T7 Release 7.1

Eurex Market Signals

Manual

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Content

1. Introduction

T7 currently provides market and reference data via a number of multicast interfaces:

- T7 Market Data Interface (MDI) for netted market data
- T7 Enhanced Market Data Interface (EMDI) for un-netted market data
- T7 Enhanced Order Book Interface (EOBI) for un-netted, order-by-order market data
- T7 Reference Data Interface (RDI) for reference data
- T7 Extended Market Data Service for the distribution of settlement prices, open interest information, off-book trade prices.

In addition to these existing interfaces, Eurex now provides Eurex Market Signals.

Eurex Market Signals are key figures, separated into different services, calculated in real-time, which can optionally be received via Multi Interface Channel (MIC) or 10Gbit/s market data connection in co-location. Eurex Market Signals are intended to support Exchange participants in their trading decisions.

Similar to the existing interfaces, Eurex Market Signals are also distributed via UDP multicast; following FIX 5.0 SP2 semantics and are FAST 1.1/1.2 encoded. Messages are published on two identical services (A and B) with different multicast addresses (live-live concept).

This document provides technical information by listing the multicast addresses via which Eurex Market Signals are disseminated and describes the message layouts. In addition, the document provides information about the calculation method of Eurex Market Signals including examples.
The relevant FAST 1.1 and 1.2 templates for the interface will be published on the Eurex website www.eurexchange.com.

Please note:

The document refers to the Eurex Market Signals only. Concepts regarding FIX messages, FAST encoding and the live-live concept are described in separate documents.

The Service described in this manual has a version number which is also listed at the beginning of the FAST XML templates. This manual relates to the interface version number 007.001.000.

2. Multicast Addresses

Eurex® Market Signals will be disseminated via the multicast addresses and port combinations named in the following two chapters.

The Eurex Market Signals Multicast addresses use the same source networks and rendezvous points as for Eurex EMDI. Participants should however be aware that for existing installations, the multicast group to rendezvous point definitions (typically an Access Control List) will need to be expanded.

2.1 Multicast Addresses and Ports (Production)

Service	Multicast Groups Service A	Multicast Groups Service B	Ports: US allowed Products	Ports: US restricted Products
Reference Data for all services below	224.0.114.1	224.0.114.9	59000	-
Eurex IOC Liquidity Indicator for Options	224.0.114.128	224.0.114.130	59001	59033
Volatility Forecast	224.0.114.132	224.0.114.136	59001	59033
Risk Alerts	224.0.114.134	224.0.114.138	59001	59033

2.2 Multicast Addresses and Ports (Simulation)

Service	Multicast Groups Service A	Multicast Groups Service B	Ports: US allowed Products	Ports: US restricted Products
Reference Data for all services below	224.0.114.17	224.0.114.25	59500	-
Eurex IOC Liquidity Indicator for Options	224.0.114.129	224.0.114.131	59501	59533
Volatility Forecast	224.0.114.133	224.0.114.137	59501	59533
Risk Alerts	224.0.114.135	224.0.114.139	59501	59533

2.3 Service Availability

The service will be technically available at least between 7:00 CET and 22:30 CET.

The Reference Data / Configuration Data (Template id 200) will be sent out cyclically (e.g. every 5 minutes) starting at 07:00 CET.

Eurex Market Signals will be available for the respective instruments during Continuous Trading only on Eurex® trading days between 08:00 CET and 22:00 CET.

3. Data and Service Messages

3.1 Market Data Statistics Reference Data (TID = 200)

FIX Tag	FIX Field Name	Req'd	FAST Data Type	Description
35	MsgType	Y	string	Message type Always 'DP' = MarketDataStatisticsReport
49	SenderCompID	Y	uInt32	Unique ID of a sender
2453	MDStatisticRptID	Y	string	Market Data Statistics Report identifier Always '0'
207	SecurityExchange	Y	string	Market used to help identify a security (XEUR)
48	SecurityID	Y	string	T7 Instrument ID
22	SecurityIDSource	Y	string	Source Identification Always 'M' = Marketplace-assigned ID
< MDStatisticRptGrp > sequence starts				
2474	NoMDStatistics	Y	length	Defines the number of entries to follow.
2475	> MDStatisticID	Y	string	Unique statistics identifier
2477	> MDStatisticStatus	Y	enum	Status for the statistics 1 = Active 2 = Inactive
2454	> MDStatisticName	Y	string	Acronym for statistic
2455	> MDStatisticDesc	Y	string	Description for the statistics
2460	> MDStatisticFrequencyPeriod	N	uInt32	Dissemination frequency of statistics Special meaning for 0 = real-time (e.g. as soon as a new trade appears)
2461	> MDStatisticFrequencyUnit	N	enum	Time unit for MDStatFrequencyPeriod 0 = seconds (default) 3 = milliseconds 10 = Minutes 12 = Days
2466	> MDStatisticIntervalPeriod	N	uInt32	Length of time for which the statistic is calculated.

2467	> MDStatisticIntervalUnit	N	enum	Time unit for MDStatIntervalPeriod 0 = Seconds (default) 3 = Milliseconds 10 = Minutes 12 = Days
2456	> MDStatisticType	Y	enum	Type of statistic 1 = Count 2 = Average 3 = Volume 4 = Distribution 5 = Ratio 6 = Liquidity 7 = VWAP 8 = Volatility 9 = Duration 10 = Tick
2457	> MDStatisticScope	Y	enum	Scope of the statistics 1 = Best Bid 2 = Best Ask 3 = Depth Ask 4 = Depth Bid 5 = Orders 6 = Quotes 7 = Orders and Quotes 8 = Trade
2458	> MDStatisticSubScope	N	enum	Scope details of the statistic 1 = Orderbook (only visible orders/quotes) 2 = Hidden (only hidden orders/quotes) 3 = Indicative (only non-tradable quotes)
2459	> MDStatisticScopeType	N	enum	Scope type of the statistics 1 = Entry Rate 2 = Modification Rate 3 = Cancel Rate
54	> Side	N	enum	Data of a specific side only 1 = Buy 2 = Sell

40	> OrdType	N	enum	Data for a specific order type only 1 = Market 2 = Limit 3 = Stop
59	> TimeInForce	N	enum	Specifies how long an order remains in effect 3 = Immediate Or Cancel 4 = Fill Or Kill
2472	> MDStatisticRatioType	N	enum	Ratios between various entities. Conditionally required for MDStatType 'Ratio' 1 = Buyer / Seller Relation 2 = Upticks – Downticks 3 = Market Maker to Non-Market Maker
< MDStatsAttribGrp > (optional) sequence starts				
29827	>NoMDStatAttributes	N	length	Defines the number of entries to follow.
29828	>>MDStatAttributeType	Y	enum	1 = (not used) 2 = last trade price 3 = last trade quantity 4 = trade match identifier 5 = side
< MDStatsAttribGrp > (optional) sequence ends				
<MDStatsRptGrp> sequence ends				
60	TransactTime	Y	timestamp	Transaction Time

3.2 Market Data Statistics Update (TID = 201)

FIX Tag	FIX Field Name	Req'd	FAST Data Type	Description
35	MsgType	Y	string	Message type Always 'DP' = MarketDataStatisticsReport
49	SenderCompID	Y	uInt32	Unique ID of a sender
2453	MDStatisticRptID	Y	string	Market Data Statistics Report identifier Always '0'
207	SecurityExchange	Y	string	Market used to help identify a security (XEUR)
48	SecurityID	Y	string	Instrument ID
22	SecurityIDSource	Y	string	Source Identification Always 'M' = Marketplace-assigned ID
< MDStatisticRptGrp > sequence starts				
2474	NoMDStatistics	Y	length	Defines the number of entries to follow.
2475	> MDStatisticID	Y	string	Unique statistics identifier
2476	> MDStatisticTime	Y	timestamp	Time of calculation of the statistic
2478	> MDStatisticValue	N	decimal	Calculated statistics value
< MDStatsAttribGrp > (optional) sequence starts				
29827	>NoMDStatAttributes	N	length	Defines the number of entries to follow.
29828	>>MDStatAttributeType	Y	enum	1 = (not used) 2 = last trade price 3 = last trade quantity 4 = trade match identifier 5 = side
29829	>>MDStatAttributeValue	Y	string	Corresponding attribute value
< MDStatsAttribGrp > (optional) sequence ends				
<MDStatsRptGrp> sequence ends				
60	TransactTime	Y	timestamp	Transaction Time

3.3 Packet Header (TID = 92)

Each datagram contains a packet header which is used for identification of datagrams and is sent on a channel basis. Each header contains the following fields:

Field Name	FAST Data Type	Description
SenderCompID	uInt32	Unique id for a sender Each multicast channel uses the same logic. Constant value: • Standard Value • Failover Value
PacketSeqNum	ByteVector	Datagram/packet sequence number Contiguous. Can be used for gap detection. Sequenced for each multicast channel itself. The PacketSeqNum's in the packet header are contiguous per SenderCompID, multicast address and port combination.
SendingTime	ByteVector	Time at which this packet left the sender (in nanoseconds since epoch).

The following table shows the structure of the block header before FAST-decoding:

1 Byte	1 Byte	1 Byte	1 Byte	4 Bytes	1 Byte	8 Bytes
PMAP	**TID**	**Sender Comp ID**	**Length**	**PacketSeqNum**	**Length**	**SendingTime**
1	2	3	4	8	9	17

3.4 Market Data Report Message (TID = 152)

FIX Tag	FIX Field Name	Req'd	Fast Data Type	Description
35	MsgType	Y	string	U20 = MarketDataReport
2536	MDReportCount	N	uInt32	Number of messages
369	LastMsgSeqNumProcessed	N	uInt32	
2535	MDReportEvent	Y	enum	11 = Start Of Statistic Reference Data 12 = End Of Statistic Reference Data
60	TransactTime	Y	timestamp	Transaction Time

4. Eurex IOC Liquidity Indicator

The Eurex IOC Liquidity Indicator determines potential liquidity as aggregated volume from automatically deleted IOC orders.

The calculation is triggered by a trade event ('trigger') where the aggressive-order side has the order validity 'IOC' (Immediate-Or-Cancel). The trigger establishes a price limit (by means of execution price) and the beginning of an observation time period (by means of execution time).

During this observation time, the volumes of subsequent IOC orders at a price level better or equal to the one given by the 'trigger' are aggregated upon deletion where for each business unit involved only the highest order quantity contributes to the aggregated volume ('IOC volume'). Volumes of IOC orders sent via the same session Id within the observation time contribute in total to the aggregated volume.

Regarding the trigger's aggressive-order side, two additional rules apply:

- No further IOC orders (by its business unit) are considered for the 'IOC volume'
- If it only partially matches, the deleted excess volume contributes to the 'IOC volume' in the calculation interval where the (partial) match constitutes the trigger event only.

Multiple trigger events can constitute overlapping observation periods, which means a deleted IOC volume can contribute to more than one indicator message.

The calculation is based on an exchange-internal data feed.

Configured observation time for Eurex IOC Liquidity Indicator for Options: 10 milliseconds

Please note that the calculation result is determined at the end of the observation time and is disseminated immediately afterwards.

Initially the Eurex IOC Liquidity Indicator for Options will be provided for the 77 most liquid options listed on the Eurex Exchanges T7 trading system – see chapter 7.

The calculated value for the Eurex IOC liquidity indicator is provided in field MDStatisticValue with MDStatisticID=480 – see appendix A.

4.1 Details

The indicator message consists of the following elements:

1. liquidity indication: aggregated volume calculated on the basis of deleted IOC orders
2. last traded price, last traded quantity, execution ID, aggressive side of the trade that triggers the calculation of the liquidity indication

4.2 Examples

The following examples show specific calculation scenarios of the indicator for a single contract security ID.

The table colours provide guidance with regard to the relevance of the order:

- white: resting order
- grey: executed aggressive order
- green: orders counted towards the deleted IOC quantity
- orange: orders not counted towards the deleted IOC quantity

4.2.1 Example #1

Two orders counted; one order not counted as it belongs to the same business unit:

BU	trader	session	validity	qty	side	type	px	entry time	aggressor	status
1	1	1	GTC	75	Buy	Limit	30	09:16:04.265	resting	filled
2	1	1	IOC	75	Sell	Limit	30	09:16:05.561	incoming	filled
3	1	1	IOC	75	Sell	Limit	30	09:16:05.565	n/a	cancelled
4	1	1	IOC	50	Sell	Limit	30	09:16:05.566	n/a	cancelled
4	2	2	IOC	50	Sell	Limit	30	09:16:05.567	n/a	cancelled

result	
liquidity indication	125
last traded price	30
last traded quantity	75
execution ID	123456
aggressive side	S

4.2.2 Example #2

Two orders counted; one order not counted as it belongs to same business unit; the duplicate with the lower quantity is discarded:

BU	trader	session	validity	qty	side	type	px	entry time	aggressor	status
1	1	1	GTC	75	Buy	Limit	30	09:16:04.265	resting	filled
2	1	1	IOC	75	Sell	Limit	30	09:16:05.561	incoming	filled
3	1	1	IOC	75	Sell	Limit	30	09:16:05.565	n/a	cancelled
4	1	1	IOC	25	Sell	Limit	30	09:16:05.566	n/a	cancelled
4	2	2	IOC	50	Sell	Limit	30	09:16:05.567	n/a	cancelled

result	
liquidity indication	125
last traded price	30
last traded quantity	75
execution ID	123456
aggressive side	S

4.2.3 Example #3

Two orders counted; one order not counted as it belongs to the same business unit (with regard to aggressively filled order):

BU	trader	session	validity	qty	side	type	px	entry time	aggressor	status
1	1	1	GTC	75	Buy	Limit	30	09:16:04.265	resting	filled
2	1	1	IOC	75	Sell	Limit	30	09:16:05.561	incoming	filled
3	1	1	IOC	75	Sell	Limit	30	09:16:05.565	n/a	cancelled
4	1	1	IOC	25	Sell	Limit	30	09:16:05.566	n/a	cancelled
2	2	2	IOC	75	Sell	Limit	35	09:16:05.567	n/a	cancelled

result	
liquidity indication	100
last traded price	30
last traded quantity	75
execution ID	123456
aggressive side	S

4.2.4 Example #4

Two orders counted; one order not counted, because only orders with same or better price are considered:

BU	trader	session	validity	qty	side	type	px	entry time	aggressor	status
1	1	1	GTC	75	Buy	Limit	30	09:16:04.265	resting	filled
2	1	1	IOC	75	Sell	Limit	30	09:16:05.561	incoming	filled
3	1	1	IOC	75	Sell	Limit	30	09:16:05.565	n/a	cancelled
4	1	1	IOC	75	Sell	Limit	30	09:16:05.566	n/a	cancelled
5	2	2	IOC	75	Sell	Limit	31	09:16:05.567	n/a	cancelled

result	
liquidity indication	150
last traded price	30
last traded quantity	75
execution ID	123456
aggressive side	S

4.2.5 Example #5

Two orders counted; one order not counted due to being outside observation time (10ms):

BU	trader	session	validity	qty	side	type	px	entry time	aggressor	status
1	1	1	GTC	75	Buy	Limit	30	09:16:04.265	resting	filled
2	1	1	IOC	75	Sell	Limit	30	09:16:05.561	incoming	filled
3	1	1	IOC	75	Sell	Limit	30	09:16:05.565	n/a	cancelled
4	1	1	IOC	75	Sell	Limit	30	09:16:05.566	n/a	cancelled
5	1	2	IOC	75	Sell	Limit	30	09:16:05.586	n/a	cancelled

result	
liquidity indication	150
last traded price	30
last traded quantity	75
execution ID	123456
aggressive side	S

4.2.6 Example #6

The resting order is initially only partially filled, the second trade triggers an additional indicator calculation. Business unit 3 contributes only to results 2 (see description under chapter 4, 2nd hyphen):

BU	trader	session	validity	qty	side	type	px	entry time	aggressor	status
1	1	1	GTC	100	Buy	Limit	30	09:16:04.265	resting	part. filled/filled
2	1	1	IOC	75	Sell	Limit	30	09:16:05.561	incoming	filled
3	1	1	IOC	75	Sell	Limit	30	09:16:05.565	n/a	25 filled, 50 cancelled
4	1	1	IOC	75	Sell	Limit	30	09:16:05.566	n/a	cancelled
5	1	1	IOC	75	Sell	Limit	30	09:16:05.567	n/a	cancelled

result 1	
liquidity indication	150
last traded price	30
last traded quantity	75
execution ID	123456
aggressive side	S

result 2	
liquidity indication	200
last traded price	30
last traded quantity	25
execution ID	123457
aggressive side	S

Please note:
- Observation time for result 1 starts at 09:16:05.561 and ends at 09:16:05.571.
- Observation time for result 2 starts at 09:16:05.565 and ends at 09:16:05.575.

5. Intraday Volatility Forecast

5.1 Average Realized Volatility

Average realized volatility data is available via the separate Eurex Market Signal service Intraday Volatility Forecast.

The analytic measures the average realized volatility for every second. The average realized volatility measure is based on the following conventions:

- Price measure is based on the volume weighted mid-price of best bid/best ask Prices are sampled on a 10 millisecond grid
- Price increments are taken over 100 millisecond intervals
- Instead of using only one price increment per 100 millisecond interval, the 100 millisecond interval is shifted 10 times (each time by 10 milliseconds)
- The average of the corresponding 10 squared price increments is used for volatility calculation

The calculation is done every second and reported for the last second. Volatility may be aggregated to any coarser reporting interval by using the additivity of variance (=squared volatility).

Average realized volatility is calculated for all contracts of Euro Stoxx 50 Futures, DAX Futures and Euro-Bund Futures.

The calculated value for the average realized volatility is provided in field MDStatisticValue with MDStatisticID=587– see appendix A.

5.2 Intraday Volatility Forecast

The Intraday Volatility Forecast data is available via the separate Eurex Market Signal service Intraday Volatility Forecast.

The Intraday Volatility Forecast uses an internal methodology based on explanatory factors such as auto-regressive patterns, seasonality and scheduled events. The forecast model is maintained and improved on an on-going basis.

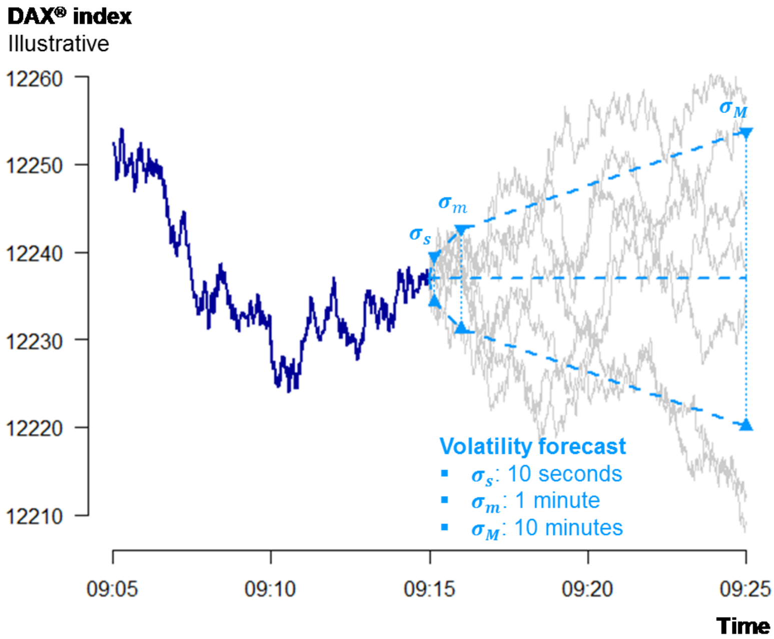

Illustration of forecasts with different horizons

The Intraday Volatility Forecast is available with the following specifications:

Forecast period	Publishing frequency	Forecast horizon
10 seconds	every 5 seconds	next 5 consecutive 10 second periods
1 minute	every 30 seconds	next 5 consecutive 1 minute periods
10 minutes	every 5 minutes	next 3 consecutive 10 minute periods

Intraday Volatility Forecast is calculated is calculated for the front contracts of the EuroStoxx 50, DAX and Euro-Bund. Rolling in equity index products is on last trading day whereas rolling in fixed income products is one day before last trading day.

The calculated value for the Intraday Volatility Forecast is provided in field MDStatisticValue with MDStatisticID=587 to 600 – see appendix A.

6. Risk Alerts

6.1 Order Book Resilience

The order book resilience analytics are available via the separate Eurex Market Signal service Risk Alerts.

The analytic measures the resilience of an individual order book situation by the number of units required to move price 5, 10 or 20 price ticks up or down. The reported analytic is the minimum, maximum and time weighted bid/ask spread over the last second. The calculation is done every second. The calculation starts one second after the beginning of the continuous trading phase.

Calculation of order book resilience 5
Fictitious example for DAX future with ticksize 0.5

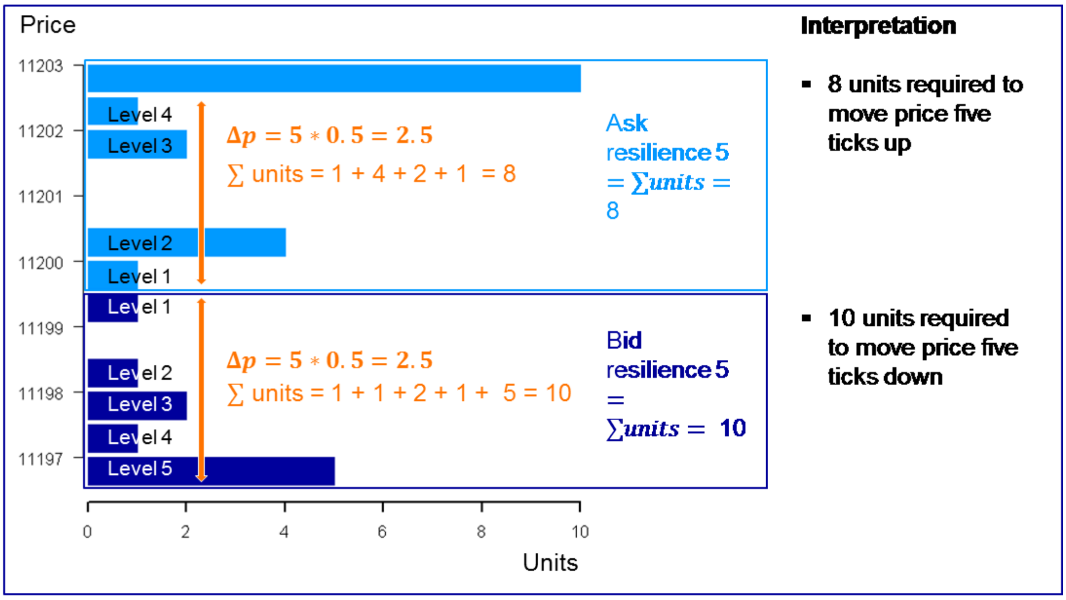

Illustration for an individual order book situation of order book resilience with tick size 5

Calculation of average order book resilience values are all time weighted averages.

Order Book Resilience is calculated for all Futures listed in chapter 8.

The calculated value for the Order Book Resilience is provided in field MDStatisticValue with MDStatisticID=566 to 577 – see appendix A.

6.2 Risk Alerts

The Risk Alerts are available via the separate Eurex Market Signal service Risk Alerts.

Risk alerts trigger a real-time message when a measure exceeds a given threshold. Currently the alerts implemented are based on bid/ask spread, order book resilience 20 and price range. These measures are evaluated on every trade or order book update, where a message is immediately triggered in case of one of the thresholds is being exceeded. Another message is triggered as soon as the measure returns to a value below threshold.

There are two thresholds levels:

- a "once a day" threshold based on the average of the most extreme values per day within the last 30 trading days (threshold H1)
- a "every ten days" threshold based on the average of the most extreme values per 10 days within the last three 10 trading day periods (threshold H2)

As extreme values are considered a high bid/ask spread, low order book resilience or a high price range from one tick to the other.

Risk Alerts are calculated only for front contracts of Euro Stoxx 50 Futures, DAX Futures and Euro-Bund Futures. Rolling in equity index products is on last trading day whereas rolling in fixed income products is one day before last trading day.

The calculated value for the Risk Alerts is provided in field MDStatisticValue with MDStatisticID=555 to 562 – see appendix A.

7. Options Product List

Product ID	Product Category	Product Name
OGBM	Fixed Income Options	Options on Euro-Bobl Futures
OGBL	Fixed Income Options	Options on Euro-Bund Futures
OGBS	Fixed Income Options	Options on Euro-Schatz Futures
ODAX	Index Options	DAX® Options
ODX1	Index Options	DAX® 1st Friday weekly options
ODX2	Index Options	DAX® 2nd Friday weekly options
ODX4	Index Options	DAX® 4th Friday weekly options
ODX5	Index Options	DAX® 5th Friday weekly options
OEXD	Index Options	EURO STOXX 50 Index Dividend Options
OESX	Index Options	EURO STOXX 50® Index Options
OESB	Index Options	EURO STOXX® Banks Options
OES1	Index Options	EURO STOXX 50® 1st friday
OES2	Index Options	EURO STOXX 50® 2nd friday
OES4	Index Options	EURO STOXX 50® 4th friday
OKS2	Index Options	KOSPI 200
OSMI	Index Options	SMI® Options
OSTB	Index Options	STOXX Europe Bank Index Options
OSTE	Index Options	STOXX Europe Energy Index Options
OSTS	Index Options	STOXX Europe Basic Resources Index Options
OVS	Volatility Index Options	VSTOXX Options
ADS	DAX Equity Options	Adidas
ALV	DAX Equity Options	Allianz
BAS	DAX Equity Options	BASF
BAY	DAX Equity Options	Bayer
BEI	DAX Equity Options	Beiersdorf
BMW	DAX Equity Options	BMW
CON	DAX Equity Options	Continental
DAI	DAX Equity Options	Daimler
DBK	DAX Equity Options	Deutsche Bank
DB1	DAX Equity Options	Deutsche Börse
DPW	DAX Equity Options	Deutsche Post
DTE	DAX Equity Options	Deutsche Telekom
EOA	DAX Equity Options	E.ON
FRE	DAX Equity Options	Fresenius

Product ID	Product Category	Product Name
FME	DAX Equity Options	Fresenius Medical Care
HEI	DAX Equity Options	HeidelbergCement
HEN3	DAX Equity Options	Henkel
IFX	DAX Equity Options	Infineon
SDF	DAX Equity Options	K+S
LXS	DAX Equity Options	Lanxess
LIN	DAX Equity Options	Linde
LHA	DAX Equity Options	Lufthansa
MRK	DAX Equity Options	Merck
MUV2	DAX Equity Options	Münchener Rückversicherung
RWE	DAX Equity Options	RWE
SAP	DAX Equity Options	SAP
SIE	DAX Equity Options	Siemens
TKA	DAX Equity Options	Thyssen Krupp
VO3	DAX Equity Options	VOLKSWAGEN VZ
ABBN	Other Equity Options	ABB
ADEN	Other Equity Options	Adecco Options
AEN	Other Equity Options	Aegon Options
AFR	Other Equity Options	Air France-KLM Options
AHO	Other Equity Options	Ahold Delhaize Options
AIR	Other Equity Options	Air Liquide INH. Options
AIX	Other Equity Options	Aixtron Options
AKU	Other Equity Options	Akzo Nobel Options
AOM	Other Equity Options	Alstom Options
ARYN	Other Equity Options	Aryzta Options
ASG5	Other Equity Options	Generali Options
ASM	Other Equity Options	ASML Holding
EAD	Other Equity Options	Airbus Group N.V.
CGE	Other Equity Options	Alcatel-Lucent
ISPA	Other Equity Options	ArcelorMittal
AXA	Other Equity Options	AXA
IES5	Other Equity Options	Banca Intesa
BAEN	Other Equity Options	Julius Bär Group
BALN	Other Equity Options	Baloise HDLG Options
BBVD	Other Equity Options	Banco Bilbao Vizcaya Argentaria
BSD2	Other Equity Options	Banco Santander Central Hispano
BSN	Other Equity Options	Groupe Danone EO
BNP	Other Equity Options	BNP Paribas Options

Product ID	Product Category	Product Name
BYG	Other Equity Options	Boygues SA INH.
CAR	Other Equity Options	Carrefour
CAJ	Other Equity Options	Casino Guichard
CBK	Other Equity Options	Commerzbank
CFR	Other Equity Options	Compagnie Financière Richemont
CGM	Other Equity Options	CAP Gemini INH. Options
CLN	Other Equity Options	Clariant Options
CSGN	Other Equity Options	Credit Suisse Group
DAIE	Other Equity Options	Daimler [European]
DSM	Other Equity Options	Koninklijke DSM
E2F	Other Equity Options	Electricite de France
EAD	Other Equity Options	EADS Options
ENL5	Other Equity Options	ENEL Options
ENT5	Other Equity Options	ENI Options
ESL	Other Equity Options	Essilor Luxottica
FIA5	Other Equity Options	Fiat Chrysler Automobiles
FOT	Other Equity Options	Forum Options
GEBN	Other Equity Options	Geberit Options
GIVN	Other Equity Options	Givaudan Options
GLEN	Other Equity Options	Glencore
GOB	Other Equity Options	St. Gobain Options
GZF	Other Equity Options	GDF Suez
HNK	Other Equity Options	Heineken Options
HNR1	Other Equity Options	Hannover Rück Options
HOLN	Other Equity Options	Holcim
IBE	Other Equity Options	Iberdrola
IMO	Other Equity Options	Immofinanz Options
INN	Other Equity Options	ING
ITK	Other Equity Options	Anheuser-Busch InBev
IXD	Other Equity Options	Inditex
KCO	Other Equity Options	Klöckner & Co.
KNIN	Other Equity Options	Kühne & Nagel
KPN	Other Equity Options	KPN
LOGN	Other Equity Options	Logitech
LONN	Other Equity Options	Lonza
LOR	Other Equity Options	L'Oreal
MBTN	Other Equity Options	Meyer Burger Technology
MCH	Other Equity Options	Michelin

Product ID	Product Category	Product Name
MEO	Other Equity Options	Metro
MOH	Other Equity Options	LVMH Options
MTX	Other Equity Options	MTU Aero Engines
NESE	Other Equity Options	Nestle [European]
NESN	Other Equity Options	Nestlé
NOA3	Other Equity Options	Nokia
NOVE	Other Equity Options	Novartis [European]
NOVN	Other Equity Options	Novartis
FTE	Other Equity Options	Orange
OERL	Other Equity Options	Unaxis Options
OSR	Other Equity Options	Osram Licht
PER	Other Equity Options	Pernot-Ricard
PEU	Other Equity Options	Peugeot
PHI1	Other Equity Options	Philips Options
POR3	Other Equity Options	Porsche Options
PPX	Other Equity Options	Kering
PSM	Other Equity Options	ProSiebenSat.1 Media
REP	Other Equity Options	Repsol
RHM	Other Equity Options	Rheinmetall
RIBH	Other Equity Options	Raiffeisen Bank International
RNL	Other Equity Options	Renault
ROG	Other Equity Options	Roche Holding
ROY	Other Equity Options	Royal Dutch Shell
RPL	Other Equity Options	UPM-Kymmene Corp.
RSH	Other Equity Options	Randstad
SBMO	Other Equity Options	SBM Offshore
SEJ	Other Equity Options	Safran
SEV	Other Equity Options	Suez
SNW	Other Equity Options	Sanofi-Aventis old
SGE	Other Equity Options	Société Générale
SGL	Other Equity Options	SGL Carbon
SGM	Other Equity Options	SGM / STMicroelectronics
SGSN	Other Equity Options	SGS
UHR	Other Equity Options	Swatch Group
SREN	Other Equity Options	Swiss Re
SCMN	Other Equity Options	Swisscom
SLHN	Other Equity Options	Swiss Life
SND	Other Equity Options	Schneider Electric

Product ID	Product Category	Product Name
SNF	Other Equity Options	Snam-Italgas
SNW	Other Equity Options	Sanofi-Synthelabo
SOON	Other Equity Options	Sonova
SQU	Other Equity Options	Vinci SA
SZG	Other Equity Options	Salzgitter
SZU	Other Equity Options	Südzucker
THP	Other Equity Options	TechnipFMC
TUI	Other Equity Options	TUI Options
TQI5	Other Equity Options	Telecom Italia
TNE5	Other Equity Options	Telefonica
TOTB	Other Equity Options	Total
UBL	Other Equity Options	Unibail-Rodamco-Westfield
UBSN	Other Equity Options	UBS
UHRN	Other Equity Options	Swatch Group
CRI5	Other Equity Options	UniCredit
UNI	Other Equity Options	Unilever
VAC	Other Equity Options	Vallourec
VOW	Other Equity Options	Volkswagen Options
VSA	Other Equity Options	Valeo
VVD	Other Equity Options	Veolia Environment
VVU	Other Equity Options	Vivendi
XCA	Other Equity Options	Credit Agricole
ZURE	Other Equity Options	Zurich Insurance Group [European]
ZURN	Other Equity Options	Zurich Insurance Group

8. Futures Product List

Product code	Product Category	Product Name
FDAX	Equity Index Futures	DAX® Futures
FESX	Equity Index Futures	EURO STOXX 50® Index Futures
FSMI	Equity Index Futures	SMI® Futures
FVS	Volatility Index Futures	VSTOXX® Futures
FGBM	Fixed Income Futures	Euro-Bobl Futures
FGBL	Fixed Income Futures	Euro-Bund Futures
FGBX	Fixed Income Futures	Euro-Buxl® Futures
FOAT	Fixed Income Futures	Euro-OAT Futures
FGBS	Fixed Income Futures	Euro-Schatz Futures
FBTP	Fixed Income Futures	Long-Term Euro-BTP Futures
FOAM	Fixed Income Futures	Mid-Term Euro-OAT Futures
FESB	Sector Index Futures	EURO STOXX® Banks Futures
FEXD	Dividend Index Futures	EURO STOXX 50® Index Dividend Futures

9. Appendix A – Valid Values for MDStatisticID

MDStatisticID	MDStatisticName	Description
480	IOC_IND	Eurex IOC Liquidity Indicator for Options
555	ALERT_BID_ASK_SPREAD_MAX_H1	Bid/ask spread alert – 'once a day' threshold for maximum spread reached
556	ALERT_BID_ASK_SPREAD_MAX_H2	Bid/ask spread alert – 'every ten days' threshold for maximum spread reached
561	ALERT_PRICE_RANGE_H1	Price range alert – 'once a day' threshold for maximum price range reached
562	ALERT_PRICE_RANGE_H2	Price range alert – 'every ten days' threshold for maximum price range reached
566	ORDER_BOOK_RESILIENCE_5_BUY_MIN	Minimum volume from last second, which needs to be executed to move price 5 price ticks up
567	ORDER_BOOK_RESILIENCE_5_BUY_MAX	Maximum volume from last second, which needs to be executed to move price 5 price ticks up
568	ORDER_BOOK_RESILIENCE_5_BUY_AVG	Average volume from last second, which needs to be executed to move price 5 price ticks up
569	ORDER_BOOK_RESILIENCE_5_SELL_MIN	Minimum volume from last second, which needs to be executed to move price 5 price ticks down
570	ORDER_BOOK_RESILIENCE_5_SELL_MAX	Maximum volume from last second, which needs to be executed to move price 5 price ticks down
571	ORDER_BOOK_RESILIENCE_5_SELL_AVG	Average volume from last second, which needs to be executed to move price 5 price ticks down
572	ORDER_BOOK_RESILIENCE_10_BUY_MIN	Minimum volume from last second, which needs to be executed to move price 10 price ticks up
573	ORDER_BOOK_RESILIENCE_10_BUY_MAX	Maximum volume from last second, which needs to be executed to move price 10 price ticks up

MDStatisticID	MDStatisticName	Description
574	ORDER_BOOK_RESILIENCE_10_BUY_AVG	Average volume from last second, which needs to be executed to move price 10 price ticks up
575	ORDER_BOOK_RESILIENCE_10_SELL_MIN	Minimum volume from last second, which needs to be executed to move price 10 price ticks down
576	ORDER_BOOK_RESILIENCE_10_SELL_MAX	Maximum volume from last second, which needs to be executed to move price 10 price ticks down
577	ORDER_BOOK_RESILIENCE_10_SELL_AVG	Average volume from last second, which needs to be executed to move price 10 price ticks down
587	AVERAGE_REALIZED_VOLATILITY	Average realized volatility, published every second.
588	VOLA_FORECAST_H1_P1	10 second horizon forecast – First 10 second time frame, published every 5 seconds
589	VOLA_FORECAST_H1_P2	10 second horizon forecast – Second 10 time frame, published every 5 seconds
590	VOLA_FORECAST_H1_P3	10 second horizon forecast – Third 10 time frame, published every 5 seconds
591	VOLA_FORECAST_H1_P4	10 second horizon forecast – Fourth10 time frame, published every 5 seconds
592	VOLA_FORECAST_H1_P5	10 second horizon forecast – Fifth 10 time frame, published every 5 seconds
593	VOLA_FORECAST_H2_P1	1 minute horizon forecast - First 1 minute time frame, published every 30 seconds
594	VOLA_FORECAST_H2_P2	1 minute horizon forecast – Second 1 minute time frame, published every 30 seconds
595	VOLA_FORECAST_H2_P3	1 minute horizon forecast – Third 1 minute time frame, published every 30 seconds
596	VOLA_FORECAST_H2_P4	1 minute horizon forecast – Fourth 1 minute time frame, published every 30 seconds
597	VOLA_FORECAST_H2_P5	1 minute horizon forecast – Fifth 1 minute time frame, published every 30 seconds

MDStatisticID	MDStatisticName	Description
598	VOLA_FORECAST_H3_P1	10 minute horizon forecast – First 10 minute time frame, published every 5 minutes
599	VOLA_FORECAST_H3_P2	10 minute horizon forecast – Second 10 minute time frame, published every 5 minutes
600	VOLA_FORECAST_H3_P3	10 minute horizon forecast – Third 10 minute time frame, published every 5 minutes
601	ALERT_ODB_RESILIENCE_10_BUY_MIN_H1	Buy resilience 10 alert – 'once a day' threshold for minimum volume reached
602	ALERT_ODB_RESILIENCE_10_BUY_MIN_H2	Buy resilience 10 alert – 'every ten days' threshold for minimum volume reached
603	ALERT_ODB_RESILIENCE_10_SELL_MIN_H1	Sell resilience 10 alert – 'once a day' threshold for minimum volume reached
604	ALERT_ODB_RESILIENCE_10_SELL_MIN_H2	Sell resilience 10 alert 'every ten days' threshold for minimum volume reached

10. Change log

No	Chapter, page	Date	Change
1.0	General	Oct 10, 2014	Creation of document
1.1	Ch. 2, Pg. 5	Dec 12, 2014	Update regarding network requirements
	Ch. 4, Pg. 12	Dec 12, 2014	Rule added for 'Volumes of subsequent IOC orders send via the same session Id'
	Ch. 4, Pg. 12	Dec 12, 2014	Processing of excess volume from partially matches defined more precisely
	Ch. 4.2.6, Pg. 18	Dec 12, 2014	Result 1 in Example #6 corrected due to more precise defined processing of excess volume from partially matches
3.0	General	Sep 23, 2015	Addition of new Market Signal services and Fix protocol conventions Addition of Intraday Volatility Forecast and Risk Alerts services
3.01	General	Nov 11, 2015	Removed chapter 3.4 'Extended technical heartbeat (TID = 170)' Description of product scope for Intraday Volatility Forecast adjusted
4.0	Ch. 3.4, Pg. 13	Aug 23, 2016	Replacing FIX tags 5488 (MDCount) and 28827 (MDReportEvent) by 2536 and 2535 in chapter 3.4 Renaming FIX Field Name 'MDCount' as 'MDReportCount'
	Ch. 3.3, Pg. 12		Updating Template ID for Packet Header (TID = 92)
5.0	General	Apr 18, 2017	Created version for T7 5.0
5.01	Ch. 9, Pg. 30	May, 26 2017	Addition of MDStatisticID 601 – 604 (ALERT_ODB_ RESILIENCE_10) Removal of MDStatisticID 578 – 583 (ORDER_BOOK_ RESILIENCE_20) and MDStatisticID 557 – 560 (ALERT_ ODB_ RESILIENCE_20)
6.0	General	Sep 26, 2017	Created version for T7 6.0
6.1	General	Apr 20, 2018	Created version for T7 6.1
7.0	General	Sep 21, 2018	Created version for T7 7.0
7.1	General	Apr 10, 2019	Created version for T7 7.1 / Updated Option products list