


# MDP 3.0 - CME Globex Pricing

This topic describes how to obtain and display tick size and pricing data for products traded on CME Globex.


 Price formats across different market data protocols will not always match. For example, ITC uses open outcry price conventions while MDP 3.0 uses electronic trading conventions.

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## Tick Size Calculation

The tick is the minimum price fluctuation allowed for a futures or options contract during a trading session as specified by the contract terms of CME Group. An instrument can have either a variable tick (primarily for options instruments) or a standard tick. Both the variable tick and standard tick are obtained from the Security Definition message.

Tag 6350-TickRule will contain the Variable Tick Table (VTT) index code (see table below). When tag 6350-TickRule = 00, the instrument is **not** VTT eligible.

 Tag 969-MinPriceIncrement will be sent with a value representing "null" in the Security Definition (tag 35-MsgType=d) message for VTT eligible instruments.

## Standard Tick Instrument

If the Security Definition (tag 35-MsgType=d) message for an instrument contains tag 6350-TickRule = 00, the instrument uses a standard tick and the value found in tag 969-MinPriceIncrement is the tick size.

### Example

1128=9|9=425|35=d|... **969=0.5**|...

tick size = 0.5.

## Variable Tick Instrument

The following process shows how to calculate the tick size for a VTT eligible instrument.

### Example

CME Globex sends the following Security Definition (tag 35-MsgType=d) message for an instrument with a price of 510:

1128=9|35=d|...|**6350=1**|...

1. Tag 6350-TickRule contains the VTT index code '1'.
2. Since tag 6350-TickRule = is 1 for a market price of 510 ( $P = 510 > 500$ ), the tick size for the contract is 10.

## Variable Tick Table

VTT Code	Current CME Globex Price	CME Globex Tick Size
1	P < -500	10
1	-500 P 500	5
1	P > 500	10
2	-5 P 5	0.5

2	P < -5	1
2	P > 5	1
3	-10 P 10	1
3	P < -10	2
3	P > 10	2
4	P < -500	25
4	-500 P 500	5
4	P > 500	25
10	P < -300	25
10	-300 P 300	5
10	P > 300	25
11	P < -300	10
11	-300 P 300	5
11	P > 300	10
12	P < -5	0.50
12	-5 P 5	0.25
12	P > 5	0.50
13	-25 P < 25	1
13	P < -25	5
13	P > 25	5

## Suggested Price Display Format

This section provides an approach to extracting price information from the market data Security Definition message for display by the client. As described below, some products may require a decimal to fractional price conversion prior to display.

### Strike Price Display

Observe the following when displaying strike prices:

- For most products, clients may use the Display Factor of the underlying future to format the strike price of an option.
- The option's Display Factor should only be used for the option trade price and tick.



CME Group does not guarantee this solution will work for all option instruments due to differing market conventions between the futures and options.

### Example: Eurodollar Outright Underlying Future

Display Factor (9787): 0.01

Globex-format Settlement Price (1150): 9820.0000000

Factored Settlement Price (9787\*1150): 98.200000000– same method should be used for trade and book prices.

```
[15]="USD" [22]="8" [35]="d" [48]="807004" [55]="GEH8" [120]="^@^@^@" [167]="FUT" [200]="2018,3,null,null" [207]="XCME" [231]="null" [461]="FFDXSX" [462]="14" [562]="1" [731]="00000100,4" [779]="1451893172010975676, 01/04/2016 07:39:32:010m:975u:676n" [864]="2" [865]="5" [1145]="1205530200000000000" [865]="7" [1145]="1521453600000000000" [870]="1" [871]="24" [872]="0000000000001100000000000011101,786461" [911]="3458" [969]="5000000,-7" [980]="A" [996]="USD" [1140]="14999" [1141]="2" [264]="5" [1022]="GBX" [264]="2" [1022]="GBI" [1142]="A" [1143]="100000000,-7" [1146]="125000000,-7" [1147]="100000000000000,-7" [1148]="null,-7" [1149]="null,-7" [1150]="98200000000,-7" [1151]="GE" [1180]="312" [1234]="0" [1300]="82" [1435]="null" [1439]="null" [1682]="4" [5791]="93481" [5792]="403097" [5796]="16805, 01/04/2016" [5799]="00000000,0" [5818]="null" [5819]="null" [5849]="null" [6937]="GE" [9779]="N" [9787]="100000,-7" [9800]="null"
```

### Example: Eurodollar MidCurve outright option

Strike Price (202): 9975.0000000

Underlying future's Display Factor (9787 from the underlying future's SecDef): 0.01

Factored Strike Price (202\*9787 from the underlying future's SecDef): 99.750000000

Display Factor (9787): 1.0000000

Globex-format Settlement Price (1150): 155.0000000

Factored Settlement Price (9787\*1150): 155.0000000 – same method should be used for trade and book prices.

```
[15]="USD" [22]="8" [35]="d" [48]="678796" [55]="GE2G6 P9975 [120]="^@^@^@" [167]="OOF^@^@^@" [200]="2016,2,null,null" [201]="0" [202]="9975000000,-7" [207]="XCME" [461]="OPAFPS" [462]="14" [562]="1" [711]="1" [305]="8" [309]="807004" [311]="GEH8" [731]="00000100,4" [779]="1451893171960887461, 01/04/2016 07:39:31:960m:887u:461n" [864]="2" [865]="5" [1145]="1439591400000000000" [865]="7" [1145]="145531440000000000" [870]="1" [871]="24" [872]="0000000000001000010000000000111,270343" [911]="10169" [947]="USD" [969]="5000000,-7" [980]="A" [996]="USD" [1140]="24999" [1141]="1" [264]="3" [1022]="GBX" [1142]="Y" [1146]="125000000,-7" [1147]="10000000000000,-7" [1148]="2500000,-7" [1149]="99999000000000,-7" [1150]="1550000000,-7" [1151]="E2^@^@^@" [1180]="313" [1234]="0" [1300]="50" [1682]="4" [5791]="null" [5792]="null" [5796]="16805, 01/04/2016" [5799]="00000000,0" [6350]="null" [6937]="GE2" [9779]="N" [9787]="10000000,-7" [9800]="null" [9850]="2500000,-7" [Template]="41" [Sequence]="732" [SendingTime]="1452033604481574627" [37702]="null" [37703]="null"
```

## Display Format for Fractional Products

Products that require a decimal-to-fractional price conversion are identified in the Security Definition message by the following tags:

- tag 37702-MainFraction - Price denominator of main fraction.
- tag 37703-SubFraction - Price denominator of sub fraction.
- tag 9800-PriceDisplayFormat - Number of digits to the right of tick mark; location of tick mark between whole and non-whole numbers.



Display Factor (tag 9787-DisplayFactor) should not be used for fractional prices.

### Example: ZNZ9 10 Year U.S. Treasury Note Future

1128=9|9=455|35=d| ... |37702=32|37703=2|9800=3| ...

1. Original decimal price: 112.625
2. Fractional part after conversion 20 (.625 x 32)
3. Integer part and fractional part 112 20
4. Apply Price Display Format of 03 to 112.20
5. Resulting formatted price 112'200

## Display Format for Non-Fractional Products

To harmonize the options strike price with the underlying future's book and trade prices, client systems can use the tag 9787 value from the underlying future on the option strike price.

The client system can use the tags shown in the following table to display the price of the instrument. The display factor is multiplied by both the CME Globex Tick and the CME Globex Price conventions to calculate the display tick and display price.

The following table is a sample display of CME Globex ticks and prices.



The resulting display of price and tick below are suggested by CME Group but are not required.

Instrument	CME Globex Tick tag 969-MinPriceIncrement	CME Globex Price tag 270-MDEntryPx	Display Factor tag 9787-DisplayFactor	Display Tick	Display Price
ESH2	25	113700	0.01	.25	1137.00
GEM2	.5	9886.5	0.01	.005	98.865

CME Globex Price x Display Factor = Display Price

CME Globex Tick x Display Factor = Display Tick