



Nordic Equity Last Sale

INET Nordic

Nordic Equities Markets



Revision 1.2.8
11 Oct 2023
Approved

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Document1

Document History

Revision	Published	Author(s)	Summary of Changes
1.0	October 11, 2016		Initial
1.1	October 28, 2016		Added agreement time.
1.1.1	December 12, 2016		Added more trade types (Section 6.2.1 – On-Exchange Trade Message)
1.1.2	January 23, 2017		<p>Clarified that messages may be extended (Section 3 - Architecture).</p> <p>Changed Adjusted Closing Price to 8 bytes Price(6) in section 6.1.3 – Adjusted Closing Price message</p> <p>Added Order Book Directory message layout (Section 6.1 – Order Book Directory message).</p>
1.2.0	July 4, 2017		<p>Removed order book directory message and system event (referenced to ITCH TotalView in section 6.1)</p> <p>Added reference to Order Book Trading Action message (Section 6.1)</p> <p>Updated the On-Exchange Trade Message with an additional field (Section 6.2.1)</p> <p>Added OTC Trade Message for APA reporting (Section 6.2.2)</p>
1.2.1	September 4, 2017		<p>Updated Appendix A with MMT 3.04 flags</p> <p>Updated description for Transaction To Be Cleared in the On-Exchange Trade Message</p>
1.2.2	September 11, 2017		TradeType updated in OTC Trade Message to reflect it is still relevant after MiFID 2.
1.2.3	October 9, 2017		<p>Corrected the list of administrative messages supported in NLS by adding Order Book Trading Action (Section 6.1)</p> <p>Corrected message name for Adjusted Closing Price message (Section 6.1.1)</p>
1.2.4	October 16, 2017		Added basis points to price notation in OTC Trade Message
1.2.5	October 23, 2017		Updated the Price field in the OTC Trade Message to indicate Price Fraction will be 0 when Price is not available
1.2.6	June 15, 2018		Added and updated Trade Type in the On-Exchange Trade Message

Revision	Published	Author(s)	Summary of Changes
1.2.7	April 9, 2019		Updated section 1, Product description
1.2.8	October 11, 2023		<p><u>Updated Trade Type values in section 6.2.1</u></p> <p><u>Updated description for “Notation of the quantity in measurement unit” and added field “Third country trading venue of execution” in 6.2.2</u></p> <p><u>Updated Appendix A – MMT table to MMT v 4.1</u></p>

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Product Description

Nordic Equity Last Sale (NLS) is a direct data feed product offered by Nasdaq Nordic and Nasdaq Baltic¹. NLS covers the full range of issues traded in INET Nordic. NLS provides real-time, intra-day, on-exchange trade data from the INET Nordic execution system as well as OTC trades from the Nasdaq Nordic Approved Publication Arrangement (APA) trade publication service.

Market data distributors may use the NLS data feed to feed real-time stock tickers, portfolio trackers, trade alert programs, time and sale graphs, and other display systems.

¹ Nasdaq Copenhagen, Nasdaq Helsinki, Nasdaq Iceland, Nasdaq Riga, Nasdaq Stockholm, Nasdaq Tallinn and Nasdaq Vilnius are respectively brand names for Nasdaq Copenhagen A/S, Nasdaq Helsinki Ltd, Nasdaq Iceland hf., Nasdaq Riga AS, Nasdaq Stockholm AB, Nasdaq Tallinn AS and AB Nasdaq Vilnius. Nasdaq Nordic represents the common offering by Nasdaq Copenhagen, Nasdaq Helsinki, Nasdaq Iceland and Nasdaq Stockholm. Nasdaq Baltic represents the common offering by Nasdaq Tallinn, Nasdaq Riga and Nasdaq Vilnius.

Network Protocol Options

Nasdaq will offer the NLS data feed in two protocol options:

- **SoupBinTCP**
- **MoldUDP64**

Architecture

NLS is made up of a series of sequenced messages. Each message is variable in length based on the message type. The messages that make up the NLS protocol are typically delivered using a higher level protocol that takes care of sequencing and delivery guarantees.

Nasdaq Nordic can add new message fields and message types to this specification. New message fields will be added to the end of the message. Participants should use decoders that ignore unknown message types and messages that expand in length.

Data Types

All **integer** fields are big-endian (network byte order) binary encoded numbers. Unless otherwise noted, they are unsigned.

Prices are integer fields, supplied with an associated precision. Unless specifically denoted as a Signed Price, Prices are unsigned. When converted to a decimal format, prices are in a fixed point format, where the precision defines the number of decimal places. For example, a field flagged as Price (4) has an implied 4 decimal places.

Timestamps reflects the Nasdaq Nordic system time at which the outbound message was generated. Nasdaq Nordic states time as the number of nanoseconds past midnight. The time zone is UTC.

Dates are integer fields defined as YYYYMMDD.

Times are integer fields defined as HHMMSSssssssss and are implicitly UTC.

All **alphanumeric fields** are left-justified, ASCII fields. Padding spaces appear on the right as necessary.

Bit masks are fields where every set bit represents a certain value.

Message Header

All NLS messages have a header of three fields:

- The Message Type that identifies the type of message.
- The Timestamp that specifies the nanosecond time of the event.
- The Tracking Number that provides a sequence in the case multiple events happen at the same timestamp value.

Message Formats

6.1 Administrative Messages

To help firms create a full display, Nasdaq Nordic supports the following administrative messages: System Event; Order Book Directory; Order Book Trading Action and; Adjusted Closing Price.

Please note that Nasdaq NLS uses the same System Event, Order Book Directory and Trading Action formats as the Nasdaq TotalView-ITCH data feed:

- For the **System Event** message format, refer to the current TotalView-ITCH specification (3.0 or higher).
- **Order Book Directory** messages for all security symbols in the Nasdaq execution system. For the message format, refer to the current TotalView-ITCH specification (3.0 or higher).
- **Order Book Trading Action** messages for active security symbol in the Nasdaq execution system. The Trading Action state will reflect the current state of the book. For the message format, refer to the current TotalView-ITCH specification (3.0 or higher).

6.1.1 Adjusted Closing Price Message

At the start of each trading day, Nasdaq Nordic disseminates the adjusted closing price for all active symbols in the trading system.

For Nasdaq Nordic listed securities the Nasdaq Official Closing Price is used to calculate the adjusted close.

Adjusted Closing Price				
Name	Offset	Length	Value	Notes
Message Type	0	1	"G"	Adjusted Closing Price Message.
Timestamp	1	8	Timestamp	Nanoseconds since midnight.
Tracking Number	9	2	Integer	Nasdaq Nordic internal tracking number
Order Book	11	4	Integer	Denotes the identity (order book id) of an order book.
Adjusted Closing Price	15	8	Price (6)	The previous trading day's official closing price adjusted for any applicable corporate actions. If there were no corporate actions for a security, the

Adjusted Closing Price				
Name	Offset	Length	Value	Notes
				previous day's official close will be disseminated.

6.2 Trade Messages

6.2.1 On-Exchange Trade Message

The following message is used to relay Nasdaq Nordic execution system and TRF on-exchange trade transactions that are executed or have publication deferred to the current business day. Please note that Nasdaq Nordic uses a single message to publish both side of a trade execution on the Nordic Equity Last Sale (NLS) feed.

Trade breaks/cancels is sent whenever an execution on Nasdaq Nordic is broken. A trade break is final; once a trade is broken, it cannot be reinstated.

Firms that use the NLS feed to create trade tickers or calculate market statistics should be prepared to process the broken trade message.

In order to adhere to the ESMA MiFID II prescribed post-trade publication formats:

- Clients must fetch the following fields from the Order Book Directory message
 - Instrument Identification Code = the ISIN code
 - Price currency
 - Price notation
 - Notional currency
 - Notional amount
- Default the following fields:
 - Instrument Identification Code Type = "ISIN"
 - Transaction to be cleared = false
 - Publication Date = the current date
- Re-format the following fields:
 - Execution Date and Time
 - Agreement Date and Time
 - Price
 - Quantity
 - MMT Trade Flags

On-Exchange Trade Message				
Name	Offset	Length	Value	Notes
Message Type	0	1	"T"	On-Exchange Trade Message
Timestamp	1	8	Timestamp	Nanoseconds since midnight. Serves as the publication time.

On-Exchange Trade Message				
Name	Offset	Length	Value	Notes
Tracking Number	9	2	Integer	Nasdaq Nordic internal tracking number
Order Book	11	4	Integer	Denotes the primary identifier of an order book.
Execution Date	15	4	Date	Date of execution (YYYYMMDD).
Execution Time	19	8	Time	Time of execution (HHMMSSssssssss).
Agreement Date	27	4	Date	Date of agreement (YYYYMMDD).
Agreement Time	31	8	Time	Time of agreement (HHMMSSssssssss).
Price	39	8	Price (6)	Execution price.
Quantity	47	8	Integer	Execution Quantity
Venue of Execution	55	4	Alpha-numeric	MIC code of the execution venue.
Transaction Identifier Code	59	10	Alpha-numeric	Trade match ID. Assigned by Nasdaq Nordic to each trade.
MMT Trade Flags	69	14	Alpha-numeric	Refer to MMT Trade Flags
Trade Type	83	1	Alpha-numeric	Type of negotiated trade. Valid values: 1 = Standard Trade 2 = Non-Standard Settlement 3 = Exchange Granted Trade 5 = Portfolio Trade 6 = Volume Weighted Average Price Trade 8 = Pre-Opening Trade D = Standard Routed Trade E = Standard Routed Dark Trade F = Standard Dark Trade G = Standard Auction On Demand Trade

On-Exchange Trade Message				
Name	Offset	Length	Value	Notes
				H = Standard Trade At Closing Trade I = Contingent Trade N = Non-Price Forming Trade
MPID, buyer	84	4	Alpha-numeric	The MPID of the buyer, if public
MPID, seller	88	4	Alpha-numeric	The MPID of the seller, if public
Transaction To Be Cleared	92	1	Alpha	Valid values: Y – Yes N – No Only relevant for Securitized Derivatives (SDRV)

6.2.2 OTC Trade Message

The following message is used to relay Nasdaq Nordic APA OTC trade transactions.

In order to adhere to the ESMA MiFID II prescribed publication formats:

- Default the following:
 - Publication data = the current date
- Re-format the following fields:
 - Agreement Date and Time
 - Publication Date and Time
 - MMT Trade Flags

OTC Trade Message				
Name	Offset	Length	Value	Notes
Message Type	0	1	"Z"	OTC Trade Message
Timestamp	1	8	Timestamp	Nanoseconds since midnight.
Tracking Number	9	2	Integer	Nasdaq Nordic internal tracking number
Instrument Identification Code Type	11	4	Alpha	Valid values: "ISIN" - ISIN-code, where ISIN is available "OTHR" - other identifier

OTC Trade Message				
Name	Offset	Length	Value	Notes
Instrument Identification Code	15	12	Alpha-numeric	Code used to identify the financial instrument
Agreement Date	27	4	Date	Date of agreement (YYYYMMDD).
Agreement Time	31	8	Time	Time of agreement (HHMMSSssssssss).
Price	39	8	Integer (18/n)	Execution price. Set to zero, with Price Fraction 0 in case the price is not available
Price fraction	47	1	Integer	0-17
Price Notation	48	4	Alpha	Valid values: "MONE" – Monetary value "PERC" – Percentage "YIEL" – Yield. "BAPO" – Basis Points
Price Currency	52	3	Alpha-numeric	ISO currency code
Quantity	55	8	Integer (18/n)	Execution Quantity. Number of fractional digits in Quantity Fraction
Quantity fraction	63	1	Integer	0-17
Notation of the quantity in measurement unit	64	25	Alpha-numeric	For commodity derivatives, emission allowance derivatives and emission allowances with certain exceptions. Valid values: "TOCD" – tons of carbon dioxide "TONE" – Metric tonnes "MWHO" – Megawatt hours "MBTU" – One Million British Thermal Units "THMS" – Therms "DAYS" – Days

OTC Trade Message				
Name	Offset	Length	Value	Notes
Quantity in measurement unit	89	8	Integer (18/n)	For commodity derivatives, emission allowance derivatives and emission allowances with certain exceptions. . Number of fractional digits in Quantity in measurement unit fraction.
Quantity in measurement unit fraction	97		Integer	0-17
Venue of Execution	98	4	Alpha-numeric	Valid values: MIC code of the execution venue. "XOFF" for OTC trades; "SINT" for systematic internalisers.
Notional amount	102	8	Integer (18/17)	Number of fractional digits in Notional amount fraction.
Notional amount fraction	110	1	Integer	0-17
Notional Currency	111	3	Alpha-numeric	ISO currency code
Type	114	4	Alpha-numeric	For emission allowances and emission allowance derivatives only Valid values: "EUAE" – EUA "CERE" - CER "ERUE" – ERU "EUAA" – EUAA "OTHR" - Other
Transaction Identifier Code	118	10	Alpha-numeric	Assigned by Nasdaq Nordic to each trade.
MMT Trade Flags	128	14	Alpha-numeric	Refer to MMT Trade Flags
Transaction To Be Cleared	142	1	Alpha-numeric	Valid values: Y – Yes N – No

OTC Trade Message				
<i>Name</i>	<i>Offset</i>	<i>Length</i>	<i>Value</i>	<i>Notes</i>
TradeType	143	1	Alpha-numeric	9 – OTC Standard Trade A – OTC Non Standard Trade B – SI Standard Trade C – SI Non Standard Trade
Third country trading venue of execution	144	4	Alpha-numeric	Valid values: MIC code of the execution venue.

Support

Specification documents can be located at:

<http://www.nasdaqomx.com/transactions/technicalinformation>

Appendix A - MMT Trade Flags

The MMT Trade Flags field is an efficient way of relaying MMT standard trade flags (MMT 4.1). MMT (Market Model Typology) is a FIX Trading Community maintained standard that covers the ESMA MiFID II post-trade trade flags.

The value relayed in the field is mapped according to the below table.

#	MMT Level	On the Wire	Display as	Description
1	1	MARKET MECHANISM		
		1	LB	Central Limit Order Book
		2	QB	Quote Driven Market
		3	DB	Dark Order Book
		4	OB	Off Book (including Voice or Messaging Trading)
		5	PA	Periodic Auction
		6	RQ	Request for Quotes
		7	AH	Any Other, Including Hybrid
		8	HS	Hybrid System
		9	AO	Any Other, Excluding Hybrid
2	2	TRADING MODE		
		1	AU	Undefined Auction
		O	OA	Scheduled Opening Auction
		K	CA	Scheduled Closing Auction
		I	IA	Scheduled Intraday Auction
		U	UA	Unscheduled Auction
		P	OD	On Demand Auction (Frequent Batched Auction)
		2	CT	Continuous Trading
		3	AC	At Market Close Trading
		4	OT	Out of Main Session Trading

#	MMT Level	On the Wire	Display as	Description
		5	ON	Trade Reporting (On Exchange)
		6	OF	Trade Reporting (Off Exchange)
		7	SI	Trade Reporting (Systematic Internaliser)
3	3.1	TRANSACTION TYPE : TRANSACTION CATEGORY		
		D	D	Dark Trade
		R	RPRI	Trade that has Received Price Improvement
		Z	TPAC	Package Trade (excluding Exchange for Physicals)
		Y	XFPH	Exchange for Physicals Trade
	3.13	G	GIVE	RFMD Give-Up Trade
	3.1 3.13	H	XFPH GIVE	Exchange for Physicals Trade and RFMD Give-Up Trade
		-	<i>Nothing</i>	n/a
4	3.2	TRANSACTION TYPE : NEGOTIATION INDICATOR OR PRE-TRADE TRANSPARENCY WAIVER		
		N	N	Negotiated Trade
		1	NLIQ	Negotiated Trade in Liquid Financial Instruments
		2	OILQ	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 Instrument on an SI
	3.10	5	SIZE	Pre-Trade Transparency Waiver for Above Standard Market Size on an SI
	3.2 3.10	6	ILQD SIZE	Pre-Trade Transparency Waivers of Illiquid Instrument and Above Standard Market Size
	3.10	7	NTLS	Negotiated Trade Larger Than LIS Brought Onto a Venue
	3.2	8	NETW	Negotiated Trade With Pre-Trade Transparency Waiver

#	MMT Level	On the Wire	Display as	Description
	3.2 3.10	9	NLIQ NTLS	Negotiated Trade in Liquid Financial Instruments and Negotiated Trade Larger Than LIS Brought Onto a Venue
	3.2 3.10	a	OILQ NTLS	Negotiated Trade in Illiquid Financial Instruments and Negotiated Trade Larger Than LIS Brought Onto a Venue
	3.2 3.10	b	PRIC NTLS	Negotiated Trade Subject to Conditions Other Than The Current Market Price and Negotiated Trade Larger Than LIS Brought Onto a Venue
	3.2 3.10	c	NETW NTLS	Negotiated Trade With Pre-Trade Transparency Waiver and Negotiated Trade Larger Than LIS Brought Onto a Venue
		-	<i>Nothing</i>	No Negotiated Trade
5	3.3	TRANSACTION TYPE : AGENCY CROSS TRADE INDICATOR		
		X	ACTX	Agency Cross Trade
		-	<i>Nothing</i>	No Agency Cross Trade
6	3.4	TRANSACTION TYPE : MODIFICATION INDICATOR		
		C	CANC	Trade Cancellation
		A	AMND	Trade Amendment
		-	<i>Nothing</i>	New Trade
7	3.5	TRANSACTION TYPE : BENCHMARK OR REFERENCE PRICE INDICATOR		
		B	BENC	Benchmark Trade
		S	RFPT	Reference Price Trade
	3.11	P	PORT	Portfolio Trade
	3.12	C	CONT	Contingent Trade
	3.5 3.11	Y	BENC PORT	Benchmark and Portfolio Trade
	3.5 3.12	M	BENC CONT	Benchmark and Contingent Trade
	3.11 3.12	N	PORT CONT	Portfolio and Contingent Trade

#	MMT Level	On the Wire	Display as	Description
	3.5 3.11 3.12	O	BENC PORT CONT	Benchmark and Portfolio and Contingent Trade
		1	CLSE	Benchmark Transactions Executed at the Market Closing Price
	3.5 3.11	2	CLSE PORT	Benchmark Transactions Executed at the Market Closing Price and Portfolio Trade
	3.5 3.12	3	CLSE CONT	Benchmark Transactions Executed at the Market Closing Price and Contingent Trade
	3.5 3.11 3.12	4	CLSE PORT CONT	Benchmark Transactions Executed at the Market Closing Price and Portfolio Trade and Contingent Trade
		-	<i>Nothing</i>	No benchmark or Reference Price Trade
8	3.6	TRANSACTION TYPE : SPECIAL DIVIDEND INDICATOR		
		E	SDIV	Special Dividend Trade
		-	<i>Nothing</i>	No Special Dividend Trade
9	3.7	TRANSACTION TYPE : OFF BOOK AUTOMATED INDICATOR		
		-	Nothing	Unspecified
		M	M	Off Book Non-Automated
		Q	Q	Off Book Automated
10	3.8	TRANSACTION TYPE : CONTRIBUTION TO PRICE FORMATION OR THE PRICE DISCOVERY PROCESS		
		P	P	Plain-Vanilla Trade
		T	NPFT	Non-Price Forming Trade
		J	TNCP	Trade not Contributing to the Price Discovery Process
		N	PNDG	Price is Currently Not Available but Pending
		Z	NOAP	Price is Not Applicable
11	3.9	TRANSACTION TYPE : ALGORITHMIC INDICATOR		

#	MMT Level	On the Wire	Display as	Description
		H	ALGO	Algorithmic Trade
		-	<i>Nothing</i>	No Algorithmic Trade
12	4.1	PUBLICATION MODE / POST-TRADE DEFERRAL : REASON		
		-	Nothing	Immediate Publication
		1	1	Non-Immediate Publication
		2	LRGS	Non-Immediate Publication: Deferral for "Large in Scale"
	4.3	3	ILQD	Non-Immediate Publication: Deferral for "Illiquid Instrument"
	4.4	4	SIZE	Non-Immediate Publication: Deferral for "Size Specific"
	4.3 4.4	5	ILQD SIZE	Non-Immediate Publication: Deferrals of "ILQD" and "SIZE"
	4.3 4.1	6	ILQD LRGS	Non-Immediate Publication: Deferrals of "ILQD" and "LRGS"
13	4.2	POST-TRADE DEFERRAL OR ENRICHMENT : TYPE		
		1	LMTF	Limited Details Trade
		2	DATF	Daily Aggregated Trade
		3	VOLO	Volume Omission Trade
		4	FWAF	Four Weeks Aggregation Trade
		5	IDAF	Indefinite Aggregation Trade
		6	VOLW	Volume Omission Trade, Eligible for Subsequent Enrichment in Aggregated Form
		7	FULF	Full Details of Earlier "Limited Details Trade (LMTF)"
		8	FULA	Full Details of Earlier "Daily Aggregated Trade (DATF)"
		9	FULV	Full Details of Earlier "Volume Omission Trade (VOLO)"
		V	FULJ	Full Details of Earlier "Four Weeks Aggregation Trade (FWAF)"

#	MMT Level	On the Wire	Display as	Description
		W	COAF	Full Details in Aggregated Form of Earlier "Volume Omission Trade, Eligible for Subsequent Enrichment in Aggregated Form (VOLW)"
		-	<i>Nothing</i>	Not applicable
14	5.1-5.3	DUPLICATIVE INDICATOR		
		-	<i>Nothing</i>	Unique Trade Report
	5.1	1	DUPL	Duplicative Trade Report (reported to more than one APA)
	5.3	2	IGRP	Intra-Group Trade
	5.1 5.3	3	DUPL IGRP	Duplicative Trade Report and Intra-Group Trade
	5.2	4	XBDT	Cross-Border Duplicative Trade Report
	5.1 5.2	5	DUPL XBDT	Duplicative Trade Report and Cross-Border Duplicative Trade Report
	5.1 5.2 5.3	6	DUPL XBDT IGRP	Duplicative Trade Report and Cross-Border Duplicative Trade Report and Intra-Group Trade

Appendix B - MiFID II Publication Rules

ESMA prescribes specific formats for post-trade publication. For more information, please refer to MiFID II Regulatory Technical Standards (RTS 1 and 2).

NLS carries trade transactions in an efficient format and cannot be displayed in a compliant way without formatting as indicated above.