenors, with the earnings effect removed.
ffexErn180_90	The flat-forward implied volatility between the 90-day and 180-day tenors, with the earnings effect removed.
fbfwd30_20	The ratio of the flat-forward to the forward implied volatility between the 20-day and 30-day tenors.
fbfwd60_30	The ratio of the flat-forward to the forward implied volatility between the 30-day and 60-day tenors.
fbfwd90_30	The ratio of the flat-forward to the forward implied volatility between the 30-day and 90-day tenors.
fbfwd90_60	The ratio of the flat-forward to the forward implied volatility between the 60-day and 90-day tenors.
fbfwd180_90	The ratio of the flat-forward to the forward implied volatility between the 90-day and 180-day tenors.

Column	Description
fbfexErn30_20	The ratio of the flat-forward to the forward implied volatility between the 20-day and 30-day tenors, with the earnings effect removed.
fbfexErn60_30	The ratio of the flat-forward to the forward implied volatility between the 30-day and 60-day tenors, with the earnings effect removed.
fbfexErn90_30	The ratio of the flat-forward to the forward implied volatility between the 30-day and 90-day tenors, with the earnings effect removed.
fbfexErn90_60	The ratio of the flat-forward to the forward implied volatility between the 60-day and 90-day tenors, with the earnings effect removed.
fbfexErn180_90	The ratio of the flat-forward to the forward implied volatility between the 90-day and 180-day tenors, with the earnings effect removed.
impliedEarningsMove	The front-month implied percentage move in the underlying stock attributable to the upcoming earnings event.
quoteDate	The date and time at which the market quote used to calculate the SMV (option's greeks, skew, and other related values) was recorded.
updatedAt	The date and time at which the calculation of the option's greeks, skew, and other related values was completed.
snapShotEstTime	The time of day, in Eastern Time, at which the one-minute intraday snapshot was taken.
snapShotDate	The date and time at which a one-minute snapshot of the SMV strikes was taken.
tickerId	An internal ORATS identifier assigned to the underlying ticker.