



# BMLL Data Feed

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## Trades

**Date:** 2023-12-08

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## 1.1. Introduction

The BMLL Trades product is a dataset that provides details of all events related to executions and trades across all Exchanges (primary and secondary markets) and Trade Reporting Facilities in a simple, normalised format.

It provides a trade-by-trade view of all important attributes of executions occurring on multiple systems. This dataset can compute volume aggregates, analyse the market share of different mechanisms, and provide a detailed trade-by-trade view of the market.

## 1.2. Dataset schema

### Basic Types

Type	Content	Text representation
bigint	8 byte signed integer	103403403403
char(n)	fixed length string containing letters, digits or '@'	XLON
date	Calendar date	YYYY-MM-DD
enum	string from a defined set	AUCTION
integer	4 byte signed integer	1234
price	8 byte binary floating point. All prices are rounded to a fixed number of decimal places. Trailing decimal zeros are not shown.	123.45
quantity	8 byte binary floating point, rounded to 4 decimal places	125
timestamp	Nanoseconds since 1970 in UTC. Timestamp will be represented in ISO format in text format.	20220302-11:23.5712345789
varchar	variable length string up to 500 characters. May contain quotes and special characters. All text will be utf8-encoded unless indicated differently. Ticker and ISO codes should be ASCII compatible.	"Vodafone Group"
bool	Boolean	1, 0

## 1.3. Schema

One row in the dataset corresponds to a single atomic event during the trading day. Events can be new trade reports, trade amendments or trade cancellations.

Trade reports can include duplicate and alternative representations of the same trade from a different point of view. When computing volumes, to avoid double counting trade reports, it is recommended to filter out trade reports that are not marked "Printable" as duplicates.

Trade amendments are always preceded by a trade cancellation. Trade cancellations always have a negative "Size" field. Aggregation on all the printable trades on specific intervals gives an accurate vision of the volume traded during that interval.

Field Name	Type	Description
ExchangeTicker	varchar (ascii)	Ticker as provided by the reporting venue.
Ticker	varchar (ascii)	FactSet ticker. It refers to the unique identifier used within the FactSet financial data platform to represent a specific security.
MIC	char(n)	The Market Identifier Code (MIC) uniquely identifies the exchange for which the trade is reported.
ISOExchangeCode	varchar (ascii)	The ISO code of the exchange on which the trade was reported.
OPOL	char(n)	The MIC of the Original Place Of Listing for the instrument.
ISIN	char(n)	The International Securities Identification Numbering value unique for the instrument
BMLLObjectId	bigint	The BMLL identifier represents the listing
InstrumentId	bigint	If not 0, the BMLL identifier represents the instrument to which the listing belongs. BMLL Instrument IDs are different if the primary identifier is different, the currency or the region is different.
CurrencyCode	char(n)	The currency of the order book information as provided by the exchange.

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ExecutionVenue	char(n)	The MIC code of the venue on which the trade did occur. Note that this can be different to the MIC code provided. For example, a trade on Liquidnet reported via CBOE BXTR would have a MIC Code of BOTC but an ExecutionVenue of LIQU.
TradeDate	date	The specific date on which a trade was executed - the date is derived from the LocalTimestamp.
TZOffset	integer	The offset between the local timestamp and UTC in seconds. Note: This is based on the original listing location of the primary instrument. Format was +/- HHMM . This will be adjusted during the DST if such a change occurs.
TradeTimestamp	timestamp	Time at which the trade was executed. The Time Zone is UTC. Generally delivered at microsecond precision.
PublicationTimestamp	timestamp	Time at which the trade was reported. The Time Zone is UTC. Generally delivered at microsecond precision.
LocalPublicationTimestamp	timestamp	Time at which the trade was reported. The Time Zone is the local time zone. Generally delivered at microsecond precision.
LocalTradeTimestamp	timestamp	Time at which the trade was executed. The Time Zone is the local timezone of the reporting venue. Generally delivered at microsecond precision.
TradeTimestampNanoseconds	bigint	Time at which the trade was executed. The Time Zone is UTC. Nanosecond precision.
PublicationTimestampNanoseconds	bigint	Time at which the trade was reported. The Time Zone is UTC. Nanosecond precision.
TradeId	varchar (ascii)	is an ID representing the trades. This is provided directly from the exchange feed.
AggressorSide	integer	Side of the aggressive trade: 2: Quotes from the BID side are aggressed by an aggressive sell order. 1: Quotes from the ASK side are aggressed by an aggressive buy order.

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		0: Quotes where the aggressor's side is unavailable due to trade mechanism without the aggressor or information not being reported.
Price	double	The price of the executed trade expressed in CurrencyCode.
Size	double	The size of the execution. If the execution is a cancellation, then the size will be negative.
SequenceNo	bigint	Sequence number - synthetic incremental number allowing to reorder messages for a security on a specific date.
Printable	boolean	Printable value computed by BMLL, allowing to filter out duplicate (non-printable) trade reports. These can be synthetic trade reports or trade reports describing the same execution from the view of the counterparty.  For US markets, this is taken as whether the trade is printable to the SIP.
OriginalTradeType	varchar (utf8)	A concatenation of flags relating to trade type as reported by the exchange in their string representation. This field is exchange dependent. On European venues, there is only one column used as input this is generally original_trade_type and trade_type (on Euronext, AQSE ), cross_type (on Nasdaq venues) and match_type (on EOBV venues such as XETRA, Vienna, Prague and Budapest). The exact set of flags for each venue can be accessed in the appendix below.
MarketMechanism	char(n), n=1	MMT 1 Flag - Market Mechanism  1: Central Limit Order Book (CLOB) 2: Quote Driven Market 3: Dark Order Book 4: Off Book 5: Periodic Auction 6: Request For Quotes 7: Any other (including hybrid)
TradingMode	char(n), n=1	MMT 2 Flag - Trading Mode

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		<p>1 : Undefined Auction          0 : Opening Auction          K : Closing Auction          I : Intraday Auction          U : Unscheduled Auction          2 : Continuous Trading          3 : At Market Close Trading          4 : Out of Main Session Trading          5 : Trade Reporting - On Exchange          6 : Trade Reporting - Off exchange          7 : Trade Reporting (SI)</p>
TransactionCategory	char(n)	<p>MMT 3.1 Flag - Transaction Category</p> <p>D : Dark Trade          R : Trade that received Price Improvement          Z : Package Trade (Excluding physical Trades)          Y : Exchange for Physical Trade</p>
NegotiatedIndicator	char(n)	<p>MMT 3.2 Flag - Negotiation Indicator or Pre-Trade Transparency Waiver</p> <p>1 : NLIQ - Negotiated Trade in Liquid Financial Instruments          2 : OLIQ - Negotiated Trade in Illiquid Financial Instruments          3 : PRIC - Negotiated Trade subject to Conditions Other Than The Current Market Price          4 : ILQD - Pre-Trade Transparency Waiver for Illiquid Instruments on an SI          5 : SIZE - Pre-Trade Transparency Waiver for Above Standard Market Size on an SI          6 : ILQD,SIZE - Pre-Trade Transparency Waiver for Illiquide and Above Standard Market Size          7 : NTLS - Negotiated trade larger than LIS brought onto a venue          8 : NETW - Negotiated trade with pretrade transparency waiver          9 : NLIQ,NTLS - Negotiated trades in Liquid Financial Instrument          A : OLIQ,NTLS          B : PRIC,NTLS          C : NETW,NTLS          N : Negotiated Trade</p>

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CrossingTrade	char(n), n=1	MMT 3.3 Flag Used to indicate if the trade was the result of a cross executed by the broker.  X: Agency Cross Trade
ModificationIndicator	char(n), n=1	MMT 3.4 Flag - Modification Indicator A: Trade Amendment C: Trade Cancelled
BenchmarkIndicator	char(n), n=1	MMT 3.5 Flag  B: Benchmark Trade S: Reference Price Trade
SpecialDividendIndicator	char(n), n=1	MMT 3.6 Flag  E: Special Dividend Indicator
OffBookAutomatedIndicator	char(n), n=1	MMT 3.7 Flag  M: Off-book manual Q: Off-book automated
PriceFormation	char(n), n=1	MMT 3.8 Flag  P: Plain-Vanilla Trade T: Non-Price Forming Trade J: Trade not Contributing to Price Discovery Process N: Price is currently not available - PENDING
AlgorithmicTrade	char(n), n=1	MMT 3.9 Flag  H: Algorithmic Trade
PublicationMode	char(n), n=1	MMT 4.1 Flag  1: Non-Immediate Publication 2: Non-Immediate Publication: Deferral due to "Large In Scale" 3: Non-Immediate Publication: Deferral due to "Illiquid Instrument" 4: Non-Immediate Publication: Deferral due to "Size Specific" 5 : Non-Immediate Publication : Deferral due to "Illiquid Instrument" and "Size Specific"

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		6 : Non-Immediate Publication : Deferral due to "Illiquid Instrument" and "Large In Size"
DeferralType	char(n), n=1	MMT 4.2 Flag  1 : Limited Details Trade 2 : Daily Aggregated Trade 3 : Volume Omission Trade 4 : Four Weeks Aggregation Trade 5 : Indefinite Aggregation Trade 6 : Volume Omission Trade, Eligible to Subsequent Enrichment in Aggregated Form 7 : Full details of Earlier "Limited Details Trade" 8 : Full details of Earlier "Daily Aggregated Trade" 9 : Full details of Earlier "Volume Omission Trade" V : Full Details of Earlier "Four Weeks Aggregation Trade" W : Full Details of Earlier "Volume Omission Trade, Eligible to Subsequent Enrichment in Aggregated Form"
DuplicativeIndicator	char(n), n=1	MMT 5 Flag  1 : If this is a duplicate of an existing trade report
BMLLTradeType	varchar(ascii) / enum	BENCHMARK_PRICE : Trade executed at a benchmark price CLOSING_PRICE : Trade executed at closing price DARK : Trade executed on dark order book EXCHANGE_FOR_RELATED_POSITION : Reserved LIT : Trade executed on a lit order book OTC : Reported Trade REQUEST_FOR_QUOTE : Trade executed via an RFQ venue SPECIAL_PRICE : Trade priced differently from normal market conditions - (Non-Price Forming trades, physical delivery trades, negotiated trades) UNCROSSING : Trade resulting from an auction uncross



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		UNKNOWN: Unknown/unsupported trade type
MarketState	varchar(ASCII) / enum	<p>AUCTION_ON_DEMAND: An auction that occurs concurrently with the main trading session.</p> <p>CLOSED: The exchange is closed - no on-exchange trading activity is recorded during this time.</p> <p>CLOSING_AUCTION: Market in Closing Auction - if the market is in closing auction is restarted due to a halt, and only the last valid closing auction is selected as the closing auction.</p> <p>CONDITIONAL: The trade is the result of a conditional trading mechanism where trades have to be approved in more sophisticated ways.</p> <p>CONTINUOUS_TRADING: The venue is operating a central limit order book in continuous trading.</p> <p>CONTINUOUS_TRADING_PRIMARY_CLOSED: The venue is continuously trading</p> <p>HALTED: Trading on the venue is temporarily halted due to technical reasons.</p> <p>INTRADAY_AUCTION: A scheduled auction that occurred at a defined schedule that is not an opening or a closing auction.</p> <p>OPENING_AUCTION: Market in Cpening Auction - if the opening auction is restarted, only the last opening auction will be marked as opening auction</p> <p>UNSCHEDULED_AUCTION: An unscheduled auction or a failed scheduled auction session during the day.</p>
ExchangeSequenceNo	bigint	The sequence number as provided by the exchange. Note that some exchanges may not provide a sequence number in this case, the ExchangeSequenceNo will always be 0.
BMLLSequenceNo	bigint	The sequence no of the trade in the upstream feed as inferred by BMLL - this sequence number will respect the order of messages in upstream protocol and will be populated even if the upstream venue does not provide a sequence number - where the

		source of the feed is indicated by BMLLSequenceSource.
BMLLSequenceSource	integer	An integer used to identify the upstream feed from which the sequence numbers are generated. This is designed to avoid the creation of a non-existent order between events that come from different message streams.

### 1.4. Format and file structure

Data is delivered as a single file per market per date, as a parquet file.

### 1.5. Data arrival times

Full product coverage and arrival times are available at <https://data.bmlitech.com>.

### 1.6. Notes

**Aggressor side:** The aggressor side is only provided for executions that can be deterministically mapped to a side of the order book. It is not inferred when there is no clear side (e.g. for an off-book trade).

**Use of MMT flags:** Multiple flags are taken from the FIX MMT Standard (see <https://www.fixtrading.org/mmt/>). This is provided as is when MMT flags are provided. For venues where MMT is not provided, fields are normalised to that field (for example, the ModificationIndicator)

### 1.7. Venue-specific Original Trade Type

Venues	Name of source columns	Description of possible values in original trade type
XETR, XWBO, XBUD, XPRA	match_type	13 : Liquidity Improvement - Cross Trade 3 : Manual Trade 5 : Uncrossing Trade 7 : Auction Trade
XAMS XBRU XLIS XMIL XOSL XPAR	original_trade_type	1 - Conventional Trade (Cash and Derivatives) 2 - Large in Scale (LiS) Trade (Derivatives Only) 3 - Basis Trade (Derivatives Only) 4 - Large in Scale (LiS) Package Trade (Derivatives Only) 5 - Guaranteed Cross Trade (Cash and Derivatives) 6 - Against Actual Trade (Derivatives Only)

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		<p>7 - Asset Allocation Trade (Derivatives Only)            9 - Exchange for Swap Trade (Derivatives Only)            10 - Exchange for Physical Trade - Cash Leg (Cash Only)            20 - BoB Trade (Cash Only)            21 - SI Trade (Cash Only)            22 - AtomX Trade (Derivatives Only)            24 - Trade Cancellation (Cash and Derivatives)            25 - Out of Market Trade (Cash Only)            26 - Delta Neutral Trade - Underlying Cash Leg (Cash Only)            27 - Market VWAP Operation Trade (Cash Only)            28 - Euronext Fund Service Trade (Cash Only)            29 - Secondary Listing Trade (Cash Only)            30 - Request for Cross Trade (Derivatives Only)            31 - Request for cross strategy Leg Trade (Derivatives Only)            32 - Trade Publication (Cash Only)            33 - Dark Trade (Cash Only)            34 - Delta Neutral Trade - Underlying Future Leg (Derivatives Only)</p>
<p>XSTO,            XCSE            XHEL,            XICE,            XLIT, XRIS,            XTAL.</p>	cross_type	<p>'O': Opening Cross.            'I': Scheduled Intraday Cross.            'C': Closing Cross.            'H': Cross for halted securities.            'A': Auction On Demand.</p>
<p>XEQT</p>	trade_type	<p>'B' – VBBO trade (buy-side aggressor)            'S' – VBBO trade (sell side aggressor)            'A' – Auction trade            'O' – Opening cross trade            'C' – Closing cross trade            'U' – Uncrossing trade            'T' – Consolidated trade (Market by Limit)            'N' – Off-book, on-Exchange trade report            'b' - ALP order trade (buy-side aggressor)            's' - ALP order trade (sell side aggressor)</p>