2.5 Theoretical Price File - FPTHED [Modified]

This file contains information about theoretical prices for all Eurex and EEX products.

Theoretical price information for Eurex single-stock futures on USD-listed stocks will be listed in the end-of-day version of the file only once the Eurex-ISE Link is active[1]. Currently, Eurex single-stock futures on USD-listed stocks are contained in the intra-day version, as well.

The FPTHED - Theoretical Price File has a 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 44 bytes. The very last line contains up to 86 characters.

1. Pending regulatory approval.

```
01  RMTHED-WS-REC.
    05  RMTHED-CLS-REC.
        10  REC-TYP-COD-RMTHED                PIC X.
        10  FILLER                            PIC X(43).

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

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

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

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

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

***
* RECORD TYPE = "B" (Bucket Record)
***
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    05  RMTHED-BUCKET-REC REDEFINES RMTHED-CLS-REC.
          10  REC-TYP-COD-RMTHED              PIC X.
          10  RISK-ARRAY-INDEX-RMTHED         PIC 9(2).
          10  CALC-UND-PRICE-RMTHED           PIC X(9).
          10  FORWARD-UND-PRICE-RMTHED        PIC Z(4)9.9(6).

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

***
* RECORD TYPE = "*" (EOF Record)
***
    05  RMTHED-FILE-INFO-REC REDEFINES RMTHED-CLS-REC.
        10  FILE-END-MARK-RMTHED              PIC X(5).
        10  FILLER                            PIC X.
        10  FILE-COUNTER-RMTHED               PIC 9(8).
        10  FILLER                            PIC X.
        10  CURR-BUS-DAY-RMTHED               PIC 9(8).
        10  FILLER                            PIC X.
        10  DESCRIPTION-RMTHED                PIC X(20).
```

The fields contained in the file FPTHED are described in the following list.

FPTHED	
Field	Description
REC-TYP-COD-RMTHED	This field contains the record type.
MGN-CLS-COD-RMTHED	This field contains the margin class code assigned by the exchange.
MGN-EXPI-YR-DAT-RMTHED	This field contains the expiration year of the options series or futures contract.
MGN-EXPI-MTH-DAT-RMTHED	This field contains the expiration month of the options series or futures contract.
INTP-REF-PRC-RMTHED	This field contains a reference price of the underlying for the interval product. In an EOD file, it contains 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.

FPTHED	
Field	**Description**
MGN-INTERVAL-RMTHED	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-RMTHED	This field contains the currency code of the underlying instrument.
DCML-SHFT-NO-RMTHED	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-RMTHED	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.

FPTHED	
Field	**Description**
CALC-BUC-PRICE-RMTHED	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-RMTHED 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-RMTHED	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
STOCK-PRC-IND-RMTHED	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-RMTHED	This field contains the product ID.
PROD-TIC-SIZE-RMTHED	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-RMTHED	This field contains the tick value for the product.
MGN-STYLE-FLG-RMTHED	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-RMTHED	This field indicates the number of decimals in the exercise price.

FPTHED	
Field	**Description**
SERI-CLAS-COD-RMTHED	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-RMTHED	This field contains the date the option series or the futures contract expires.
EXPI-YR-DAT-RMTHED	This field contains the expiration year of the options series or futures contract.
EXPI-MTH-DAT-RMTHED	This field contains the expiration month of the options series or futures contract.
INTR-RAT-PCT-RMTHED	This field contains the security risk free interest rate used to calculate the theoretical value.
YIELD-RAT-PCT-RMTHED	This field contains the yield rate which is used for the calculation of theoretical prices of currency options.
DAYS-TO-EXP-RMTHED	This field contains the number of days until the Final Settlement Day of the series or contract.
EXER-PRC-RMTHED	This field contains the price at which an option contract may be exercised. The field EXER-PRC-DECIMALS-RMTHED contains the number of decimal places to be used to format the value of this field. For future contracts it is zero.

FPTHED	
Field	**Description**
SERI-VERS-NO-RMTHED	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
UND-REF-PRC-RMTHED	This field contains the underlying reference price. In an EOD file, it is the last closing price of the underlying asset; for futures 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.
SERI-REF-PRC-RMTHED	This field contains the series reference price (in EOD file, it is the last settlement price of the series). It has a decimal point with variable number of decimal places depending on the product.
SECU-TRD-UNT-NO-RMTHED	This field contains the quantity of the underlying instrument traded per contract.
SERI-STS-COD-RMTHED	This field contains a code to identify an options series/futures contract as active (“A“) or expired (“E“).
VOL-RMTHED	This field contains the implied volatility used for theoretical price calculations.
CALC-UND-PRICE-RMTHED	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.

FPTHED	
Field	**Description**
FORWARD-UND-PRICE-RMTHED	This field contains the forward underlying price. Only applicable to options with theoretical underlying.
VOLA-UND-IND-RMTHED	This field indicates whether the implied volatility is in the up scenario (U), down scenario (D) or neutral scenario (N).
ADJ-VOL-RMTHED	This field contains the simulated implied volatility based on the VOLA-UDN-IND-RMTHED field, used for theoretical price calculations.
THEO-VALUE-RMTHED	This field contains the theoretical value calculated for an active options/futures position for a given CALC-UND-PRICE-RMTHED and ADJ-VOL-RMTHED.
SHORT-OPT-THEO-RMTHED	This field contains the short option adjustment (= [margin interval] × [out-of-the-money minimum percentage] + [settlement price for the series]). 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.

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

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