TRADE FILE – DERIVATIVES MARKET (SOM) (BINARY FORMAT)

Update History

No.	Issue Date	Details
1	2014-12-01	First Issue
1.1	2016-07-04	Data Enrichment - Section 2.2 – Revised as Null Value will also be found in Trade Amendment (356) message Section 2.2 – Clarify field values of Price and Quantity in Trade Amendment (356) message for cancelled trades already "given up"
2	2018-04-16	Data Enrichment - Section 1.1 – Add a new field "CommodityID" - Section 1.2 – Add a new field "TickStepSize" and change the description of the field "PriceQuotationFactor" - Section 1.4 – Add new field "PriceQuotationFactor" and 8-byte filler

The Trade File – Derivatives Market (SOM) (Binary Format) includes 3 types of information – (1) Derivatives Reference data, (2) Derivatives Trade and (3) Derivatives Block Trade and Trade Amendment data. Please refer to the below sub-sections for the details of the 3 types of information.

The following table lists out the data files to be found in each issue:

File Name	Contents
SOM Products	
MC102_All_YYYYMMDD	Derivatives Static Reference (Partition 1)
MC202_All_YYYYMMDD	Derivatives Static Reference (Partition 2)
MC152_All_YYYYMMDD	Derivatives Static Reference (OAPI)
MC112_All_YYYYMMDD	Derivatives Trade (Partition 1)
MC212_All_YYYYMMDD	Derivatives Trade (Partition 2)
MC168_All_YYYYMMDD	Derivatives Block Trades and Trade Amendments

1) YYYYMMDD is the date of file

2) If there is no record in the file, a dummy file with zero-length size will be provided.

1. Derivatives Reference

The Derivatives Reference file is in binary format and contains five types of messages – ***CommodityDefinition***, ***ClassDefinition***, ***SeriesDefinitionBase, SeriesDefinitionExtended*** and ***CombinationDefinition***. The filenames of the 6 Derivatives Reference files are as follows:

MC102_All_YYYYMMDD – SOM Partition 1 (SeriesDefinitionBase,CombinationDefinition)
MC202_All_YYYYMMDD – SOM Partition 2 (SeriesDefinitionBase,CombinationDefinition)
MC152_All_YYYYMMDD –SOM (CommodityDefinition,ClassDefinition,SeriesDefinitionExtended)
where YYYYMMDD is the date of the Derivatives Reference Data file

The layout of the Derivatives Reference is as follows:

<RecordLength><PacketHeader><DerivativesReference>…<RecordLength><PacketHeader><DerivativesReference>…<RecordLength><PacketHeader><DerivativesReference>

Following is the message layout of the ***RecordLength***

Offset	Field	Format	Len	Description
0	RecLen	Uint16	2	Size of the record (including this field)
Total length			2	

Following is the message layout of the ***PacketHeader***

Offset	Field	Format	Len	Description
0	PktSize	Uint16	2	Size of the packet (including this field)
2	MsgCount	Uint8	1	Number of messages included in the packet
3	Filler	String	1	
4	SeqNum	Uint32	4	Sequence number of the first message in the packet
8	SendTime	Uint64	8	UTC Timestamp. The number of nanoseconds since *January 1*, 1970, *00:00:00 GMT*, precision is provided to the nearest millisecond.
Total length			16	

<DerivativesReference> contains different combinations of the four types of messages – ***CommodityDefinition***, ***ClassDefinition***, ***SeriesDefinitionBase, SeriesDefinitionExtended*** and ***CombinationDefinition.*** For example:

In MC152 data files, the order of messages can be as following:

<CommodityDefinition><CommodityDefinition><ClassDefinition><SeriesDefinitionExtended> or ***<CommodityDefinition><CommodityDefinition><ClassDefinition><SeriesDefinitionExtended><ClassDefinition><SeriesDefinitionExtended>***

In MC102/202 data files, the order of messages can be as following:

<SeriesDefinitionBase><CombinationDefinition><SeriesDefinitionBase><CombinationDefinition>

or

<SeriesDefinitionBase><SeriesDefinitionBase><CombinationDefinition><CombinationDefinition>

Followings are the message layouts of the ***CommodityDefinition***, ***ClassDefinition***, ***SeriesDefinitionBase, SeriesDefinitionExtended*** and ***CombinationDefinition***

1.1 Commodity Definition (301)

Describes individual commodities available from the OMD-D system.

Message Fields

Offset	Field	Format	Len	Description	Values
0	MsgSize	Uint16	2	Size of the message	
2	MsgType	Uint16	2	Type of message.	301 Commodity Definition
4	CommodityCode	Uint16	2	Numerical identifier of the Underlying. This is the unique identifier of the message. The Series Definition Extended and the Class Definition are retrieved through this field which links them to the Commodity Definition. eg. 2005 (HKB).	
6	DecimalInUnderlyingPrice	Uint16	2	Number of implicit decimals in the underlying price received from external sources.	
8	ISINCode	String	12	A code which uniquely identifies a specific securities issue (International Securities Identification Number). For more information about ISIN code, see the international standard ISO 3166.	
20	BaseCurrency	String	3	Defines the trading currency for the instrument or the currency for the underlying. The representation of the currency follows the S.W.I.F.T. handbook and ISO 3166 standard.	See Currency Values in section 3.1.2 of OMD-D Interface Specification for full details.
23	UnderlyingPriceUnit	Uint8	1	The price unit for the underlying	1 Price 2 Yield * 3 Points 4 Yield Diff * 5 IMM Index * 6 Basis Points * 7 Inverted Yield * 8 Percentage of Nominal * 9 Dirty Price *

Offset	Field	Format	Len	Description	Values
24	CommodityName	String	32	Descriptive Name of the underlying Eg. Hang Seng Index	
56	NominalValue	Int64	8	Nominal Value of the Commodity	Applicable for 3-Year EFN Futures only
64	UnderlyingCode	String	20	Underlying Code of the Commodity	
84	UnderlyingType	Uint8	1	Type of the underlying	1 Stock 2 Currency 3 Interest rate 4 Energy * 5 Soft and Agrics * 6 Metal 7 Stock Index 8 Currency Index * 9 Interest Rate Index * 10 Energy Index * 11 Softs and Agrics Index * 12 Metal Index *
85	EffectiveTomorrow	Uint8	1	This declaration is for series to be traded the next day	0 False 1 True
86	CommodityID	String	6	Commodity ID of the underlying E.g. HSB	
92	Filler	String	2		
Total Length			94		

*Remark *: denotes that the value is not currently in use for existing products. However, please note that HKEX may use the value anytime when introducing new products*

1.2 Class Definition (302)

Describes individual instrument classes available from the OMD-D system. The key of a Class Definition is composed by Country, Market, Instrument Group and Commodity Code.

Message Fields

Offset	Field	Format	Len	Description	Values
0	MsgSize	Uint16	2	Size of the message	
2	MsgType	Uint16	2	Type of message.	302 Class Definition
4	Country	Uint8	1	Country Identifier	
5	Market	Uint8	1	Market Code	See section 8.4 of OMD-D Interface Specification for a list of possible values
6	InstrumentGroup	Uint8	1	Instrument Group. This field together with the Commodity, forms the unique identifier of the message	See section 8.3 of OMD-D Interface Specification for a list of possible values
7	Modifier	Uint8	1	Expiration date modified. Value is incremented by one each time the instrument is involved in an issue, split, etc. Note that the modifier value can be different for bid and ask options in the same Series.	0-255
8	CommodityCode	Uint16	2	Numerical identifier of the Underlying This field, together with the	

Offset	Field	Format	Len	Description	Values
				InstrumentGroup forms the unique identifier of the message The Commodity Definition and the Series Definition Extended are retrieved through this field which links them to the Class Definition Eg. eg. 2005 (HKB).	
10	Filler	String	2		
12	PriceQuotationFactor	Int32	4	Implies the contracted value of the product / series	Decimal places determined from Class Definition field "DecimalInContractSize"
16	ContractSize	Uint32	4	Number of Underlying entities per contract.	Decimal places determined from Class Definition field "DecimalInContractSize"
20	DecimalInStrikePrice	Uint16	2	Number of implicit decimals in the strike price.	
22	DecimalInContractSize	Uint16	2	Number of implicit decimals in the Contract Size and the Price Quotation Factor fields.	
24	DecimalInPremium	Uint16	2	The number of decimals used in Price fields	
26	RankingType	Uint16	2	This identifies how the instrument is ranked.	1 Price, Time 2 Inverted Price, Time * 3 Price, Traders before MM, Time * 4 Inverted Price, Traders before MM, Time * 5 Price, MM before Traders, Time * 6 Inverted Price, MM before Traders, Time * 7 Price, Baits before Normal Orders, Time * 8 Inverted Price, Baits before Normal Orders, Time * 11 Price, Own Orders, Time * 12 Inverted Price, Own Orders, Time *
28	Tradable	Uint8	1	Defines if the instrument is a tradable instrument or not.	1 Yes 2 No
29	PremiumUnit4Price	Uint8	1	The premium unit that describes the price unit in the order.	1 Price 2 Yield * 3 Points 4 Yield Diff * 5 IMM Index * 6 Basis Points * 7 Inverted Yield * 8 Percentage of Nominal * 9 Dirty Price *
30	BaseCurrency	String	3	Defines the trading currency for the instrument or the currency for the underlying. The representation of the currency follows the S.W.I.F.T. handbook and ISO 3166 standard.	See Currency Values in section 3.1.2 of OMD-D Interface Specification for full details.
33	InstrumentClassID	String	14	The ASCII representation of the instrument class.	
47	InstrumentClassName	String	32	The full ASCII representation. name_short	
79	IsFractions	String	1	Is the premium internally represented as fractions?	Y Yes N No
80	SettlementCurrencyID	String	32	Full descriptive name of the Settlement Currency. The representation of the currency follows the S.W.I.F.T. handbook and ISO	See Currency Values in section 3.1.2 of OMD-D Interface Specification for full details.

Offset	Field	Format	Len	Description	Values
				3166 standard.	
112	Effective Tomorrow	Uint8	1	This declaration is for series to be traded the next day	0 False 1 True
113	TickStepSize	Int32	4	Minimum Fluctuation of the product / series	Decimal places determined from Class Definition field 'DecimalInPremium'
117	Filler	String	1		
Total Length			118		

*Remark *: denotes that the value is not currently in use for existing products. However, please note that HKEX may use the value anytime when introducing new products*

1.3 Series Definition Base (303)

Describes basic series information available from the OMD-D system.

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Message Fields

Offset	Field	Format	Len	Description	Values
0	MsgSize	Uint16	2	Size of the message	
2	MsgType	Uint16	2	Type of message.	303 Series Definition Base
4	OrderbookID	Uint32	4	Numerical identifier of the order book This is the unique identifier for the series The Combination Definition is retrieved through this field which links it to the Series Definition Base	
8	Symbol	String	32	Short Name	
40	FinancialProduct	Uint8	1	Financial Product	1 Option 2 Forward * 3 Future 4 FRA * 5 Cash * 6 Payment * 7 Exchange Rate * 8 Interest Rate Swap * 9 REPO * 10 Synthetic Box Leg/Reference * 11 Standard Combination 12 Guarantee * 13 OTC General * 14 Equity Warrant * 15 Security Lending *
41	NumberOfDecimalsPrice	Uint16	2	The number of decimals used in Price fields	
43	NumberOfLegs	Uint8	1	Number of legs in the series There can be up to 256 legs per series	

Offset	Field	Format	Len	Description	Values
44	StrikePrice	Int32	4	In general, it is the price at which a specific derivative contract can be exercised. Zero implies the Strike Price is not applicable, e.g. for futures contracts. For Combo Series, this field may not have meaning but can be used with other fields such as CommodityCode, ExpirationDate, InstrumentGroup and Modifier to differentiate the series from the others.	Decimal places determined from Class Definition (302) field "DecimalsInStrikePrice". Not applicable for Combo Series.
48	ExpirationDate	String	8	Expiry date of the series	YYYYMMDD
56	Filler	Uint16	2		
58	PutOrCall	Uint8	1	Identifies whether the series is a put or call type	0 Undefined 1 Call 2 Put
59	Filler	String	1		
Total Length			60		

*Remark *: denotes that the value is not currently in use for existing products. However, please note that HKEX may use the value anytime when introducing new products*

1.4 Series Definition Extended (304)

Describes series static data available from the OMD-D system.

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Message Fields

Offset	Field	Format	Len	Description	Values
0	MsgSize	Uint16	2	Size of the message	
2	MsgType	Uint16	2	Type of message.	304 Series Definition Extended
4	OrderBookID	UInt32	4	Orderbook ID	0 If Not Available
8	Symbol	String	32	Symbol This is the unique identifier of the message	
40	Country	Uint8	1	Country Identifier	
41	Market	Uint8	1	Market Code	See section 8.4 of OMD-D Interface Specification for a list of possible values
42	InstrumentGroup	Uint8	1	Instrument Group	See section 8.3 of OMD-D Interface Specification for a list of possible values
43	Modifier	Uint8	1	Expiration date modified. Value is incremented by one each time the instrument is involved in an issue, split, etc. Note that the modifier value can be different for bid and ask options in the same Series.	0-255
44	CommodityCode	Uint16	2	Numerical identifier of the Underlying This is the unique commodity	

Offset	Field	Format	Len	Description	Values
				identifier. The Commodity Definition and the Class Definition are retrieved through this field which links them to the Series Definition Extended Eg. HSI	
46	ExpirationDate	Uint16	2	Expiry date of the series	
48	StrikePrice	Int32	4	In general, it is the price at which a specific derivative contract can be exercised. Zero implies the Strike Price is not applicable, e.g. for futures contracts. For Combo Series, this field may not have meaning but can be used with other fields such as CommodityCode, ExpirationDate, InstrumentGroup and Modifier to differentiate the series from the others.	Decimal places determined from Class Definition field "DecimalInStrikePrice". Not applicable for Combo Series.
52	ContractSize	Int64	8	Number of Underlying entities per contract.	Decimal places determined from Class Definition field "DecimalInContractSize" 0 If Not Available
60	ISINCode	String	12	A code which uniquely identifies a specific securities issue (International Securities Identification Number). For more information about ISIN code, see the international standard ISO 3166.	0 If Not Available
72	SeriesStatus	Uint8	1	The actual status of the series.	0 If Not Available 1 Active (both expired and not expired) 2 Suspended (temporarily stopped) 3 Issued 4 Delisted
73	EffectiveTomorrow	Uint8	1	This declaration is for next day series	0 False 1 True
74	PriceQuotationFactor	Int32	4	Implies the contracted value of the product / series	Decimal places determined from Class Definition field "DecimalInContractSize"
78	Filler	String	2		
80	EffectiveExpDate	String	8	The effective expiration date is the actual expiration date of the series and will normally be the same as expiration_date_n in the series binary code. The effective expiration date can be changed during the lifetime of the series whereas expiration_date_n will continue to hold the original expiration date.	YYYYMMDD " " 8 blank spaces if not available
88	DateTimeLastTrading	Int64	8	The last trading date/time of the Series in UTC timestamp (nanoseconds since 1970) precision to the nearest second	UTC Timestamp

96	Filler	String	8		
Total Length			104		

1.5 Combination Definition (305)

Describes a combination orderbook available from the OMD-D system.

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Message Fields

Offset	Field	Format	Len	Description	Values
0	MsgSize	Uint16	2	Size of the message	
2	MsgType	Uint16	2	Type of message.	305 Combination Definition
4	ComboOrderbookID	UInt32	4	Numerical identifier of the combination order book	
8	LegOrderbookID	UInt32	4	This is the orderbook identification number of the leg	
12	Filler	String	3		
15	LegSide	String	1	Identifies whether the leg within the combination order book is the same side as that defined for the leg in the OrderBook definition Possible values: As Defined or Opposite	B As Defined C Opposite
16	LegRatio	Int32	4	Relative numbers of bid and ask contracts between the combo legs.	
Total Length			20		

2. Derivatives Trade

The Derivatives Trade file is in binary format and contains two types of messages – ***Trade*** and ***TradeAmendment***. The filenames of the 3 Derivatives Trade files are as follows:

MC112_All_YYYYMMDD – SOM Partition 1 (Trade)
MC212_All_YYYYMMDD – SOM Partition 2 (Trade)
MC168_All_YYYYMMDD –SOM (Trade, TradeAmendment)
where YYYYMMDD is the date of the Derivatives Trade file

The layout of the Derivatives Reference is as follows:

<RecordLength><PacketHeader><DerivativesTrade>…<RecordLength><PacketHeader><DerivativesTrade>…<RecordLength><PacketHeader><DerivativesTrade>

Following is the message layout of the ***RecordLength***

Offset	Field	Format	Len	Description
0	RecLen	Uint16	2	Size of the record (including this field)
Total length			2	

Following is the message layout of the ***PacketHeader***

Offset	Field	Format	Len	Description
0	PktSize	Uint16	2	Size of the packet (including this field)
2	MsgCount	Uint8	1	Number of messages included in the packet
3	Filler	String	1	
4	SeqNum	Uint32	4	Sequence number of the first message in the packet
8	SendTime	Uint64	8	The number of nanoseconds since *January 1*, 1970, *00:00:00 GMT*, precision is provided to the nearest millisecond.
Total length			16	

<DerivativesTrade> contains different combinations of the two types of messages – ***Trade*** and ***TradeAmendment.*** For example:

In MC112/212 data files, the order of messages can be as following:

<Trade><Trade><Trade><Trade>

In MC168 data files, the order of messages can be as following:

<Trade><TradeAmendment><Trade><TradeAmendment>

or

<Trade><Trade><TradeAmendment><TradeAmendment>

Followings are the message layouts of the ***Trade*** and ***TradeAmendment***

2.1 Trade (350)

The Trade message is generated each time a trade has been performed.

The executions may be marked as non-printable. If a participant is looking to use the data in trade tickers or volume calculations, it is recommended that participants ignore messages marked as non-printable to prevent double counting.

- NOTE 1: Combination orders on the book that execute will always be represented by this message.
- NOTE 2: Combination orders that execute will have the Printable flag set to "N". The trades that occur in the legs of the Combo Series will be printable. This avoids double counting of the combination order and its leg trades. Leg trades will be published with the Trade message.

For DF subscribers; if the OrderID within the Trade (350) message is non-zero then users must reduce the resting order identified by the 'Quantity' within the Trade (350) message. If the outstanding quantity is zero the order must be deleted.

Important messages: Subscribers who intend to calculate trade statistics based on Trade (350) and Trade Amendment (356) are advised NOT to compare their internally aggregated turnover with those carried in the Trade Statistics (360) and the Series Statistics (363) as they may not be synchronized given the former trade messages are disseminated on streaming basis whilst the latter statistics are published on snapshot basis." Please also note that price information (Open/High/Low/Last Price) provided in Trade Statistics (360) and Series Statistics (363) cannot be derived from Trade (350) and Trade Amendment (356). For information only, the price information excludes (i) Reported Trade (DealType = 4 or above); and (ii) Leg Trades from Combo versus Combo Trades (where OrderID being zero and not "Occurred at Cross" (i.e. DealType not = 2 or 3). However, it is important to note that the stated behavior is not exclusive to Leg Trades from Combo versus Combo Trades and thus cannot be used to differentiate such Leg Trades).

Message Fields

Offset	Field	Format	Len	Description	Values
0	MsgSize	Uint16	2	Size of the message	
2	MsgType	Uint16	2	Type of message	350 Trade
4	OrderbookID	Uint32	4	Orderbook ID	
8	OrderID	Uint64	8	Order ID	0 If Not Available
16	Price	Int32	4	Traded Price	Decimal places determined from Series Definition Base field 'NumberOfDecimalsPrice' Null means N/A
20	TradeID	Uint64	8	Match ID	
28	ComboGroupID	Uint32	4	Used to group combo and leg executions together	
32	Side	Uint8	1	Side of Orderbook ID	0 Not Available 1 Not Defined 2 Buy Order 3 Sell Order
33	DealType	Uint8	1	Deal Type Bitmap	0 None 1 Printable (see note) 2 Occurred at Cross 4 Reported Trade
34	TradeCondition	Uint16	2	The condition in which a trade was executed. Field is a Bitmap.	0 None 1 Late Trade * 2 Internal Trade / Crossing 8 Buy Write * 16 Off Market *
36	DealInfo	Uint16	2	Information Bitmap of a deal.	0 None 1 Reported Trade
38	Filler	String	2		
40	Quantity	Uint64	8	The quantity being matched in this execution.	
48	TradeTime	Uint64	8	Date and time of the last trade in UTC timestamp (nanoseconds since 1970) precision to the nearest 1/100th second	UTC Timestamp
Total Length.....			56		

*Remark *: denotes that the value is not currently in use for existing products. However, please note that HKEX may use the value anytime when introducing new products*

Note : The Printable property does not apply to Reported Trade. For other trades, i.e. trades matched by the trading system, it will be OFF for trades on Combo Series to avoid double counting of the trade quantity to market turnover.

2.2 Trade Amendment (356)

Represents a trade amendment or cancellation.

Notes:

- If a traded quantity is reduced then a Trade Amendment (356) delete ("TradeState" = 3) will be sent followed by a rectification ("TradeState" = 2).
- Price and Quantity may not be available for cancelled trades which have already been given up ("TradeState" = 1) and in such cases the Price and Quantity will be NULL and 0 respectively. Please ignore these values.

Message Fields

Offset	Field	Format	Len	Description	Values

Offset	Field	Format	Len	Description	Values
0	MsgSize	Uint16	2	Size of the message	
2	MsgType	Uint16	2	Type of message	356 Trade Amendment
4	TradeID	Uint64	8	Match ID	
12	ComboGroupID	Uint32	4	Used to group combo and leg executions together	
16	Price	Int32	4	Traded Price	Decimal places determined from Class Definition field 'DecimalInPremium' "NULL" means not available
20	Quantity	Uint64	8	Defines number of contracts in a deal.	"0" means not available if Price is "NULL"
28	TradeTime	Uint64	8	Date and time of the last trade in UTC timestamp (nanoseconds since 1970) precision to the nearest 1/100th second	UTC Timestamp
36	TradeState	Uint8	1	Trade State	1 Deleted (with given up trade). The trade has been deleted. 2 Rectified. The trade has been rectified. 3 Deleted. The trade has been deleted.
37	Filler		3		
Total Length			40		