BM&FBOVESPA
The New Exchange

UMDF – Unified Market Data Feed

FIX/FAST Message Reference

Version: 1.6.6
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Revision History

Date	Version	Description	Author
Jan 24th, 2014	1.6.6	- Version sync with MD Specification document. - Changed coloring to indicate fields that were changed with PUMA migration (blue bold color instead of red)	JLRM
Feb, 22nd , 2012	1.6.4.1	- Added value 286=0 back to 35=W as well.	JLRM
Oct, 5th, 2012	1.6.4	- Added value 286=0 back again, as it´s still used in some scenarios. - Removed tag 7595-NoSharesIssued from message 35=y (SecurityList) and 35=W (Snapshot), as this will only be available on PUMA Equities. - Change to tag 1348 domain, adding another to identify when TCP Recovery is unavailable.	JLRM
Jul, 10th, 2012	1.6.3	- No changes made, just increased version to match the Market Data Reference document.	JLRM
Jun. 27th, 2012	1.6.2	- Changed contact information to the Trading Support Channel	JLRM
Jun. 4th, 2012	1.6.2	- Removed the value 4 for tag 1354 in section 2.1.4 (BY message), as this value should only be available in 35=BX messages. - Added the value 4 for tag 1354 in section 2.1.2 (BX message). Also, in the same message BX, removed values 5 and 6 from tag 1348 as they are no longer used.	JLRM
May. 18th, 2012	1.6.1	- Removed the value 3 for tag 1354 in section 2.1.4, as this value should only be available in 35=BX messages. - Removed value 3 (Delete thru) for PUMA on tag 279, in section 1.3.2.	JLRM
Mar. 22th, 2012	1.6	- MaturityDate marked as available for MEGA - Added new type “MLEG” to 167-SecurityType in 35=y, for handling user defined strategy instruments. - Added new tag 7595-NoSharesIssued to represent the total available shares for an Equity cash instrument - Added the value 3 for tag 1354 in section 2.1.4 - Added PUMA exclusive tags to section 1.3 - Removed references to the GTS system (that has been discontinued.	JLRM
Sep. 2 nd, 2011	1.5.1	- Added tag 37016-MDInsertDate to messages 35=X and 35=W for MEGA (used in blocks 269=0,1) to be used for GTD/GTC orders.	JLRM
Jul. 27 th, 2011	1.5.1	- Marked tags 1150 as valid in 35=X,W for MEGA (in block 269=g, from RLC message 03, price type=38)	JLRM
May 25 th, 2011	1.5.0	- Added 269=g for MEGA	JLRM
May 5 th, 2011	1.5.0	- Added value “3” in tag 277-TradeCondition for 35=X and 35=W for MEGA - Tag 83-RptSeq no longer required for 35=X (for Empty Book block)	JLRM
Apr. 20 th, 2011	1.5.0	- Added tags 623-LegRatioQty and 624-LegSide for 35=y on MEGA - The other strategy related Leg tags are now available for 35=y on MEGA	JLRM
Apr. 16 th, 2011	1.5.0	- Reinstated tag 6939-PriceBandType in 35=X and 35=W, with limited domain for now. - Added tags 201-PutOrCall and 1194-ExerciseStyle to SecurityList (35=y) message. - Deprecated tag 231-ContractMultiplier on MEGA - Added tag 37012-PriceDivisor on MEGA	JLRM
Feb. 9th, 2011	1.4.2.2	- For the Sequence Reset message, tag 36-NewSeqNo Always one, not “always zero”.	JLRM
Jan. 19th, 2011	1.4.2.1	- Added tags 225 and 461 to SecurityList(35=y) for MEGA - Changed domain for tag 762-SecuritySubType	JLRM
Aug. 17th, 2010	1.4.2	- Remove tags 267 and 269 from SecurityStatus (35=f). - Changed description of value = 2 for tag 1348-ApplRespType.	RNKH
Aug. 5th, 2010	1.4.1	- Price banding block (tag 269=g) is not available for equity market. - *Product* field is removed from SecurityList message. - Domains of *SecurityType* and *SecuritySubType* fields are redefined. - *TotNoRelatedSym* field is now required for SecurityList message. - *LastFragment* field is not required and the default value is “N” = Not last message. - *PriceBandType* field is removed from Incremental and Snapshot messages.	RNKH
Jul. 27th, 2010	1.4.0	- Domains of *TradingSessionSubID* and *SecurityTradingStatus* fields are changed to be compatible with new Matching Engine. - *TotNumReports* is now related to each *ApplID* not *ApplReqID* anymore. - Symbol removed from the spec except from *SecurityList*. - Default *SecurityExchange* field is changed to “BVMF”. - Imbalance and Trade Volume block included. - Derivatives post-trading information included.	RNKH

Apr. 20th, 2010	1.2.0	- DayCumQty removed: TradeVolume replace it. - Include NoMDEntryTypes in the SecurityStatus message do indicate the entry types to be reset by client systems. - Statistical Closing Data in RLC message 5J included (range 37001-37007).	RNKH
Jan. 14th, 2010	1.1.0.2	- Included SettlPriceType to incremental and snapshot messages - Included (9 and U) as new values to TradeCondition field	RNKH/TAT
Jan. 13th, 2010	1.1.0.1	- Including NewsSource to News Message - Including DayCumQty to incremental and snapshot messages	RNKH
Dec. 21st, 2009	1.1.0	- Including Index related fields to Market Data Incremental Refresh and Market Data Snapshot Full Refresh. - Including SettlType and SettlDate needed for trades in forward markets.	RNKH
Nov. 19th, 2009	1.1.0	- Updated Application Message Report message - Updated Application Message Request message - Include Application Message Request Acknowledgment message - Include Application Raw data Reporting message	DRSF
Oct. 23th, 2009	1.0.2	- Updated News message - Updated Application Message Report message - Updated Application Message Request message - Market Data Snapshot Full Refresh adjusted	RNKH / JML
Sep 29th, 2009	1.0.1	- Added price bands - Updated security states	RNKH / JML
July 31st, 2009	1.0.0	- First version	RNKH / JML

1 Market Data FIX 5.0SP2 Message Specification

This section outlines the new market data messages for the BVMF feed for all segments. By implementing the specification in the document, clients will be able to process market data coming from all legacy BVMF trading platforms (MEGABOLSA UMDF) and from PUMA Trading System for derivatives.

The tag usage may vary depending on the trading platform used (**MEGABOLSA** UMDF and **PUMA** UMDF), this indicated by an "X" in the relevant columns at certain tables below. If a tag is marked as required (Req) but it´s not available in a given platform, it is deemed ***not required*** for that platform.

1.1 Message Blocks

This section contains "message blocks", i.e. specific sets of tags that work as "stamps" in the message specification and are common to most or all market data messages.

1.1.1 FIX Header (for all messages)

This section describes the header that is common to all messages of the market data feed.

Tag	Tag Name	Req	Data Type	Comment
35	MsgType	Y	String(2)	Defines message type. Possible values: 0 – Heartbeat 4 – Sequence Reset V – Market Data Request W – Market Data Snapshot X – Market Data Incremental f – Security Status y – Security List BV – Market Definition Update Report BW – Application Message Request BY – Application Message Report
34	MsgSeqNum	Y	Integer	Integer Message Sequence Number.
52	SendingTime	Y	UTCTimestamp	Time of message transmission: always expressed in UTC (Universal Time Coordinated).
369	LastMsgSeqNumProcessed	N	Integer	Only used in the MarketDataSnapshotFullRefresh (35=W) message. The last sequence number of real-time channel as of the time the snapshot was generated. This is used to synchronize the snapshot with the real-time feed.
1128	ApplVerID	N	String	Specifies the service pack release being applied at message level. Default value= 9 (FIX.5.0.SP2).

1.1.2 Instrument identification block

This block is common to most market data messages issued by BVMF. It contains the tags that uniquely identify an instrument, and works as a "stamp" of the instrument identification in the message specification.

Tag	Tag name	Data type	Comment	MEGA	PUMA
48	SecurityID	String (12)	Unique instrument identifier for a given qualifier (*SecurityIDSource*).	X	X
22	SecurityIDSource	String(1)	SecurityID qualifier. Value issued by BVMF: 8 = Exchange Symbol (BVMF security identification).	X	X
207	SecurityExchange	String(4)	Market to which the instrument belongs to. If it is not present the default value is "**BVMF**". Valid Values: BVMF: BM&FBovespa (equities, derivatives, FX)	X	X

1.2 Session Level Messages

This section outlines messages that relate to the market data channel multicast state.

1.2.1 Sequence Reset (tag 35=4)

This message is used to reset the incremental stream.

	Instrument definition	Recovery	Incremental	TCP Replay
Sent on stream			X	

Tag	Tag Name	Req	Data Type	Comment
[Standard message header]				
36	NewSeqNo	Y	SeqNum	New sequence number. Always one.

1.2.2 Heartbeat (tag 35=0)

This message is sent over the market recovery and incremental streams to notify customers that the multicast channel join was successful and that BVMF will send the data when available.

There is no body for this message, only the standard header with tag 35=0.

	Instrument definition	Recovery	Incremental	TCP Replay
Sent on stream	X	X	X	X

1.3 Application Messages

1.3.1 SecurityList (tag 35=y)

This message is used to relay instrument information, such as insertion, update or deletion.

	Instrument definition	Recovery	Incremental	TCP Replay
Sent on stream	X		X	X

	Tag	Tag name	Req	Data type	Comment	MEGA	PUMA
[Standard message header]							
	393	TotNoRelatedSym	Y	Integer	Total number of securities available in the channel.	X	X
	893	LastFragment	N	Boolean	Indicates whether this message is the last in the sequence of messages. Valid values: Y = Last message N = Not last message (default)	X	X
	146	NoRelatedSym	Y	NumInGroup	Specifies the number of repeating instruments specified.	X	X
→	55	Symbol	Y	String(32)	Instrument's ticker symbol.	X	X
→	**[Instrument identification block]** See Section "Instrument Identification Block" for tag values						
→	**1351**	**NoApplIDs**	Y	NumInGroup	Specifies the number of the application ID		X

Tag			Tag name	Req	Data type	Comment	MEGA	PUMA
						occurrences (number of channels).		
→		**1180**	**ApplID**	Y	String	Identifies the channel. It follows the convention: type + number. Type may have the following values: MBO, MBP and TOB. Example: MBP101.		X
→		**1141**	**NoMDFeedTypes**	C	NumInGroup	Number of MD Feed Types. Relates to tag 1180. Not sent if the only feed type available is MBO.		X
→	→	**1022**	**MDFeedType**	N	String(3)	Indicates feed type as standard or implied. Not sent for MBO. Valid values: STD = Standard MBP IMP = Implied MBP		X
→	→	**264**	**MarketDepth**	Y	Int	Identifies depth of book. Not sent for MBO (use default value). Valid values: **0=full book depth (MBO) (default)** 1=top of book **2 and above = book depth (number of levels)**		X
→		454	NoSecurityAltID	N	NumInGroup	Number of alternate security identifiers.	X	X
→	→	455	SecurityAltID	Y	String(50)	Alternate identifiers for this security (e.g. ISIN).	X	X
→	→	456	SecurityAltIDSource	Y	String(1)	Identifies class or source of the SecurityAltID (455) value. Required if SecurityAltID is specified. Values issued by BVMF: 4 = ISIN number H = Clearing house/organization	X	X
→		711	NoUnderlyings	N	NumInGroup	Number of underlying instruments.	X	X
→	→	311	UnderlyingSymbol	Y	String(32)	Underlying instrument's ticker symbol.	X	X
→	→	309	UnderlyingSecurityID	Y	String(12)	Underlying instrument's security identifier.	X	X
→	→	305	UnderlyingSecurityID Source	Y	String(1)	Qualifier for underlying instrument's security identifier. Value issued by BVMF: 4 = ISIN code 8 = Exchange Symbol (BVMF security identification).	X	X
→	→	308	UnderlyingSecurity Exchange	N	String(4)	Exchange code the underlying security belongs to. Value issued by BVMF: BVMF: BVMF (equities, derivatives, FX) The default value is "**BVMF**".	X	X
→	→	6919	IndexPct	C	Percentage	Required if this is an equity index instrument. Indicates the percentage that this underlying composes the index.	X	
→		555	NoLegs	N	NumInGroup	Number of instrument legs.	X	X
→	→	600	LegSymbol	Y	String(32)	Leg symbol.	X	X
→	→	602	LegSecurityID	Y	String(12)	Unique identifier for instrument leg as per tag *LegSecurityIDSource*.	X	X
→	→	603	LegSecurityIDSource	Y	String(1)	Qualifier for leg identifier (*LegSecurityID*). Value issued by BVMF: 8 = Exchange Symbol (BVMF security identification).	X	X
→	→	616	LegSecurityExchange	N	String(4)	Exchange code the leg security belongs to. Value issued by BVMF: BVMF: BVMF (equities, derivatives, FX) The default value is "**BVMF**".	X	X
→	→	623	LegRatioQty	Y	Double	The ratio of quantity for this individual leg relative to the entire multileg security.	X	X

Tag			Tag name	Req	Data type	Comment	MEGA	PUMA
→	→	**37009**	**LegType**	Y	Char	Indicates the type of leg present. Valid values: S = Short L = Long B = Base Leg O = Option Leg F = Future T = Standard		X
→	→	**37010**	**BuyersPerspective**	Y	Char	Indicates whether short or long in position (end with buy or sell). Valid values: 1 = Buy 2 = Sell		X
→	→	624	LegSide	Y	Integer	The side of this individual leg (multileg security). Valid values: 1 – Buy 2 – Sell	X	
→	980		SecurityUpdateAction	C	Char	Indicates the action used when updating the security. Required only from incremental source. Valid values: A=Add D=Delete M=Modify	X	X
→	561		RoundLot	N	Qty	The trading lot size of the security.	X	X
→	562		MinTradeVol	N	Qty	The minimum trading volume for the security.	X	X
→	969		MinPriceIncrement	N	Price	Number of minimum tick increments.	X	X
→	5151		TickSizeDenominator	N	Integer	Number of decimals used for pricing this instrument, e.g. for price increment of 0.001, the number of decimals is 3.	X	X
→	9749		MinOrderQty	N	Qty	Minimum quantity of an order for the security.	X	X
→	9748		MaxOrderQty	N	Qty	Maximum quantity of an order for the security.	X	X
→	9219		InstrumentId	N	Integer	Unique number identifying the instrument.		X
→	15		Currency	N	Currency	Currency used for the price.	X	X
→	167		SecurityType	N	String(32)	Indicates the type of the security. Valid Values: - FUT (future) - SPOT (spot market) - SOPT (spot option) - FOPT (future option) - DTERM (derivative forward, or “termo”) - CASH (common stock) - OPT (cash option) - FORWARD (equity forward or “termo”) - ETF (exchange traded fund) - INDEX (non tradable index) - OPTEXC (option exercise) **- MLEG (multi leg instruments – UDS)**	X	X
→	762		SecuritySubType	N	String(32)	The sub type of the instrument. Values issued by BVMF: 4 - FX spot 10 - Gold 20 - Index 30 - Interest rate 40 - FX rate 50 - Foreign debt 60 - Agricultural		X

	Tag	Tag name	Req	Data type	Comment	MEGA	PUMA
					70 - Energy 80 - Economic Indicator 90 - Strategy 100 - Future-style option **110- Volatility** **120- Swap** **130- Mini contract** **140- Financial RollOver** **141- Agricultural RollOver** 190 - Carbon credit		
→	6937	Asset	N	String(10)	Asset associated with the security , such as DOL, BGI, OZ1, WDL, CNI, etc.		X
→	107	SecurityDesc	N	String(1000)	Descriptive string of the security (e.g. “dollar futures” or “gold futures”).	X	X
→	541	MaturityDate	N	LocalMktDate	Date of instrument maturity.	X	X
→	200	MaturityMonthYear	N	MonthYear	Month and year of the maturity (for futures and options).		X
→	202	StrikePrice	N	Price	Strike price of option.	X	X
→	947	StrikeCurrency	N	Currency	Currency of option’s strike price.	X	X
→	1194	ExcerciseStyle	N	Integer	Type of exercise of a derivatives security. Valid values: 0 – European 1 – American	X	
→	201	PutOrCall	N	Integer	Indicates whether an option contract is a put or call. Valid values: 0 – Put 1 – Call	X	
→	231	ContractMultiplier	N	Double	Specifies the ratio or multiply factor to convert from “nominal” units (e.g. contracts) to total units (e.g. shares) (e.g. 1.0, 100, 1000, etc). Deprecated on MEGA.	X	X
→	37012	PriceDivisor	N	Integer	Value that divides the Price field to produce the actual order price (based on Step of Quotation). (e.g. 1, 100, 1000, etc).	X	
→	667	ContractSettlMonth	N	MonthYear	Specifies when the contract will settle.		X
→	461	CFICode	N	String(6)	Classification of Financial Instruments (CFI code) values, which indicate the type of security using the ISO 10962 standard.	X	X
→	470	CountryOfIssue	N	Country	ISO country code of instrument issue.	X	X
→	225	IssueDate	N	LocalMktDate	The date on which the security is issued/activated.	X	X
→	873	DatedDate	N	LocalMktDate	The date of the security activation, if different from the IssueDate.		X
→	916	StartDate	N	LocalMktDate	Start date of a financing deal, i.e. the date the buyer pays the seller cash and takes control of the collateral		X
→	917	EndDate	N	LocalMktDate	End date of a financing deal, i.e. the date the seller reimburses the buyer and takes back control of the collateral.		X
→	63	SettlType	N	String(4)	Indicates order settlement period . (e.g. 0, D1, D2, D3, D60, D120 etc.) If present, SettlDate (64) overrides this field. The default value SettlType (63) is 0 (Regular).		X
→	64	SettlDate	N	LocalMktDate	Specific date of trade settlement (SettlementDate) in YYYYMMDD format.		X
→	**120**	**SettlCurrency**	Y	Currency	Currency used for the settlement		X
→	423	PriceType	N	Integer	Code that represents the price type of the instrument. Valid values: 12 – Product ticks in full ticks 13 – Product ticks in halfs 14 – Product ticks in fourths 15 – Product ticks in eights 16 – Product ticks in sixteenths		X

	Tag	Tag name	Req	Data type	Comment	MEGA	PUMA
					17 – Product ticks in thirty-seconds 18 – Product ticks in sixty-fourths 20 – Product ticks in half thirty-seconds 21 – Product ticks in quarter thirty-seconds 22 – Product ticks in half sixty-fourths ***Absence of this field denotes that the instrument trades in decimals.***		
→	6938	SecurityValidity Timestamp	N	UTCTimestamp	Indicates the UTC timestamp when trading for this security expires, i.e. when it is not eligible to trade anymore. Different from MaturityDate.	X	X
→	1151	SecurityGroup	N	String(15)	Indicates the group this instrument belongs to.	X	X
→	**7595**	**NoSharesIssued**	N	Integer	Social Capital – Total number of shares issued for Cash Equity Instrument. **Reserved for future use.**	X	

1.3.2 Market Data Incremental Refresh (tag 35=X)

This message relays incremental book, trade and statistical information on one instrument.

	Instrument definition	Recovery	Incremental	TCP Replay
Sent on stream			X	X

	Tag	Tag Name	Req	Data Type	Comment	MEGA	PUMA
					[Standard message header]		
	75	TradeDate	N	LocalMktDate	Used to specify the trading date for which a set of market data applies, in YYYYMMDD format. Absence of this field indicates current day (expressed in local time at place of trade).	X	X
	268	NoMDEntries	Y	NumInGroup	Number of entries following.	X	X
→	279	MDUpdateAction	Y	Char	Types of Market Data update action. Valid values:		
					0 = New	X	X
					1 = Change	X	X
					2 = Delete	X	X
					3 = Delete Thru	X	
					4 = Delete From	X	
					5 = Overlay	X	X
→	269	MDEntryType	Y	Char	Type Market Data entry. Valid values:		
					0 = Bid	X	X
					1 = Offer	X	X
					2 = Trade	X	X
					3 = Index Value	X	
					4 = Opening Price	X	X
					5 = Closing Price	X	X
					6 = Settlement Price		X
					7 = Session High Price	X	X
					8 = Session Low Price	X	X
					9 = Session VWAP Price		X
					A = Imbalance	X	X

	Tag	Tag Name	Req	Data Type	Comment	MEGA	PUMA
					B = Trade Volume		X
					C = Open Interest		X
					J = Empty Book	X	X
					g = Price band	X	X
→	83	RptSeq	N	Integer	Sequence number per Instrument update.	X	X
→	6939	PriceBandType	N	Integer	Indicates the type of price banding (tunnel): 0 = oscillation tunnel (default) 1 = rejection tunnel (for future use) 2 = auction tunnel (for future use)	X	X
→							
→	1500	MDStreamID	N	String(2)	The identifier or name of the price stream. If it is not present, the default value is "E" (Electronic). **Each stream must be stored separately in memory.** Possible values are: "E" – Electronic "X" – Ex-pit "S" – Surveillance "O" – Option Exercise "C" – Over-the-counter (OTC)	X	
→	270	MDEntryPx	C	Price	Price of the Market Data Entry. Required when this market data entry involves a price. Represents the notional value for trade volume (B). Other entry types that do not involve price do not require this tag.	X	X
→	271	MDEntrySize	C	Qty	Quantity or volume represented by the Market Data Entry. Required when MDUpdateAction = New (0) and MDEntryType = Bid (0), Offer (1), Trade (2), Trade Volume (B) or Opening Price (4).	X	X
→	272	MDEntryDate	Y	UTCDateOnly	Date of Market Data Entry.	X	X
→	273	MDEntryTime	Y	UTCTimeOnly	Time of Market Data Entry.	X	X
→	37016	MDInsertDate	C	UTCDateOnly	Date when the order was inserted or re-inserted into the order book (used for GTD/GTC orders, only for equities market). **For PUMA: In Trade (269=2 - New or Delete) – original trade date or manually entered by MktOps**	X	X
→	**37017**	**MDInsertTime**	Y	UTCTimeOnly	The time when the order was inserted or re-inserted into the order book or manually altered by MktOps.		X
→	274	TickDirection	C	Char	Direction of the "tick". Required when MDEntryType=2 (Trade) or 4 (Opening Price). Valid values:		
					0 = Plus Tick	X	X
					1 = Zero-Plus Tick	X	
					2 = Minus Tick	X	X
					3 = Zero-Minus Tick	X	
→	276	QuoteCondition	N	MultipleString Value	Space-delimited list of conditions describing a quote. Possible values are:		
					"K" = Implied Price		X
					"R" = Retransmission of the order	X	X
→	277	TradeCondition	N	MultipleString Value	For optional use in reporting Trades/Imbalance. Space delimited list of conditions describing a trade/imbalance. Valid values:		
					R = Opening Price	X	X
					X = Crossed	X	X

	Tag	Tag Name	Req	Data Type	Comment	MEGA	PUMA
					L = Last Trade at the Same Price Indicator	X	X
					P = Imbalance more buyers	X	X
					Q = Imbalance more sellers	X	X
					U = Exchange Last	X	X
					3 = Multi Asset Trade (Termo Vista)	X	
→	286	OpenCloseSettlFlag	N	MultipleString Value	Identifies if the opening/closing price in field MDEntryPx represents a theoretical opening/closing price and applicable to describe when the settlement data is related to. Valid values: 0 = Daily settlement entry 1 = Session settlement entry 4 = Entry from previous business day 5 = Theoretical price.	X	X
→	15	Currency	N	Currency	Identifies currency used for financial volume. Absence of this field is interpreted as the default currency for the security.		X
→	37	OrderID	C	String(50)	Unique identifier for Order as assigned by the exchange, maps to the *SecondaryOrderID* field in the *Execution Report* message for the derivatives market (for the FX market, it is the actual *OrderID*). It is unique per broker firm, per instrument, per trading date. Required when this entry represents book data.	X	X
→	1003	TradeID	C	String(32)	Contains the unique identifier for this trade per instrument + trading date, as assigned by the exchange. Required if reporting a Trade.	X	X
→	288	MDEntryBuyer	N	String(50)	For optional use in reporting trades (buying party) or indicating a new bid entry. Note: not sent in FX messages (blind screen).	X	X
→	289	MDEntrySeller	N	String(50)	For optional use in reporting trades (selling party) or indicating a new offer entry. Note: not sent in FX messages (blind screen).	X	X
→	346	NumberOfOrders	C	Integer	Contains the number of orders that make up the aggregate quantity at the price point. Required if this is a price-depth book entry.	X	X
→	290	MDEntryPositionNo	C	Integer	Display position of a bid or offer, numbered from most competitive to least competitive, per market side, beginning with 1. Required when MDEntryType=0 or 1.	X	X
→	5767	AgressorSide	N	Char	Indicates which side is aggressor of the trade. If the tag is not present, then there is no aggressor. Reserved for future use. Valid values are: 1 = Buy 2 = Sell		X
→	423	PriceType	N	Integer	Code to represent the price type (applicable to settlement data). The default value is "2" (Per unit). Valid values: 1 – Percentage 2 – Per unit (i.e. per share or contract) 3 – Fixed amount (absolute value)		X
→	451	NetChgPrevDay	N	PriceOffset	Net change from previous trading day's closing price vs. last traded price.	X	X
→	287	SellerDays	N	Integer	Specifies the number of days that may	X	X

	Tag	Tag Name	Req	Data Type	Comment	MEGA	PUMA
					elapse before delivery of the security. Only used for trades in forward market.		
→	731	SettlPriceType	C	Integer	Required only for MDEntryType=6 (Settlement Price). Valid values: 1 = Final 2 = Theoretical/Preview 3 = Updated		X
→	1020	TradeVolume	N	Qty	Total traded quantity (shares/contracts) of the trading day. Only present in the Trade Volume (269=B) and Trade (269=2) blocks.	X	X
→	1306	PriceLimitType	N	Integer	Describes how the price limits are expressed. The default value is "0" (Price Unit). Valid values: 0 = Price Unit 1= Ticks 2 = Percentage		X
→	1148	LowLimitPrice	N	Price	Allowable low limit price for the trading day. A key parameter in validating order price. Used as the lower band for validating order prices. Orders submitted with prices below the lower limit will be rejected.		X
→	1149	HighLimitPrice	N	Price	Allowable high limit price for the trading day. A key parameter in validating order price. Used as the upper band for validating order prices. Orders submitted with prices above the upper limit will be rejected.		X
→	1150	TradingReferencePrice	N	Price	Reference price for the current trading price range usually representing the mid price between the *HighLimitPrice* and *LowLimitPrice*. The value may be the settlement price or closing price of the prior trading day.	X	X
→	7687	PercentageVar	N	Percentage	Index variation in percentage, from start of day.	X	
→	9343	NoUnchangedSecurities	N	Integer	Number of index underlying securities with no variation.	X	
→	9344	NoNotTradedSecurities	N	Integer	Number of index underlying securities that are not quoted.	X	
→	9989	TotTradedSecurities	N	Integer	Number of quoted securities in the index.	X	
→	9990	CapitalPct	N	Percentage	Capitalization percentage of active securities in the index.	X	
→	9993	PrevYearVariation	N	Percentage	Index variation in percentage, compared to previous year last index.	X	
→	9996	NoFallingSecurities	N	Integer	Number of index underlying securities falling in price.	X	
→	9997	NoRisingSecurities	N	Integer	Number of index underlying securities rising in price.	X	
→	37001	PercThresholdNormalTrade	N	Percentage	Percentage threshold normal trade	X	
→	37002	PercThresholdCrossTrade	N	Percentage	Percentage threshold cross trade	X	
→	37003	DailyAvgShares30D	N	Qty	Daily average shares traded on last 30 days	X	
→	37004	MaxinumNormalSharesPer DailyAvgShares30DRatio	N	Float	Ratio maximum shares traded normal trade / Daily average shares traded on last 30 days	X	
→	37005	MaxinumCrossSharesPer DailyAvgShares30DRatio	N	Float	Ratio maximum shares traded cross trade / Daily average shares traded on last 30 days	X	
→	37006	NormalSharesPer OutstandingSharesRatio	N	Float	Ratio maximum shares traded normal trade / Outstanding number of shares	X	
→	37007	CrossSharesPer OutstandingSharesRatio	N	Float	Ratio maximum shares traded cross trade / Outstanding number of shares	X	

1.3.3 Market Data Snapshot Full Refresh (tag 35=W)

This message is sent containing a snapshot of a specific instrument state (book, statistical data, state).

	Instrument definition	Recovery	Incremental	TCP Replay
Sent on stream		X		

Tag	Tag Name	Req	Data Type	Comment	MEGA	PUMA
[**Standard message header**]						
911	TotNumReports	Y	Integer	Total number of snapshots to be returned in a replay loop.	X	X
75	TradeDate	N	LocalMktDate	Used to specify the trading date for which a set of market data applies, in YYYYMMDD format. Absence of this field indicates current day (expressed in local time at place of trade).	X	X
451	NetChgPrevDay	N	PriceOffset	Net change from previous trading day's closing price vs. last traded price.	X	X
264	MarketDepth	N	Integer	Indicates the depth of the aggregate book (order depth book is always full depth), if applicable. If value = "0" or the tag is not present, it indicates Market by Order.	X	X
[Instrument identification block] See Section "Instrument Identification Block" for tag values					X	X
268	NoMDEntries	Y	NumInGroup	Number of entries following.	X	X
→ 269	MDEntryType	Y	Char	Type Market Data entry. Valid values:		
				0 = Bid	X	X
				1 = Offer	X	X
				2 = Trade	X	X
				3 = Index Value	X	
				4 = Opening Price	X	X
				5 = Closing Price	X	X
				6 = Settlement Price		X
				7 = Trading Session High Price	X	X
				8 = Trading Session Low Price	X	X
				9 = Trading Session VWAP Price		X
				A = Imbalance	X	X
				B = Trade Volume		X
				C = Open Interest		X
				c = Security trading state/phase	X	X
				g = Price band		X
→ 83	RptSeq	N	Integer	Sequence number per Instrument update, which contains the same data as the corresponding RptSeq in the Market Data Incremental Refresh (tag 35-MsgType=X).	X	X
→ 6939	PriceBandType	N	Integer	Indicates the type of price banding (tunnel): 0 = oscillation tunnel (default) 1 = rejection tunnel (for future use) 2 = auction tunnel (for future use)	X	X
→ 1500	MDStreamID	N	String(2)	The identifier or name of the price stream. The default value is "E" (Electronic). Possible values are: "E" – Electronic	X	X

	Tag	Tag Name	Req	Data Type	Comment	MEGA	PUMA
					“X” – Ex-pit “S” – Surveillance “O” – Option Exercise “C” – Over-the-counter (OTC)		
→	270	MDEntryPx	C	Price	Price of the Market Data Entry. Required when this market data entry involves a price.	X	X
→	271	MDEntrySize	C	Qty	Quantity or volume represented by the Market Data Entry. Required when this market data entry involves a quantity.	X	X
→	272	MDEntryDate	Y	UTCDateOnly	Date of Market Data Entry.	X	X
→	273	MDEntryTime	Y	UTCTimeOnly	Time of Market Data Entry.	X	X
→	37016	MDInsertDate	C	UTCDateOnly	Date when the order was inserted or re-inserted into the order book (used for GTD/GTC orders, only for equities market). **For PUMA: In Trade (269=2 - New or Delete) – original trade date or manually entered by MktOps**	X	X
→	**37017**	**MDInsertTime**	Y	UTCTimeOnly	The time when the order was inserted or re-inserted into the order book or manually altered by MktOps.		X
→	274	TickDirection	C	Char	Direction of the “tick”. Required if reporting a Trade. Valid values:		
					0 = Plus Tick	X	X
					1 = Zero-Plus Tick	X	X
					2 = Minus Tick	X	X
					3 = Zero-Minus Tick	X	X
→	326	SecurityTradingStatus	N	Integer	Status related to a given Instrument. The default value is “17” = Open. Valid values: 02 = Trading halt (Pause) 04 = No-Open (Close) 17 = Ready to trade (Open) 18 = Not available for trading (Forbidden) 20 = Unknown or invalid 21 = Pre-Open (Reserved)	X	X
→	625	TradingSessionSubID	N	Integer	Phase related to a SecurityGroup where the instrument belongs to. If absent, the default value is “17” = Open. Valid values sent by BVMF: 02 = Trading halt (Pause) 04 = No-Open (Close) 17 = Ready to trade (Open) 18 = Not available for trading (Pre-close) 21 = Pre-Open	X	X
→	342	TradSesOpenTime	C	UTCTimestamp	Indicates the time the auction is scheduled to end. Required when MDEntryType=’c’ and SecurityTradingStatus=21 (Reserved) without random ending.	X	X
→	276	QuoteCondition	N	MultipleStringValue	Space-delimited list of conditions describing a quote. Possible values are:		
					“R” = Retransmission of the order	X	X
					“K” = Implied Price		X

	Tag	Tag Name	Req	Data Type	Comment	MEGA	PUMA
→	277	TradeCondition	N	MultipleString Value	For optional use in reporting Trades/Imbalance. Space delimited list of conditions describing a trade/imbalance. Possible values:		
					R = Opening Price	X	
					X = Crossed	X	
					L = Last Trade at the Same Price Indicator	X	
					P = Imbalance more buyers	X	
					Q = Imbalance more sellers	X	
					U = Exchange Last	X	X
					3 = Multi Asset Trade (Termo Vista)	X	
→	286	OpenCloseSettlFlag	N	MultipleString Value	Identifies if the opening price in field MDEntryPx represents a theoretical opening price and applicable to describe when the settlement data is related to. Valid values issued by BVMF: 0 = Daily settlement entry 1 = Session settlement entry 4 = Entry from previous business day 5 = Theoretical price.	X	X
→	~~**7595**~~	~~**NoSharesIssued**~~	N	Integer	Social Capital – Total number of shares issued for Cash Equity Instrument. **Moved to the securityList message, for future use.**	X	
→	15	Currency	N	Currency	Identifies currency used for financial volume. Absence of this field is interpreted as the default currency for the security.		X
→	37	OrderID	C	String(50)	Unique identifier for Order as assigned by the exchange, maps to the *SecondaryOrderID* field in the *Execution Report* message for the derivatives market (for the FX market, it is the actual *OrderID*). It is unique per broker firm, per instrument, per trading date. Required when this Bid or Offer represents an order.	X	X
→	1003	TradeID	C	String(32)	Contains the unique identifier for this trade per instrument + trading date, as assigned by the exchange. Required if reporting a Trade.	X	X
→	288	MDEntryBuyer	N	String(50)	For optional use in reporting trades (buying party) or indicating a new bid entry. Note: not sent in FX messages (blind screen).	X	X
→	289	MDEntrySeller	N	String(50)	For optional use in reporting trades (selling party) or indicating a new offer entry. Note: not sent in FX messages (blind screen).	X	X
→	346	NumberOfOrders	C	Integer	Contains the number of orders that make up the aggregate quantity at the price point. Required if this is a price-depth book entry.	X	X
→	290	MDEntryPositionNo	C	Integer	Display position of a bid or offer, numbered from most competitive to least competitive, per market side, beginning with 1. Required when MDEntryType=0,1.	X	X
→	5767	AgressorSide	N	Char	Indicates which side is aggressor of		X

	Tag	Tag Name	Req	Data Type	Comment	MEGA	PUMA
					the trade. If there is no value present, then there is no aggressor. Not yet implemented, but reserved for future use. Valid values are: 1 = Buy 2 = Sell		
→	423	PriceType	N	Integer	Code to represent the price type (applicable to settlement data). The default value is "2" (Per unit). Valid values: 1 – Percentage 2 – Per unit (i.e. per share or contract) 3 – Fixed amount (absolute value)		X
→	287	SellerDays	N	Integer	Specifies the number of days that may elapse before delivery of the security. Only used for some types of trades in forward market.	X	X
→	731	SettlPriceType	C	Integer	Required only for MDEntryType=6 (Settlement Price). Type of settlement price: 1 = Final 2 = Theoretical/Preview 3 = Updated		X
→	1020	TradeVolume	N	Qty	Total traded quantity (shares/contracts) of the trading day. It could be present only in the Trade Volume (269=B) or Trade (269=2) blocks.	X	X
→	1306	PriceLimitType	N	Integer	Describes how the prices are expressed. The default value is "0" (Price Unit). Valid values: 0 = Price Unit 1= Ticks 2 = Percentage		X
→	1148	LowLimitPrice	N	Price	Allowable low limit price for the trading day. A key parameter in validating order price. Used as the lower band for validating order prices. Orders submitted with prices below the lower limit will be rejected.		X
→	1149	HighLimitPrice	N	Price	Allowable high limit price for the trading day. A key parameter in validating order price. Used as the upper band for validating order prices. Orders submitted with prices above the upper limit will be rejected.		X
→	1150	TradingReferencePrice	N	Price	Reference price for the current trading price range usually representing the mid price between the *HighLimitPrice* and *LowLimitPrice*. The value may be the settlement price or closing price of the prior trading day.	X	X
→	7687	PercentageVar	N	Percentage	Index variation in percentage, from start of day.	X	
→	9343	NoUnchangedSecurities	N	Integer	Number of index underlying securities with no variation.	X	
→	9344	NoNotTradedSecurities	N	Integer	Number of index underlying securities that are not quoted.	X	
→	9989	TotTradedSecurities	N	Integer	Number of quoted securities in the index.	X	

	Tag	Tag Name	Req	Data Type	Comment	MEGA	PUMA
→	9990	CapitalPct	N	Percentage	Capitalization percentage of active securities in the index.	X	
→	9993	PrevYearVariation	N	Percentage	Index variation in percentage, compared to previous year last index.	X	
→	9996	NoFallingSecurities	N	Integer	Number of index underlying securities falling in price.	X	
→	9997	NoRisingSecurities	N	Integer	Number of index underlying securities rising in price.	X	
→	37001	PercThresholdNormalTrade	N	Percentage	Percentage threshold normal trade	X	
→	37002	PercThresholdCrossTrade	N	Percentage	Percentage threshold cross trade	X	
→	37003	DailyAvgShares30D	N	Qty	Daily average shares traded 30 days	X	
→	37004	MaxinumNormalSharesPerDailyAvgShares30DRatio	N	Float	Ratio maximum shares traded normal trade / Daily average shares traded 30 days	X	
→	37005	MaxinumCrossSharesPerDailyAvgShares30DRatio	N	Float	Ratio maximum shares traded cross trade / Daily average shares traded 30 days	X	
→	37006	NormalSharesPerOutstandingSharesRatio	N	Float	Ratio maximum shares traded normal trade / Outstanding number of shares	X	
→	37007	CrossSharesPerOutstandingSharesRatio	N	Float	Ratio maximum shares traded cross trade / Outstanding number of shares	X	

1.3.4 Security Status (tag 35=f)

This message contains instrument or instrument group state and trading phase information.

	Instrument definition	Recovery	Incremental	TCP Replay
Sent on stream			X	X

Tag	Tag Name	Req	Data Type	Comment	MEGA	PUMA
[Standard message header]						
1151	SecurityGroup	N	String(15)	The instrument group that is changing trading phase.	X	X
[Instrument identification block] See Section "Instrument Identification Block" for tag values						
75	**TradeDate**	Y	LocalMktDate	Trade date of the Market Data messages.		X
625	TradingSessionSubID	C	Integer	Phase related to a given *SecurityGroup*. Valid values sent by BVMF: 02 = Trading halt (Pause) 04 = No-Open (Close) 17 = Ready to trade (Open) 18 = Not available for trading (Pre-close) 21 = Pre-Open	X	X
326	SecurityTradingStatus	C	Integer	Status related to a given instrument. Valid values sent by BVMF: 02 = Trading halt (Pause) 04 = No-Open (Close) 17 = Ready to trade (Open) 18 = Not available for trading (Forbidden) 20 = Unknown or invalid 21 = Pre-Open (Reserved)	X	X
342	TradSesOpenTime	N	UTCTimestamp	Estimated end of the current auction. Included only if *SecurityTradingStatus*=21 (Reserved).	X	X

Tag	Tag Name	Req	Data Type	Comment	MEGA	PUMA
60	TransactTime	N	UTCTimestamp	Timestamp when the business transaction represented by the message occurred.	X	X
1174	SecurityTradingEvent	N	Integer	Identifies an event related to a *TradingSessionSubID*. Possible value: 4 - Change of Trading Session = Reset Trading Statistics.	X	X
1500	**MDStreamID**	Y	String	The identifier or name of market data stream. If not present, default=E. Valid values: E = electronic A = all X = ex-pit S = surveillance O = option exercise C = over the counter S = surveillance		X

1.3.5 News (tag 35=B)

The News message is sent over the incremental stream and TCP replay to convey market information of BVMF market surveillance notifications. News message is available to all trade platforms: Legacy UMDF and PUMA.

	Instrument definition	Recovery	Incremental	TCP Replay
Sent on stream			X	X

Tag		Tag Name	Req	Data Type	Comment
[Standard message header]					
42		OrigTime	N	UTCTimestamp	Time of message origination (always expressed in UTC - Universal Time Coordinated, also known as "GMT")
6940		NewsSource	N	String(3)	Indicates the source of the news. Values issued by BVMF for derivatives market: "1" - DCM "2" - BBMNet "3" - MarketSurveillance "4" - Internet "5" - DPR-VE Values issued by BVMF for equities market: "11" – Over-the-counter news agency "13" – Electronic Purchase Exchange "14" – CBLC News Agency "15" – BOVESPA – Index Agency "16" – BOVESPA – Institutional Agency "17" – BOVESPA – Operations Agency "18" – BOVESPA – Companies Agency
1474		LanguageCode	N	Language	Indicates the language the news is in. Represented by the two-letter ISO 639-1 standard identification. Absence of this field defaults to "pt" – Portuguese.
148		Headline	Y	String	The headline of a News message.
146		NoRelatedSym	N	NumInGroup	Specifies the number of repeating symbols (instruments) specified.
→		**[Instrument identification block]** See Section "Instrument Identification Block" for tag values			
215		NoRoutingIDs	N	NumInGroup	Indicates the number of destinations of this message.
→	216	RoutingType	Y	Integer	Indicates the type of RoutingID (217) specified. Values issued by BM&FBOVESPA: 2 = Target List.
→	217	RoutingID	N	String(2)	Assigned value used to identify a specific routing destination. Values issued by BM&FBOVESPA:

Tag		Tag Name	Req	Data Type	Comment
					"1" = Vendors "2" = Traders "3" = BM&FBOVESPA RSS feed "4" = BBMNet "5" = GLOBEX
33		NoLinesOfText	Y	NumInGroup	Identifies number of lines of text body.
→	58	Text	Y	String(8192)	Free format text string.
→	354	EncodedTextLen	N	Length	Length of EncodedText field.
→	355	EncodedText	N	Data	Encoded (non-ASCII characters) representation of the Text (58) field in the encoded format specified via the *MessageEncoding* (347) field.
149		URLLink	N	String(1024)	A URL (Uniform Resource Locator) link to additional information (e.g. http://www.bmf.com/news.html)

2 Market Data FIX 4.4 Message Specification

2.1 FIX 4.4 Application Messages used at Replay Connection (TCP)

This section outlines the FIX 4.4 messages designed/adapted only for replaying lost FIX 5.0SP2 real-time market data purposes. More details of small-scale recovering process can be found at UMDF Functionality document.

2.1.1 Application Message Request (tag 35=BW)

The client application should send this message for requesting a TCP replay in case of lost messages in the UDP channel.

	Instrument definition	Recovery	Incremental	TCP Replay
Sent on stream				X

Tag		Tag Name	Req	Data Type	Comment
[Standard message header]					
1346		ApplReqID	Y	String	Unique identifier for Request.
1347		ApplReqType	Y	Integer	Type of resend request being made: 0 - Retransmission of application messages for the specified Applications.
1351		NoApplIDs	Y	NumInGroup	Specifies number of application ID occurrences.
→	1355	RefApplID	Y	String	Reference to the unique application identifier (the UDP Channel ID).
→	1182	ApplBegSeqNum	Y	Integer	Message sequence number of first message in range to be resent. If the request is for a single message, *ApplBeginSeqNum* (tag 1182) and *ApplEndSeqNum* (tag 1183) must be the same.
→	1183	ApplEndSeqNum	Y	Integer	Message sequence number of last message in range to be resent. If the request is for a single message, *ApplBeginSeqNum* (tag 1182) and *ApplEndSeqNum* (tag 1183) must be the same. *ApplEndSeqNum*=0 is not allowed. The maximum number of messages that can be requested is 2000.

2.1.2 Application Message Request Acknowledgment (tag 35=BX)

BM&FBovespa sends the Application Message Request Acknowledgment message in response to the Application Message Request (tag 35-MsgType=BW) message. The Application Request Acknowledgment contains information regarding the response to the resend request.

	Instrument definition	Recovery	Incremental	TCP Replay
Sent on stream				X

Tag	Tag Name	Req	Data Type	Comment
[Standard message header]				
1353	ApplRespID	Y	String	Identifier for the Application Resend Response (identifier provided by the Exchange)
1346	ApplReqID	Y	String	Unique identifier for Request (identifier provided by the client application and received in the Application Message Request – tag 35=BW)
1347	ApplReqType	Y	Integer	Type of application resend response being sent: 0 - Retransmission of application messages.
1348	ApplRespType	Y	Integer	Used to indicate the type of acknowledgement being sent: 0 - Request accepted 1 - Application does not exist (not specified) 2 - Request not accepted or partially accepted (unable to process all requested data, each *RefApplID* in the *NoApplIDs* group must be checked to verify errors). 3 - The processing of a prior Application Message Request is in progress (client application must wait until the resend in progress is complete) 4 - Exceeded the maximum number of Applications (*NoApplIDs* - tag 1351) allowed in a single Application Message Request (currently 1) 7 – System temporarily unavailable
1351	NoApplIDs	N	NumInGroup	Specifies number of application ID occurrences, only when feedback information is applied.
→ 1355	RefApplID	Y	String	Reference to the unique application identifier (the UDP Channel ID).
→ 1182	ApplBegSeqNum	N	Integer	Beginning range of application sequence numbers.
→ 1183	ApplEndSeqNum	N	Integer	Ending range of application sequence numbers.
→ 1354	ApplRespError	N	Integer	Used if response error for a given ApplID; resend is not possible. Reason: 0 - Application does not exist 3 - Invalid range requested 4 - Exceeded the maximum limit of messages allowed per resend request

2.1.3 Application Raw Data Reporting (tag 35 =URDR)

In order to resend the messages requested with Application Message Request (tag 35-MsgType=BW), BM&FBovespa sends a set of Raw Data Reporting messages (tag 35-MsgType=URDR) each containing one or more FAST encoded messages appended in the RawData (tag 96) field.

	Instrument definition	Recovery	Incremental	TCP Replay
Sent on stream				X

Tag	Tag Name	Req	Data Type	Comment
[Standard message header]				
1346	ApplReqID	Y	String	Unique identifier for Request (identifier provided by the client application in the Application Message Request message– tag 35=BW)
1353	ApplRespID	Y	String	Identifier for the Application Resend Response (identifier provided by the Exchange in the Application Message Request Acknowledgment message – tag 35=BX)
1180	ApplID	Y	String	Identifies the application with which the message is associated.
1352	ApplResendFlag	Y	Boolean	Used to indicate that a message is being sent in response to an Application Message Request
95	RawDataLength	Y	Integer	Number of bytes in raw data field
96	RawData	Y	Bytes	Unformatted raw data containing one or more encoded FAST messages
911	TotNumReports	Y	Integer	Total number of recovered messages to be resent regarding the *ApplID*.
10054	NoApplSeqNums	Y	NumInGroup	Specifies number of Application Sequence Number occurrences.
→ 1181	ApplSeqNum	Y	String	Application sequence number being resent
→ 1350	ApplLastSeqNum	Y	Integer	The previous sequence number in the application sequence stream. Useful to help detect sequence gaps. The value “0” means that this is the first message being resent.
→ 10055 (?)	RawDataOffset	Y	Integer	The offset is the reference to the start point for the encoded message in *RawData* field (tag 96)

	Tag	Tag Name	Req	Data Type	Comment
→	95	RawDataLength	Y	Integer	Length in bytes of the encoded message. Must be used with *RawDataOffset* to safely recover the resent message with *ApplSeqNum*.

2.1.4 Application Message Report (tag 35=BY)

BM&FBovespa sends the Application Message Report (tag 35-MsgType=BY) message to indicate that the Application Resend process is complete. An Application Message Report is generated for each Channel ID just after resending the last Raw Data Reporting message.

	Instrument definition	Recovery	Incremental	TCP Replay
Sent on stream				X

	Tag	Tag Name	Req	Data Type	Comment
		[**Standard message header**]			
	1356	ApplReportID	Y	String	Identifier for the Application Message Report
	1426	ApplReportType	Y	Integer	Reason the Application Message Report is being sent: 3 - Application Resend successfully completed 4 - Application Resend Error
	1347	ApplReqType	Y	String	Type of application resend response being sent: 0 = Retransmission of application messages.
	1346	ApplReqID	Y	String	Unique identifier for Request (identifier provided by the client application and received in the Application Message Request message – tag 35=BW)
	1353	ApplRespID	Y	String	Identifier for the Application Resend Response (identifier provided by the Exchange in the Application Message Request Acknowledgment message – tag 35=BX)
	1351	NoApplIDs	Y	NumInGroup	Specifies number of Application ID occurrences. Should always be 1, because TCP Replay issues a separate report for each Channel ID, when it completes an Application Resend.
→	1355	RefApplID	Y	String	Reference to the unique application identifier (the UDP Channel ID).
→	1357	RefApplLastSeqNum	N	Integer	Application sequence number of last transmitted message. This is the last application sequence number that should have been received.
→	1354	ApplRespError	N	Integer	Used if response error; resend is not possible or has missing data. Reason: 1 - Messages requested are not available 5 - Top-N message(s) of requested range not available to resend 6 - Pending Bottom-N messages of the requested range (data is queued at server application waiting to be processed). The client application might want to send another Application Message Request to obtain the missing data. 7 – Both reasons 5 and 6 together (Top N messages not available and Pending Bottom-N of the requested range)