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Zagreb Stock Exchange

ZSE APA Service

MIFID II POST-TRADE PUBLICATION

Version 2.0 – November 2023

Applicable from January 1, 2024



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1 Revision History

<p>Version 2.0 November 30, 2023</p> <p>Applicable from January 1, 2024</p>	<p>Compliance with the COMMISSION DELEGATED REGULATION (EU) 2023/944 and COMMISSION DELEGATED REGULATION (EU) 2023/945:</p> <ul style="list-style-type: none">• Field Price: if not applicable, the value must be NOAP• New field: Third-country trading venue of execution• Updated instructions for fields:<ul style="list-style-type: none">○ Price notation○ Notation of the quantity in measurement unit○ Quantity in measurement unit○ Notional amount○ Notional currency• Trade Flags: added PORT, CONT; removed TNCP; updated usage notes
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2 Introduction

MiFID II requires all investment firms within the EU to publish over-the-counter (OTC) trades in financial instruments. The requirement is covering all asset classes. All investment firms, including Systematic Internalisers, trading OTC are required to publish post-trade reports via an **Approved Publication Arrangement (APA)** entity. APA must be certified by its National Competent Authority. ZSE offers such compliant system to financial institutions.

ZSE APA Service focuses on post-trade data publication. It does not offer pre-trade publication services that may be required by Systematic Internalisers. Also, deferred publication is not supported. All OTC trades reported to ZSE APA Service are published immediately. OTC trade reports must be submitted for all instruments traded on a trading venue within the EU. List of such instruments is available in ESMA Financial Instruments Reference Data System (FIRDS). ZSE APA Service uses the information from the FIRDS registry to determine if a report submission is mandatory. Reports must be submitted for the following asset classes:

Table 1. Equity and equity-like financial instruments
defined in Annex III of Commission Delegated Regulation (EU) 2017/587

Asset Class	MiFIR Code
Shares	SHRS
ETFs	ETFS
Depository Receipts	DPRS
Certificates	CRFT
Other Equity-like instruments	OTHR

Table 2. Non-equity financial instruments
defined in Annex IV of Commission Delegated Regulation (EU) 2017/583

Asset Class	MiFIR Code
Bonds	BOND
Securitised derivatives	SDRV
Structured Finance Products	SFPS
ETCs	ETCS
ETNs	ETNS
Emission Allowances	EMAL
Derivative	DERV



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3 Reporting interfaces

Financial institutions can report OTC trades through two ZSE APA interfaces:

- **Web GUI** (<https://services.zse.hr>) – manual reporting;
- **RESTful API** (Annex I) – automated reporting.

Both interfaces are offered through standard HTTPS protocol via Internet. Financial institution authenticates to the service with unique logon details. Access to interfaces is available within two work hours after transmission of the application form for ZSE APA Service, during ZSE APA operating hours.

Both interfaces feature:

- Entry of OTC trades,
- Listing reported OTC trades,
- Report correction or cancellation.

Before utilizing the RESTful API on the production environment, the customer must ensure the implementation is successfully tested on the simulation environment.

4 OTC report fields

ZSE APA Service will reject any report which does not specify the following mandatory fields:

- **ISIN** – International Securities Identification Number, as defined in ISO 6166.
- **Asset class** – as listed in Table 1 and Table 2.
- **Sub-asset class** – Applicable and mandatory for derivatives.
Possible values: *Options, Futures, Forward Rate Agreement, Forwards, Swaps, Portfolio, Swaptions, Futures on a swap, Forwards on a swap, Forward Freight Agreements, Spread betting, CFD, Other.*
- **Underlying asset class** – Applicable and mandatory for securitised derivatives or derivatives.
Possible values: *Interest rate, Equity, Commodity, Credit, Currency.*
- **Execution time** – Date and time when the transaction was executed.
Two ISO 8601 formats are supported by the service:
 - UTC: YYYY-MM-DDThh:mm:ss.dddddZ
 - with timezone designator: YYYY-MM-DDThh:mm:ss.ddddd±hh:mm



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Execution time cannot be set into the future. *Publication time* is automatically assigned by the service.

- **Price** – Traded price of the transaction excluding, where applicable, commission and accrued interest. Decimal number of up to 18 digits in total of which up to 13 digits can be fraction digits. Where price is currently not available but pending, text value **PNDG** must be used. In such cases, investment firms are obliged to publish the price by correcting the original trade report as soon as possible. Where price is not applicable, the value must be **NOAP**.
- **Price notation** – Indicates whether the price is expressed in monetary value (**MONE**), in percentage (**PERC**), in yield (**YIEL**) or basis points (**BAPO**).
- **Price currency** – Trade currency code, as defined in ISO 4217. Mandatory only if the price is expressed as monetary value (see *Price notation*).
- **Quantity** – The number of units of the financial instrument, or the number of derivative contracts in the transaction. Decimal number of up to 18 digits in total of which up to 17 digits can be fraction digits.
- **Notation of the quantity in measurement unit** – Indication of measurement units in which the quantity in measurement unit is expressed. Applicable and mandatory for contracts designated in units in commodity derivatives, C10 derivatives, emission allowance derivatives and emission allowances.
Possible values: **TOCD** (tonnes of carbon dioxide equivalent, for any contract related to emission allowances), **TONE** (metric tonnes), **MWHO** (megawatt hours), **MBTU** (one million British thermal units), **THMS** (Therms), **DAYS** (days) or otherwise 4-character free-form text.
- **Quantity in measurement unit** – The equivalent amount of commodity or emission allowance traded expressed in measurement unit. Applicable and mandatory for contracts designated in units in commodity derivatives, C10 derivatives, emission allowance derivatives and emission allowances.
- **Notional amount** – Applicable and mandatory for non-equity asset classes:
 - (i) for bonds (excluding ETCs and ETNs), with the face value, which is the amount repaid at redemption to the investor;
 - (ii) for ETCs and ETNs and securitised derivatives, with the number of instruments exchanged between the buyers and sellers multiplied by the price of the instrument exchanged for that specific transaction. Equivalently, with the price field multiplied by the quantity field;
 - (iii) for structured finance products (SFPs), with the nominal value per unit multiplied by the number of instruments at the time of the transaction;



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- (iv) for credit default swaps, with the notional amount for which the protection is acquired or disposed of;
 - (v) for options, swaptions, swaps other than those in (iv), futures and forwards, with the notional amount of the contract;
 - (vi) for emission allowances, with the resulting amount of the quantity at the relevant price set in the contract at the time of the transaction. Equivalently, with the price field multiplied by the quantity in measurement unit field;
 - (vii) for spread bets, with the monetary value wagered per point movement in the underlying financial instrument at the time of the transaction;
 - (viii) for contracts for difference, with the number of instruments exchanged between the buyers and sellers multiplied by the price of the instrument exchanged for that specific transaction. Equivalently, with the price field multiplied by the quantity field.
- **Notional currency** – ISO 4217 code of major currency in which the notional amount is denominated. In the case of an FX derivative contract or a multi-currency swap or a swaption where the underlying swap is multi-currency or a currency CFD or spread-betting contract, this will be the notional currency of leg 1. The field is applicable and mandatory if *Notional amount* is entered.
 - **Type** – Applicable and mandatory for emission allowances.
Possible values: **EUAE** (*European Union Allowance*), **CERE** (*Certified Emission Reduction*), **ERUE** (*Emission Reduction Units*), **EUAA** (*European Aviation Allowance*) or **OTHR** (*Other*).
 - **Transaction to be cleared** – Applicable and mandatory for derivatives. Identifies whether the transaction will be cleared.
 - **Third-country trading venue of execution** – Applicable if the transaction is executed on an organised trading platform outside of the EU. ISO 10383 segment MIC of the third-country trading venue where the transaction was executed. Where the segment MIC does not exist, operating MIC should be entered.
 - **Transaction Identification Code (TIC)** – Mandatory only in case of a report correction or cancellation. A report correction/cancellation will be rejected if specified Transaction Identification Code is not generated by ZSE APA Service.

5 Trade flags

The following flags may be used to flag OTC trades reported to ZSE APA Service:

- **BENC** – Benchmark transaction flag



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Transactions executed in reference to a price that is calculated over multiple time instances according to a given benchmark, such as volume-weighted average price or time-weighted average price;

- **PORT** – Portfolio transactions flag

Equity: Transactions in five or more different financial instruments where those transactions are traded at the same time by the same client and as a single lot against a specific reference price;

Non-equity: Transaction in five or more different financial instruments where those transactions are traded at the same time by the same client and against a single lot price and that is not a “package transaction”.

- **CONT** – Contingent transactions flag

Equity: Transactions that are contingent on the purchase, sale, creation or redemption of a derivative contract or other financial instrument where all the components of the trade are meant to be executed as a single lot.

- **ACTX** – Agency cross transactions flag

Transactions where an investment firm has brought together clients' orders with the purchase and the sale conducted as one transaction and involving the same volume and price.

- **SDIV** – Special dividend flag

Equity: Transactions that are either: executed during the ex-dividend period where the dividend or other form of distribution accrues to the buyer instead of the seller; or executed during the cum-dividend period where the dividend or other form of distribution accrues to the seller instead of the buyer.

- **SIZE** – Transactions above the standard market size flag

Equity: Transactions executed on a systematic internaliser where the size of the incoming price offer was above the standard market size.

Non-equity: Transactions executed under the post-trade size specific to the instrument deferral. ZSE APA Service does not accept SIZE flag for non-equity instruments as deferral is not supported.

- **ILQD** – Illiquid instrument transaction flag

Equity: Transactions in illiquid instruments executed on a systematic internaliser.

Non-equity: Transactions executed under the deferral for instruments for which there is not a liquid market. ZSE APA Service does not accept ILQD flag for non-equity instruments as deferral is not supported.



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- **RPRI** – Transactions which have received price improvement flag
Transactions executed on a systematic internaliser with a price improvement MiFIR Article 15 (2)
- **TPAC** – Package transaction flag
Package transactions which are not exchange for physicals as defined in Commission Delegated Regulation (EU) 2017/583 Article 1
- **XFPH** – Exchange for physical transaction flag
Exchange for physicals as defined in Commission Delegated Regulation (EU) 2017/583 Article 1

ZSE APA service will automatically flag reports with **CANC** and/or **AMND** flags upon report correction or cancellation.



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According to ESMA Q&A on MiFID II and MiFIR transparency topics, flags for OTC trades reported to ZSE APA Service may be combined as follows:

Combination of equity flags

1. *Descriptive flags*: BENC, ACTX, PORT, CONT and SDIV. They can be combined with each other and with the flags under 5. The NPFT flag is not applicable for APA.
2. *Post-trade deferral flag*: LRGS. The application of the deferred publication is an option and not an obligation, therefore the LRGS flag has to be used only in case of the effective use of the deferred publication. ZSE APA Service does not accept LRGS flag as deferral is not supported.
3. *Pre-trade waiver flags*: RFPT, NLIQ, OILQ and PRIC are not applicable for APA.
4. *Algorithmic trading flag*: ALGO is not applicable for APA.
5. *Flags related to Systematic Internalisers*: SIZE, ILQD and RPRI. They can be combined among each other and with the flags under 1.
6. *Flag related to reporting to APAs*: DUPL. ZSE APA Service does not accept DUPL flag. Only original trade reports are subject to the service.

Combination of non-equity flags

1. *Descriptive flags*: **BENC**, **PORT** and **ACTX**. Descriptive flags can be combined with each other, as well as with flags under 3, with the exception of **PORT + TPAC**. The **NPFT** flag is not applicable for APA.
2. *Post-trade deferral flags*: **LRGS**, **ILIQ**, and **SIZE**. The application of the deferred publication is an option and not an obligation. Post-trade deferral flags should only be used in case of the effective use of the deferred publication. ZSE APA Service does not accept these flags as deferral is not supported.
3. *Package transaction flags*: **TPAC** and **XFPH**. These flags are mutually exclusive. These flags can be combined with flags under 1, with the exception of **PORT + TPAC**.
4. *Supplementary deferral flags*: **LMTF**, **DATF**, **VOLO**, **FWAF**, **IDAF**, **VOLW** and **COAF**. ZSE APA Service does not accept these flags as deferral is not supported.
5. *Full details flags*: **FULF**, **FULA**, **FULV** and **FULJ**. They should be reported once the deferral time period lapses and all the details of the transactions on an individual basis are published. ZSE APA Service does not accept these flags as deferral is not supported.



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6 Report processing

All data reported to ZSE APA Service is checked against ESMA Financial Instruments Reference Data System (FIRDS). The system checks if a report is mandatory for submission to the APA as soon as the ISIN is entered into Web GUI. RESTful API offers a similar functionality through direct query of ISIN status. ZSE will accept any report for financial instrument that is subject to market suspension.

The following tolerance levels will be used for price and quantity validation:

- **Price:** $\pm 30\%$ from the previous close price;
- **Quantity:** $\pm 50\%$ of average daily turnover in previous 6-month period.

If validation errors are raised, such as ISIN code not being compliant to ISO 6166 and similar, the customer must correct the information to submit the report.

If validation warnings are raised, the customer may correct the information or skip the validation if provided information was double checked as correct.

Once the report is accepted, ZSE APA service will assign a unique *Transaction Identification Code (TIC)*. The customer must specify TIC to identify the report in case of correction or cancellation. TIC is a concatenation of reporting date and trade report number which is unique per each reporting date. Accepted reports will automatically be dispatched for publication. Please note that deferred publication of trades is not supported.



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7 Data publication

ZSE APA Service publishes post-trade data through two channels:

- **ZSE website** – human readable format;
- **ZSE feed service** – machine readable XML format.

Publication of post-trade information on equity and equity-like instruments must be made available as close to real-time as technically possible and in any case within one minute of the relevant transaction. Publication of post-trade information on non-equity instruments must be made available as close to real time as technically possible and in any case within 5 minutes after the execution of the relevant transaction.

ZSE APA service processes every transaction as close to real-time as possible, at a maximum within 2 seconds. Data is published as soon as reported, within operating hours.

Post-trade data published on ZSE website is delayed by 15 minutes. Data vendors can access real time post-trade data in XML file format. XML schema is available at: <https://feed.zse.hr/schema>.

8 Operating hours

ZSE APA Service operates within Zagreb Stock Exchange trading hours: **8:30 – 16:30 CET**.

Publication of post-trade information on equity and equity-like instruments must be made available in accordance with article 14(2) of the Commission Delegated Regulation (EU) 2017/587. Publication of post-trade information on non-equity instruments must be made available in accordance with article 7(4) of the Commission Delegated Regulation (EU) 2017/583.

Trades older than 90 calendar days will not be accepted by ZSE APA Service.



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9 Service infrastructure and record retention

ZSE APA Service is developed and maintained by Zagreb Stock Exchange. The service is deployed on Linux based servers in ZSE primary data centre located in Zagreb and secondary data centre located in Varaždin, Croatia. Both data centres provide power supply redundancy, high level of security and 24/7 access for maintenance. Logging is enabled throughout ZSE infrastructure to proactively identify any issues with the service.

ZSE will inform its National Competent Authority (HANFA) in cases of any significant change to the service, service disruption or security breach. ZSE will inform the public of any service disruption or security breach via ZSE website.

ZSE APA Service stores all reported data for at least 3 years. Data no longer accessible through the service is archived.

10 More information and contacts

For the latest information about ZSE APA Service please visit <https://apa.zse.hr> or contact:

Information and application for ZSE APA Service

apa@zse.hr

Technical support

tech-support@zse.hr



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11 Annex I: WebGUI

Web GUI service location:

PRODUCTION: <https://services.zse.hr>

SIMULATION: <https://services-simu.zse.hr>

WebGUI features:

- Form for manual entry, change or cancellation of OTC trades
- Form for delivering the XML file in accordance with the ZseApaTrade_v2.xsd
- View of OTC trades reported in the last 90 calendar days with the possibility to change or cancel OTC trades.

Form for manual entry of OTC trades automatically displays only fields which are mandatory according to the asset class, sub-asset class and underlying asset class.

Before submitting the OTC trade report, WebGUI interface will perform some automatic data checks and display all potential errors to user. User will be obliged to validate those potential errors and to re-confirm the OTC trade report. All successfully submitted OTC trade reports are displayed to the user in a separate view.



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Screenshot of WebGUI interface:

The screenshot displays the ZSE APA Service web interface. At the top, there is a navigation bar with the ZSE logo, language options (HR, EN), and user information (ZSE OTC / APA, logged in as Test, Logoff). The main content area is titled "ZSE APA Service" and includes a timestamp of 11:08:14. Below the title, there are three tabs: "Manual entry" (active), "File import", and "Reported trades".

The form is organized into several sections:

- Financial Instrument:** ISIN: HRHT00RA0005. A green checkmark indicates "ISIN found in ESMA FIRDS. HT/REGSH VTG FPD SER-A HRK126.139". Asset Class: Shares. Sub-Asset Class, Underlying Asset Class, and Type are empty dropdowns.
- Trade Value:** Price Notation: Monetary value. Price Currency: EUR - Euro. Price: 26. Quantity: 100 000. There are checkboxes for "Price is pending" and "Price is not applicable".
- Trade Details:** Venue of Execution: Off-Exchange. Third Country and Venue of Execution are empty. Execution time: 30.11.2023 11:07:46. Time Zone: UTC+01:00h. Transaction to be cleared is an empty dropdown.
- Quantity In Measurement Unit:** Notation, Notation (other), and Quantity are empty dropdowns.
- Trade Flags:** A list of checkboxes for various transaction types: BENC (Benchmark transaction), PORT (Portfolio transactions, checked), CONT (Contingent transactions), ACTX (Agency cross transactions), SDIV (Special dividend, checked), SIZE (Transactions above the standard market size), ILQD (Illiquid instrument transaction), RPR (Transactions which have received price improvement), TPAC (Package transaction), XFPH (Exchange for physical transaction), and ZSE-OTC (Only report to ZSE OTC Service).
- Notional Amount:** Amount and Currency (EUR - Euro) are empty input fields.

At the bottom left of the form, there is a "Validate report" button with a green checkmark icon.

ZSE Web Services v.4.0
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12 Annex II: RESTful API

REST service location

PRODUCTION: <https://rest.zse.hr>

SIMULATION: <https://rest-simu.zse.hr>

Common status codes

Status code	Description
401 Unauthorized	Not authorized for specified resource
400 Bad request	Invalid request URI
503 Service Unavailable	Service is not available, usually due to trading holidays
500 Internal Error	Please contact Zagreb Stock Exchange if the problem persists

Session login

Method	URL
GET/POST	<code>/auth/login?public_key={UID}&private_key={PWD}</code>

Example:

POST https://rest.zse.hr/auth/login?public_key=test&private_key=abc123

Status code	Description
200 OK	Authentication successful
400 Bad request	Invalid username or password

On successful authentication (200 OK), the reply body will contain an authorization token. The token will also be stored in a session cookie. To manipulate the resources, a REST client must transmit the Cookie header containing **authToken** value in each request:

Example:

Cookie: authToken=zse55f1a58dcc34e6.29461195



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Session logoff

Method	URL
GET/POST	/auth/logout

Example:

POST https://rest.zse.hr/auth/logout

Status code	Description
200 OK	Logged out

APA Trade report operations

Method	URL
POST	/apa/trade/
	Add new trade report. POST data must contain XML according to ZseApaTrade_v2.xsd specification.
GET	/apa/trade/{TIC}
	Query trade report with specified TIC (Transaction Identification Code). Returns ZseApaTrade_v2.xsd compliant XML file.
PUT	/apa/trade/{TIC}
	Correct trade report with specified TIC (Transaction Identification Code). PUT data must contain XML according to ZseApaTrade_v2.xsd specification.
DELETE	/apa/trade/{TIC}
	Cancel trade report with specified TIC (Transaction Identification Code).

Status code	Method	Description
200 OK	GET/DELETE	Trade report is found. Information is returned/deleted.
	POST/PUT	Warnings were generated. The reply body contains errors in XML format. Validation must be skipped in order to store/publish the information.
201 Created	POST/PUT	Report is stored. The reply body contains transmitted XML with addition of TIC. Information is published.
400 Bad request	POST/PUT	Report contains errors. The reply body contains errors in XML format.
404 Not found	GET/DELETE	Trade report with specified TIC is not found.