2.10 Theoretical Price File for Eurex/ISE Products - FPTHEU [Modified]

This file contains information about theoretical price information for Eurex/ISE link products. It is provided end of day but is not be provided intraday.

Theoretical price information for Eurex single-stock futures on USD-listed stocks which are also underlying of Eurex/ISE link stock option products, are also included in this file.

The FPTHEU - Theoretical Price File has a four-record structure with the following information:

- Margin Class (M)
- Array (A)
- Product (P)
- Expiry (E)
- Series (S)
- Bucket (B)
- Volatility (V)

This file has a variable record length with up to 53 bytes. The very last line contains up to 86 characters.

```
01  RMTHEU-WS-REC.
    05  RMTHEU-CLS-REC.
        10  REC-TYP-COD-RMTHEU                PIC X.
        10  FILLER                            PIC X(52).

***
* RECORD TYPE = "M" (Margin class Record)
***
    05  RMTHEU-MGN-CLS-REC REDEFINES RMTHEU-CLS-REC.
          10  REC-TYP-COD-RMTHEU              PIC X.
          10  MGN-CLS-COD-RMTHEU              PIC X(5).
          10  MGN-EXPI-YR-DAT-RMTHEU          PIC 9(2).
          10  MGN-EXPI-MTH-DAT-RMTHEU         PIC 9(2).
          10  INTP-REF-PRC-RMTHEU             PIC X(10).
          10  MGN-INTERVAL-RMTHEU             PIC X(11).
          10  CURR-DCML-SHFT-GRP-RMTHEU.
            15  CURR-TYP-COD-RMTHEU           PIC X(3).
            15  DCML-SHFT-NO-RMTHEU           PIC 9(1).

***
* RECORD TYPE = "A" (Array Record)
***
    05  RMTHEU-ARRAY-REC REDEFINES RMTHEU-CLS-REC.
          10  REC-TYP-COD-RMTHEU              PIC X.
          10  RISK-ARRAY-INDEX-RMTHEU         PIC 9(2).
          10  CALC-BUC-PRICE-RMTHEU           PIC X(9).
          10  PRICE-UDN-IND-RMTHEU            PIC X(1).
          10  STOCK-PRC-IND-RMTHEU            PIC X(1).

***
* RECORD TYPE = "P" (Product Record)
***
    05  RMTHEU-PROD-REC REDEFINES RMTHEU-CLS-REC.
          10  REC-TYP-COD-RMTHEU              PIC X.
          10  PROD-ID-COD-RMTHEU              PIC X(4).
          10  PROD-TIC-SIZE-RMTHEU            PIC X(7).
          10  PROD-TIC-VAL-RMTHEU             PIC Z(3)9.9(4).
          10  MGN-STYLE-FLG-RMTHEU            PIC X(1).
          10  EXER-PRC-DECIMALS-RMTHEU        PIC 9(1).

***
* RECORD TYPE = "E" (Expiry Record)
***
    05  RMTHEU-EXPIRY-REC REDEFINES RMTHEU-CLS-REC.
          10  REC-TYP-COD-RMTHEU              PIC X.
          10  SERI-CLAS-COD-RMTHEU            PIC X(1).
          10  SERI-EXP-DAT-RMTHEU.
              20  EXPI-YR-DAT-RMTHEU          PIC 9(2).
              20  EXPI-MTH-DAT-RMTHEU         PIC 9(2).
          10  INTR-RAT-PCT-RMTHEU             PIC 9(1).9(6).
          10  YIELD-RAT-PCT-RMTHEU            PIC 9(1).9(6).
          10  DAYS-TO-EXP-RMTHEU              PIC Z(4)9.

***
* RECORD TYPE = "S" (Series Record)
***
    05  RMTHEU-SERIES-REC REDEFINES RMTHEU-CLS-REC.
          10  REC-TYP-COD-RMTHEU              PIC X.
          10  EXER-PRC-RMTHEU                 PIC 9(6).
          10  SERI-VERS-NO-RMTHEU             PIC 9(1).
          10  UND-REF-PRC-RMTHEU              PIC X(10).
          10  SERI-REF-PRC-RMTHEU             PIC X(10).
          10  SECU-TRD-UNT-NO-RMTHEU          PIC Z(3)9.9(4).
          10  SERI-STS-COD-RMTHEU             PIC X(1).
          10  VOL-RMTHEU                      PIC Z(2)9.9(2).
          10  STRIKE-MULTIPLIER-RMTHEU        PIC Z(3)9.9(4).

***
* RECORD TYPE = "B" (Bucket Record)
```

```
***
    05  RMTHEU-BUCKET-REC REDEFINES RMTHEU-CLS-REC.
          10  REC-TYP-COD-RMTHEU              PIC X.
          10  RISK-ARRAY-INDEX-RMTHEU         PIC 9(2).
          10  CALC-UND-PRICE-RMTHEU           PIC X(9).
          10  FORWARD-UND-PRICE-RMTHEU        PIC Z(4)9.9(6).

***
* RECORD TYPE = "V" (Vola Record)
***
    05  RMTHEU-VOLA-REC REDEFINES RMTHEU-CLS-REC.
          10  REC-TYP-COD-RMTHEU              PIC X.
          10  VOLA-UDN-IND-RMTHEU             PIC X(1).
          10  ADJ-VOL-RMTHEU                  PIC Z(2)9.9(2).
          10  THEO-VALUE-RMTHEU               PIC Z(4)9.9(6).
          10  SHORT-OPT-THEO-RMTHEU           PIC Z(4)9.9(6).

***
* RECORD TYPE = "*" (EOF Record)
***
    05  RMTHEU-FILE-INFO-REC REDEFINES RMTHEU-CLS-REC.
        10  FILE-END-MARK-RMTHEU              PIC X(5).
        10  FILLER                            PIC X.
        10  FILE-COUNTER-RMTHEU               PIC 9(8).
        10  FILLER                            PIC X.
        10  CURR-BUS-DAY-RMTHEU               PIC 9(8).
        10  FILLER                            PIC X.
        10  DESCRIPTION-RMTHEU                PIC X(29).
```

In the following table the fields contained in the file FPTHEU are described in detail.

FPTHEU	
Field	Description
REC-TYP-COD-RMTHEU	This field contains the record type.
MGN-CLS-COD-RMTHEU	This field contains the margin class code assigned by the exchange.
MGN-EXPI-YR-DAT-RMTHEU	This field contains the expiration year of the options series or futures contract.
MGN-EXPI-MTH-DAT-RMTHEU	This field contains the expiration month of the options series or futures contract.
INTP-REF-PRC-RMTHEU	This field contains a reference price of the underlying for the interval product. In an EOD file, it is the last closing price of the underlying asset; if the interval product is a future with no underlying price, this field contains the settlement price of the spot month series. It has a decimal point with variable number of decimal places depending on the product.
MGN-INTERVAL-RMTHEU	This field contains the margin interval. The value of this field is determined using the last closing price and historical volatility of the interval product. For products whose historical volatility is expressed as a percentage (for instance stock options), the margin interval is the historical volatility multiplied by the last closing price. For products with a historical volatility expressed in ticks (such as the Bund and DAX futures and their options), the margin interval is the historical volatility multiplied by the tick value. It has a decimal point with variable number of decimal places depending on the product.
CURR-TYP-COD-RMTHEU	This field contains the currency code of the underlying instrument.

FPTHEU	
Field	Description
DCML-SHFT-NO-RMTHEU	This field contains one digit specifying a decimal given as a power of ten. It represents the factor by which a price has to be multiplied in order to get the real price. Example: Decimal Shift: 0 Factor: 10 ^ 0 = 1 (for example, for EUR) The amount “23.45“ is then understood by the user in the associated currency as: 23.45 x 1 = 23.45 EUR
RISK-ARRAY-INDEX-RMTHEU	This field contains the current index in the risk array; for each risk array this indicator starts with 1 and is increased up to the risk array size. Maximum is 29.
CALC-BUC-PRICE-RMTHEU	This field contains the projected underlying price for the interval product. For each class there is one interval product which determines the margin interval and projected underlying values for all products in the class. This field has the same value as the CALC-UND-PRICE-RMTHEU for products that are interval products, or have the same underlying as the interval product for their class. It has a decimal point with variable number of decimal places depending on the product.
PRICE-UND-IND-RMTHEU	This field contains an indicator showing whether the projected underlying price is less than (downside), greater than (upside) or movement neutral to the closing price of the underlying. "D" - downside "U" - upside 'N" - neutral

FPTHEU	
Field	Description
STOCK-PRC-IND-RMTHEU	This field contains an indicator showing whether the theoretical price calculated relates to a minimum projected underlying price (2), to an in-between strike (3), to a maximum projected underlying price (1) or to zero price movement (0) used in pure volatility buckets.
PROD-ID-COD-RMTHEU	This field contains the product ID.
PROD-TIC-SIZE-RMTHEU	This field contains the tick size for the product. It has a decimal point with variable number of decimal places depending on the product.
PROD-TIC-VAL-RMTHEU	This field contains the tick value for the product.
MGN-STYLE-FLG-RMTHEU	This field contains a code to identify the margining style for the product. Valid values are: “F“– futures style “T“– traditional style
EXER-PRC-DECIMALS-RMTHEU	This field indicates the number of decimals in the exercise price.
SERI-CLAS-COD-RMTHEU	This field contains the class code for option series or a blank for futures contracts. Field values include: “C“ – Call “P“ – Put “ “ - Future
SERI-EXP-DAT-RMTHEU	This field contains the date the option series or the futures contract expires.
EXPI-YR-DAT-RMTHEU	This field contains the expiration year of the options series or futures contract.
EXPI-MTH-DAT-RMTHEU	This field contains the expiration month of the options series or futures contract.
INTR-RAT-PCT-RMTHEU	This field contains the security risk free interest rate used to calculate the theoretical value.

FPTHEU	
Field	Description
YIELD-RAT-PCT-RMTHEU	This field contains the yield rate which is used for the calculation of theoretical prices of currency options.
DAYS-TO-EXP-RMTHEU	This field contains the number of days until expiration of the series or contract.
EXER-PRC-RMTHEU	This field contains the price at which an option contract may be exercised. The field EXER-PRC-DECIMALS-RMTHEU contains the number of decimal places to be used to format the value of this field. For future contracts it is zero.
SERI-VERS-NO-RMTHEU	This field contains the version number assigned to the series at creation. The value is zero for all standard series not changed as a result of capital adjustment to the underlying instrument and for futures contracts. Valid values include: 0 – standard series version or futures contract 1 – adjusted series version from most recent capital adjustment 2 – adjusted series version from the second most recent capital adjustment 3 – adjusted series version from the third most recent capital adjustment
CALC-UND-PRICE-RMTHEU	This field contains the projected underlying price used to calculate the theoretical value for this record. It has a decimal point with variable number of decimal places depending on the product.
FORWARD-UND-PRICE-RMTHEU	This field contains the forward underlying price. Only applicable to options with theoretical underlying.

FPTHEU	
Field	Description
UD-IND-RMTHEU	This field contains an indicator showing whether the projected underlying price is less than (downside) or greater than (upside) the closing price of the underlying. “D“ – downside “U“ – upside
THEO-VALUE-RMTHEU	This field contains the theoretical value calculated for an active options/future position for a given CALC-UND-PRICE-RMTHEU.
SHORT-OPT-THEO-RMTHEU	This field contains a value also called short option adjustment. It is calculated by multiplying the margin interval with the out-of-the-money minimum percentage and adding the settlement price for the series to this. It replaces the maximum upside theoretical option price for a short call option if it is greater than that theoretical. It replaces the maximum downside theoretical option price for a short put option if it is greater than that theoretical. For futures this field is set zero. Note: This field is only written if the theoretical price was replaced.
SECU-LST-CLS-PRC-RMTHEU	This field contains the last closing price of the underlying asset. For futures products with no underlying price, this field contains the settlement price of the appropriate series. It has a decimal point with variable number of decimal places depending on the product.
INTP-LST-CLS-PRC-RMTHEU	This field contains the last closing price of the underlying asset for the interval product. If the interval product is a future with no underlying price, this field contains the settlement price of the spot month series. It has a decimal point with variable number of decimal places depending on the product.

FPTHEU	
Field	Description
SERI-LST-STL-PRC-RMTHEU	This field contains the last settlement price of the series. It has a decimal point with variable number of decimal places depending on the product.
VOL-RMTHEU	This field contains the synthetic volatility used for theoretical price calculations.
SECU-TRD-UNT-NO-RMTHEU	This field contains the quantity of the underlying instrument traded per contract.
SERI-STS-COD-RMTHEU	This field contains a code to identify an options series/futures contract as active (“A“) or expired (“E“).
STRIKE-MULTIPLIER-RMTHEU	This field contains the strike price multiplier. To calculate correct theoretical prices, the effective strike price must be calculated using the exercise price, the strike multiplier and the trade unit value. The effective strikes will also be used to define buckets in risk arrays. Effective strike = exercise price x strike multiplier / actual trade unit number Usually the trade unit and the strike price multiplier are equal, but they may differ for Eurex/ISE link products after some types of corporate actions, e.g. stock splits which would result in fractional strike prices instead (3 for 2 splits, 4 for 3 splits, but not 2 for 1 splits), or stock dividends.

The following descriptions apply to the last record of FPTHEU only.

FPTHEU	
Field	Description
FILE-END-MARK-RMTHEU	This field marks the end of the file and contains the string “*EOF*“.
FILE-COUNTER-RMTHEU	This field contains the number of data records contained in the file, not including the last record.
CURR-BUS-DAY-RMTHEU	This field contains the date of the business day in the format YYYYMMDD.
DESCRIPTION-RMTHEU	This field contains a short description of the file content.