

HISTORICAL FULL BOOK (SECURITIES MARKET)

Update History

No.	Issue Date	Details
1	2013-09-30	First Issue

The Historical Full Book includes 4 types of information – (1) Securities Reference data, (2) Securities Status data, (3) Securities Full Order Book data and (4) Securities Market Odd Lot Order 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
MC01_All_YYYYMMDD	Securities Reference
MC02_All_YYYYMMDD	Securities Status
MC30_All_YYYYMMDD	Securities Full Order Book file for AMS stock group #1 (MAIN market)
MC31_All_YYYYMMDD	Securities Full Order Book file for AMS stock group #2 (MAIN market)
MC32_All_YYYYMMDD	Securities Full Order Book file for AMS stock group #3 (MAIN market)
MC33_All_YYYYMMDD	Securities Full Order Book file for AMS stock group #4 (MAIN market)
MC34_All_YYYYMMDD	Securities Full Order Book file for AMS stock group #5 (MAIN market)
MC35_All_YYYYMMDD	Securities Full Order Book file for AMS stock group #6 (MAIN market)
MC36_All_YYYYMMDD	Securities Full Order Book file for AMS stock group #7 (GEM market)
MC37_All_YYYYMMDD	Securities Full Order Book file for AMS stock group #8 (NASD market)
MC38_All_YYYYMMDD	Securities Full Order Book file for AMS stock group #9 (ETS market)
MC70_All_YYYYMMDD	Securities Market Odd Lot Order file for AMS stock group #1 (MAIN market)
MC71_All_YYYYMMDD	Securities Market Odd Lot Order file for AMS stock group #2 (MAIN market)
MC72_All_YYYYMMDD	Securities Market Odd Lot Order file for AMS stock group #3 (MAIN market)
MC73_All_YYYYMMDD	Securities Market Odd Lot Order file for AMS stock group #4 (MAIN market)
MC74_All_YYYYMMDD	Securities Market Odd Lot Order file for AMS stock group #5 (MAIN market)
MC75_All_YYYYMMDD	Securities Market Odd Lot Order file for AMS stock group #6 (MAIN market)
MC76_All_YYYYMMDD	Securities Market Odd Lot Order file for AMS stock group #7 (GEM market)
MC77_All_YYYYMMDD	Securities Market Odd Lot Order file for AMS stock group #8 (NASD market)
MC78_All_YYYYMMDD	Securities Market Odd Lot Order file for AMS stock group #9 (ETS market)

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. Securities Reference

The Securities Reference file is in binary format and contains four types of messages – **MarketDefinition**, **SecurityDefinition**, **LiquidityProvider** and **CurrencyRate**. There is only one Securities Reference file with filename MC01_All_YYYYMMDD, where YYYYMMDD is the date of the Securities Reference file.

The layout of the Securities Reference is as follows:

<RecordLength><PacketHeader><SecuritiesReference>...<RecordLength><PacketHeader><SecuritiesReference>...<RecordLength><PacketHeader><SecuritiesReference>

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	

Offset	Field	Format	Len	Description
4	SeqNum	UInt32	4	Sequence number of the first message in the packet
8	SendTime	UInt64	8	The number of nanoseconds since <i>January 1, 1970, 00:00:00 GMT</i> , precision is provided to the nearest millisecond.
Total length			16	

<SecuritiesReference> contains different combinations of the four types of messages – **MarketDefinition**, **SecurityDefinition**, **LiquidityProvider** and **CurrencyRate**. For example:

<MarketDefinition><SecurityDefinition><LiquidityProvider><CurrencyRate> or
<SecurityDefinition><SecurityDefinition><SecurityDefinition><SecurityDefinition>

Followings are the message layouts of the **MarketDefinition**, **SecurityDefinition**, **LiquidityProvider** and **CurrencyRate**

1.1 Market Definition (10)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	10 Market Definition
4	MarketCode	String	4	Market code	MAIN GEM NASDAQ ETS
8	MarketName	String	25	Market Name	Alphanumeric
33	CurrencyCode	String	3	Base currency code of the market.	
36	NumberOfSecurities	UInt32	4	Number of securities within the market	
Total Length			40		

1.2 Security Definition (11)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	11 Security Definition
4	SecurityCode	UInt32	4	Uniquely identifies a security available for trading	5 digit security codes with possible values 1 – 99999
8	MarketCode	String	4	Market code	MAIN GEM NASDAQ ETS
12	ISINCode	String	12	ISIN code of the security.	
24	InstrumentType	String	4	Instrument type of the security.	BOND Bonds BWRT Basket Warrants EQTY Equities TRST Trusts WRNT Warrants & structured products (DW & CBBC)
28	SpreadTableCode	String	2	Spread table code of the security.	Spread table as per Second Schedule of Rules of the Exchange: '01' Part A '03' Part B
30	SecurityShortName	String	40	Security short name	
70	CurrencyCode	String	3	Security currency code of the	.

Offset	Field	Format	Len	Description	Values
				market.	
73	SecurityNameGCCS	Binary	60	Security name in Traditional Chinese using Unicode	Unicode UTF-16LE encoded
133	SecurityNameGB	Binary	60	Security name in Simplified Chinese using Unicode	Unicode UTF-16LE encoded
193	LotSize	UInt32	4	Board lot size for the security	
197	PreviousClosingPrice	Int32	4	Previous closing price of the security	3 implied decimal places
201	Filler	String	1		
202	ShortSellFlag	String	1	Indicator for short-sell authorization.	Y Short-sell allowed N Short-sell not allowed
203	Filler	String	1		
204	CCASSFlag	String	1	Indicates whether or not the security is a CCASS security	Y CCASS security N Non CCASS security
205	DummySecurityFlag	String	1	Dummy Security Flag.	Y Dummy security N Normal security
206	TestSecurityFlag	String	1	Test Security Flag	Y Test security ¹ N Normal security
207	StampDutyFlag	String	1	Indicator for stamp duty requirement	Y Stamp duty required N Stamp duty not required
208	Filler	String	1		
209	ListingDate	UInt32	4	Date of security listing	The representation is YYYYMMDD. Value is 19000101 for unknown listing date
213	DelistingDate	UInt32	4	Date of security delisting	The representation is YYYYMMDD. Value is 0 if no date exists.
217	FreeText	String	38	Free text associated to the security	Fixed length array of free text. When there is no free text, spaces will be present instead.
Bonds Specific Data					
255	EFNFlag	String	1	EFN Indicator	Y EFN N Non-EFN
256	AccruedInterest	UInt32	4	Accrued interest of the security.	3 implied decimal places
260	CouponRate	UInt32	4	Coupon rate of a bond security	3 implied decimal places
Warrants, Basket Warrants and Structured Product specific data					
264	ConversionRatio	UInt32	4	Conversion ratio for Structured Product with stock underlying only	3 implied decimal places
268	StrikePrice	Int32	4	Strike price of the security.	3 implied decimal places
272	MaturityDate	UInt32	4	Date of maturity of a warrant or structured security	The representation is YYYYMMDD
276	CallPutFlag	String	1	Indicator of whether the warrant or structured product is a call or put option	For Derivative Warrants/Basket Warrants: C Call P Put For ELI & CBBC: C Bull P Bear / Rang
277	Style	String	1	Style of the basket warrant	A American style E European style <blank> Other
278	NoUnderlyingSecurities	UInt16	2	Number of underlying security codes within this message	0 to 20 for Basket Warrants 0 to 1 for Warrants and Structured Product
280	UnderlyingSecurityCode	UInt32	4	5-digit code identifying the underlying security.	
284	UnderlyingSecurityWeight	UInt32	4	The weight of the underlying	

¹ Test security is not production security and the corresponding counter is reserved for testing purpose. It may not exist in normal trading days. Clients can ignore the test security if any.

Offset	Field	Format	Len	Description	Values
				security code.	
Total Length			280 + 8n _U		

(n_U = value of NoUnderlyingSecurities)

1.3 Liquidity Provider (13)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	13 Liquidity Provider
4	SecurityCode	UInt32	4	Uniquely identifies a security available for trading	5 digit security codes with possible values 1 – 99999
8	NoLiquidityProviders	UInt16	2	Number of liquidity providers within this message.	1 to 50
10	LPBrokerNumber	UInt16	2	Broker number of the liquidity provider	
Total Length			10 + 2n _T		

(n_T = value of NoLiquidityProviders)

1.4 Currency Rate (14)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	14 Currency Rate
4	CurrencyCode	String	3	Currency code.	
7	Filler	String	1		
8	CurrencyFactor	UInt16	2	Currency factor conversion.	A non-zero value <i>n</i> means all price fields for this security should be interpreted as a value equal to the price multiplied by 10 ^{<i>n</i>} .
10	Filler	String	2		
12	CurrencyRate	UInt32	4	Currency rate	Rate, expressed in HKD for one foreign currency unit. 4 decimals implied.
Total Length			16		

2. Securities Status

The Securities Status file is in binary format and contains two types of messages – **TradingSessionStatus**, and **SecurityStatus**. There is only one Securities Status file with filename MC02_All_YYYYMMDD, where YYYYMMDD is the date of the Securities Status file.

The layout of the Securities Status is as follows:

<RecordLength><PacketHeader><SecuritiesStatus>...<RecordLength><PacketHeader><SecuritiesStatus>...<RecordLength><PacketHeader><SecuritiesStatus>

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 <i>January 1, 1970, 00:00:00 GMT</i> , precision is provided to the nearest millisecond.
Total length			16	

<SecuritiesStatus> contains different combinations of the two types of messages – **TradingSessionStatus** and **SecurityStatus**. For example:

<TradingSessionStatus><SecurityStatus><TradingSessionStatus><TradingSessionStatus> or
<SecurityStatus><SecurityStatus><SecurityStatus><SecurityStatus>

Followings are the message layouts of the **TradingSessionStatus** and **SecurityStatus**

2.1 Trading Session Status (20)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	20 Trading Session Status
4	MarketCode	String	4	Market segment identifier	MAIN GEM NASDAQ ETS
8	TradingSessionID	UInt8	1	Identifies the trading session.	1 Day
9	TradingSessionSubID	UInt8	1	Trading session sub-identifier.	0 Day Close (DC) 1 Pre-trading (Order Input OI) 2 Opening or Opening Auction (Matching MA) 3 Continuous trading (Continuous CT) 7 Quiescent (Blocking BL) 100 Not Yet Open (NO) 101 No Cancel/Modification (NC) 102 Exchange Intervention (EI) 103 Close (CL) 104 Order Cancel (OC)
10	TradingSesStatus	UInt8	1	Status of the current trading session.	0 Unknown (for NO) 1 Halted (for BL, EI) 2 Open (for OI, NC, MA, CT, OC) 3 Closed (for CL) 100 Day Closed (for DC)
11	TradingSesControlFlag	String	1	Indicates how control of trading session and sub-session transitions are performed.	'0' Automatic (Default) '1' Manual (this invalidates the normal schedule for the day)

Offset	Field	Format	Len	Description	Values
12	Filler	String	4		
16	StartDateTime	UInt64	8	Start time of the trading status	The data is provided as number of nanoseconds since Unix epoch Jan 1st 1970. Set to 0 if no time is available.
24	EndDateTime	UInt64	8	End time of the trading status	The data is provided as number of nanoseconds since Unix epoch Jan 1st 1970. Set to 0 if no time is available.
Total Length			32		

2.2 Security Status (21)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	21 Security Status
4	SecurityCode	UInt32	4	Uniquely identifies a security available for trading	5 digit security codes with possible values 1 – 99999
8	SecurityTradingStatus	UInt8	1	Identifies the trading status of a security.	2 Trading Halt 3 Resume
9	Filler	String	3		
Total Length			12		

3. Securities Full Order Book

The Securities Full Order Book file is in binary format and contains six types of messages – **Trade**, **TradeCancel**, **AddOrder**, **ModifyOrder**, **DeleteOrder** and **IndicativeEquilibriumPrice**. There are totally 9 files, each corresponds to an AMS stock group. The filenames of the 9 Securities Full Order file are as follows:

MC30_All_YYYYMMDD – securities full order book file for AMS stock group #1 (MAIN market)
 MC31_All_YYYYMMDD – securities full order book file for AMS stock group #2 (MAIN market)
 MC32_All_YYYYMMDD – securities full order book file for AMS stock group #3 (MAIN market)
 MC33_All_YYYYMMDD – securities full order book file for AMS stock group #4 (MAIN market)
 MC34_All_YYYYMMDD – securities full order book file for AMS stock group #5 (MAIN market)
 MC35_All_YYYYMMDD – securities full order book file for AMS stock group #6 (MAIN market)
 MC36_All_YYYYMMDD – securities full order book file for AMS stock group #7 (GEM market)
 MC37_All_YYYYMMDD – securities full order book file for AMS stock group #8 (NASD market)
 MC38_All_YYYYMMDD – securities full order book file for AMS stock group #9 (ETS market)
 where YYYYMMDD is the date of the Securities Full Order Book file

The layout of the Securities Full Order Book is as follows:

<RecordLength><PacketHeader><SecuritiesFullOrderBook>...<RecordLength><PacketHeader><SecuritiesFullOrderBook>...<RecordLength><PacketHeader><SecuritiesFullOrderBook>

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 <i>January 1, 1970, 00:00:00 GMT</i> , precision is provided to the nearest millisecond.
Total length			16	

<SecuritiesFullOrderBook> contains different combinations of the six types of messages – **Trade**, **TradeCancel**, **AddOrder**, **ModifyOrder**, **DeleteOrder** and **IndicativeEquilibriumPrice** For example:

<Trade><TradeCancel><AddOrder><ModifyOrder><DeleteOrder><IndicativeEquilibriumPrice> or
<AddOrder><AddOrder><DeleteOrder><ModifyOrder><Trade><Trade>

Followings are the message layouts of the **Trade**, **TradeCancel**, **AddOrder**, **ModifyOrder**, **DeleteOrder** and **IndicativeEquilibriumPrice**

3.1 Trade (50)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	50 Trade
4	SecurityCode	UInt32	4	Uniquely identifies a security available for trading	5 digit security codes with possible values 1 – 99999
8	TradeID	UInt32	4	Unique identifier per security for each trade performed within the trading system. The ID is reset for each trading day.	Starting from 1, incrementing by 1 for each trade
12	Price	Int32	4	Price	3 implied decimal places
16	Quantity	UInt32	4	Number of shares	
20	TrdType	Int16	2	Public trade type.	0 Automatch normal (AMS <space>) 4 Late Trade (Off-exchange previous day) (AMS "P") 22 Non-direct Off-Exchange Trade (AMS "M") 100 Automatch internalized (AMS "Y") 101 Direct off-exchange Trade (AMS "X") 102 Odd-Lot Trade (AMS "D") 103 Auction Trade (AMS "U") 104 Overseas Trade
22	Filler	String	2		
24	TradeTime	UInt64	8	Time of trade	The number of nanoseconds elapsed since midnight Coordinated Universal Time (UTC) of January 1, 1970 TradeTime precision is currently provided to the nearest second.
Total Length.....			32		

3.2 TradeCancel (51)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	51 Trade cancel
4	SecurityCode	UInt32	4	Uniquely identifies a security available for trading	5 digit security codes with possible values 1 – 99999
8	TradeID	UInt32	4	Unique identifier per security for each trade performed within the trading system. The ID is reset for each trading day.	Starting from 1 , incrementing by 1 for each trade
Total Length			12		

3.3 Add Order (30)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	30 Add Order
4	SecurityCode	UInt32	4	Uniquely identifies a security available for trading	5 digit security codes with possible values 1 – 99999
8	OrderID	UInt64	8	Unique identifier per security for each order performed within the trading system	Values may not be consecutive
16	Price	Int32	4	Price	3 implied decimal places
20	Quantity	UInt32	4	Number of shares	
24	Side	UInt16	2	Side of the order	0 Bid 1 Offer
26	OrderType	String	1	Order type	' 1 ' Market ' 2 ' Limit
27	Filler	String	1		
28	OrderBookPosition	Int32	4	Order rank information for the order position within the order book for each security	Integer
Total Length			32		

3.4 Modify Order (31)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	31 Modify Order
4	SecurityCode	UInt32	4	Uniquely identifies a security available for trading	5 digit security codes with possible values 1 – 99999
8	OrderID	UInt64	8	Unique identifier per security for each order performed within the trading system	Values may not be consecutive
16	Quantity	UInt32	4	Number of shares	
20	Side	UInt16	2	Side of the order	0 Bid 1 Offer
22	Filler	String	2		
24	OrderBookPosition	Int32	4	Order rank information for the order position within the order book for each security	Integer
Total Length			28		

3.5 Delete Order (32)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	32 Delete Order
4	SecurityCode	UInt32	4	Uniquely identifies a security available for trading	5 digit security codes with possible values 1 – 99999
8	OrderId	UInt64	8	Unique identifier per security for each order performed within the trading system	Values may not be consecutive
16	Side	UInt16	2	Side of the order	0 Bid 1 Offer
18	Filler	String	2		
Total Length			20		

3.6 Indicative Equilibrium Price (41)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	41 Indicative Equilibrium Price
4	SecurityCode	UInt32	4	Uniquely identifies a security available for trading	5 digit security codes with possible values 1 – 99999
8	Price	Int32	4	Price	3 implied decimal places
12	AggregateQuantity	UInt64	8	Aggregated number of shares.	
Total Length			20		

4. Securities Market Odd Lot Order

The Securities Market Odd Lot Order file is in binary format and contains two types of messages – **AddOddLotOrder**, and **DeleteOddLotOrder**. There are totally 9 files, each corresponds to an AMS stock group. The filenames of the 9 Securities Market Odd Lot Order file are as follows:

MC70_All_YYYYMMDD – securities market odd lot order file for AMS stock group #1 (MAIN market)
 MC71_All_YYYYMMDD – securities market odd lot order file for AMS stock group #2 (MAIN market)
 MC72_All_YYYYMMDD – securities market odd lot order file for AMS stock group #3 (MAIN market)
 MC73_All_YYYYMMDD – securities market odd lot order file for AMS stock group #4 (MAIN market)
 MC74_All_YYYYMMDD – securities market odd lot order file for AMS stock group #5 (MAIN market)
 MC75_All_YYYYMMDD – securities market odd lot order file for AMS stock group #6 (MAIN market)
 MC76_All_YYYYMMDD – securities market odd lot order file for AMS stock group #7 (GEM market)
 MC77_All_YYYYMMDD – securities market odd lot order file for AMS stock group #8 (NASD market)
 MC78_All_YYYYMMDD – securities market odd lot order file for AMS stock group #9 (ETS market)
 where YYYYMMDD is the date of the Securities Market Odd Lot Order file

The layout of the Securities Market Odd Lot Order is as follows:

<RecordLength><PacketHeader><SecuritiesMarketOddLotOrder>...<RecordLength><PacketHeader><SecuritiesMarketOddLotOrder>...<RecordLength><PacketHeader><SecuritiesMarketOddLotOrder>

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 <i>January 1, 1970, 00:00:00 GMT</i> , precision is provided to the nearest millisecond.
Total length			16	

<SecuritiesMarketOddLotOrder> contains different combinations of the two types of messages – **AddOddLotOrder** and **DeleteOddLotOrder**. For example:

<AddOddLotOrder><DeleteOddLotOrder><AddOddLotOrder><AddOddLotOrder> or
<AddOddLotOrder><AddOddLotOrder><AddOddLotOrder><AddOddLotOrder>

Followings are the message layouts of the **AddOddLotOrder** and **DeleteOddLotOrder**

4.1 Add Odd Lot Order (33)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	33 Add Odd Lot Order
4	SecurityCode	UInt32	4	Uniquely identifies a security available for trading	5 digit security codes with possible values 1 – 99999
8	OrderId	UInt64	8	Unique identifier per security for each order performed within the trading system	Values may not be consecutive
16	Price	Int32	4	Price	3 implied decimal places
20	Quantity	UInt32	4	Number of shares	
24	BrokerID	UInt16	2	Integer identifier uniquely identifying the Broker	Integer
26	Side	UInt16	2	Side of the order	0 Bid 1 Offer
Total Length			28		

4.2 Delete Odd Lot Order (34)

Offset	Field	Format	Len	Description	Values
0	MsgSize	UInt16	2	Size of the message	
2	MsgType	UInt16	2	Type of message.	34 Delete Odd Lot Order
4	SecurityCode	UInt32	4	Uniquely identifies a security available for trading	5 digit security codes with possible values 1 – 99999
8	OrderId	UInt64	8	Unique identifier per security for each order performed within the trading system	Values may not be consecutive
16	BrokerID	UInt16	2	Integer identifier uniquely identifying the Broker	Integer
18	Side	UInt16	2	Side of the order	0 Bid 1 Offer
Total Length			20		