



h u d e x
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ENERGY EXCHANGE

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Technical Requirements of HUDEX Hungarian Derivative Energy Exchange Ltd.

Version **910.0**

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1. General Rules

1.1. Scope of the Technical Requirements

The Technical Requirements are set of rules applicable to technical conditions related to access and use of the Trading System of HUDEX Hungarian Derivative Energy Exchange Private Company Limited By Shares (in the following: HUDEX) including parameters and prescriptions to ensure the technical conditions of the orderly trading and data reporting.

HUDEX shall publish the Technical Requirements on its website.

1.2. Persons bound by the Technical Requirements and effective date

The present Technical Requirements are binding on HUDEX and on persons bound by the HUDEX Rules and Regulations.

The present Technical Requirements will become effective at the earliest on the calendar day following their publication on the HUDEX website, or on any other later date specified by the decision of the CEO of HUDEX.

1.3. Definition

The definitions used in these Technical Requirements shall have the meaning as defined in the HUDEX Market Rules.

1.4. Official language

The present Technical Requirements are issued in Hungarian and English. The official language of HUDEX is Hungarian.

2. Rules and parameters for ensuring orderly trading and data reporting

2.1. Preconditions and setups for the use of trading functionalities

HUDEX is entitled to determine in the Technical Requirements the types of the technical accesses, which are required for using the different trading functions and related optional features. HUDEX offers different default setups for HUDEX Members as regulated in the Technical Requirements.

2.1.1. Order Routing Facility for Trading

HUDEX Member is entitled to use Order Routing Facility („Front End”) provided either by HUDEX (HUDEX Client) or by third parties as its own trading system. Front End provided by third parties as trading system can be Trayport Joule/Joule Direct Front End.

HUDEX Member or any related User(s) are obliged to use Trayport Joule/Joule Direct Front End for accessing the Trading System in the following cases:

- a) in case the User trades both Hedging and Speculative transactions,
- b) In case the HUDEX Member would like to set up more than one decision makers for the same User,
- c) in case the HUDEX Member uses Algorithmic trading,
- d) in case the HUDEX Member would like to conclude transactions on behalf of a client,
- e) in case the Market Maker would like to indicate whether the Order is submitted within the frame of a Market Maker Agreement or not.

2.1.2. Default setups

The default setups as defined in this Technical Requirements will also be used by HUDEX for reporting purposes under MiFIR and MiFID II.

a) Purpose of the Trades

HUDEX Member may determine whether its given User concludes exclusively speculative or solely hedging transactions, and HUDEX will set the default settings of the User and perform its reporting obligations accordingly. HUDEX Member may request modification of the default settings of the given User. If a HUDEX Member does not indicate on the Application Form which default setting is requested, then HUDEX will automatically set the default settings to speculative transactions.

To conclude both speculating and hedging transactions with the same User, HUDEX Member is obliged to use the Trayport Joule/Joule Direct, where HUDEX Member shall choose the purpose of the transaction (speculative or hedging).

b) Decision maker setup

HUDEX will setup as default decision maker of the User of HUDEX Member the person indicated on the Application Form by the HUDEX Member including the case when the related field in Trayport Joule/Joule Direct is left empty. In such cases always the default decision maker indicated on the Application Form will be indicated as decision maker in the respective reports.

c) Execution maker setup

The execution maker is the person who performs the trading activity within the Trading System in case the Order is not submitted via Algorithmic Trading. The default setup for the execution maker is always the Trader including the case when the related field is left empty.

d) Position reports and position limits

The HUDEX Member may choose speculative or hedging transactions as default setup of trading purpose for the position limits and position reporting on the Application Form. The chosen default setup chosen will be used for all Trades concluded on HUDEX in the position reporting and position management procedures.

The speculative option will be set as default in the position reports, in case the HUDEX Member does not specify otherwise.

HUDEX will use the default setup for position reporting and position limit controls as long as the HUDEX Member does not indicate a different purpose for the given daily positions during the respective daily reporting procedures.

e) Use of non-executing broker

The default setup is that the HUDEX Member is not using non-executive brokers according to Art. 2 d) of Regulation No. 2017/580 during its trading activity unless otherwise indicated on the Application Form.

2.2. Order submission

For Orders sent to HUDEX Ltd. shall include:

- a) the Member's identification (identification of company and User);
- b) the Contract indicator;
- c) the Trading Account in which the Order is recorded;
- d) validity of the Order;
- e) the volume;
- f) the maximum or minimum price against which the Order may be executed;
- g) Order Type;

- h) direction of the Order – i.e. buy or sell Order
- i) Client ID: In case of execution of Client Transactions the Client ID is mandatory element of the Order. For the indication of the Client ID the “DEA Client ID” field in Trayport Joule/Joule Direct Front End shall be used. If the Client is a legal entity the LEI Code of the Client shall be used. If the Client is a natural person the short code given by the HUDEX Member shall be used. In the absence of the short code given by the HUDEX Member HUDEX will generate the short code based on the full name, date of birth and on the national ID of the Client according to 2017/590 Delegated Regulation (RTS22). For own account transactions: In case of use of the Trayport Joule/Joule Direct Front End the “DEA Client ID” field shall be left empty (and in case of use of the HUDEX Client Front End no further action is required).
- j) Execution Maker: In case of a natural person execution maker the alpha numeric identifier (short code) given by the HUDEX Member shall be used. In the absence of the short code given by the HUDEX Member HUDEX will generate the short code based on the full name, date of birth and on the national ID of the User according to 2017/590 Delegated Regulation (RTS22). In case of Algorithmic Trading always the alpha numeric Algo ID provided by the HUDEX Member shall be used.
- k) Decision Maker: In case of a natural person decision maker the alpha numeric identifier (short code) given by the HUDEX Member shall be used. In the absence of the short code given by the HUDEX Member HUDEX will generate the short code based on the full name, date of birth and on the national ID of the Decision Maker given on the Application Form according to 2017/590 Delegated Regulation (RTS22). In case of Algorithmic Trading always the alpha numeric Algo ID provided by the HUDEX Member shall be used.
- l) Indication whether the Order was submitted based on a Market Maker Agreement concluded with HUDEX in line with the market maker strategy according to Articles 17 and 48 of MiFID II (Liquidity Provision True/False)

2.3. Basic parameters and pre-Trade Controls

2.3.1. Power Segment

Basic parameters regarding the Orders:

- a) min price: 0,01 EUR/MWh
- b) max price: 1000 EUR/MWh
- c) min quantity: 1 MW
- d) max quantity: 1000 MW

According to Section III.8.1. of HUDEX Market Rules HUDEX carries out three types of pre-trade controls before the conclusions of transactions in all sessions of the trading, which are defined below:

a) price collars

1. Warning message is being sent at reaching the minimum sane Price of the Order (10 EUR/MWh) and the maximum sane Price of the Order (100 EUR/MWh).
2. Warning message is being sent at a difference indicated below to the best bid and/or the best ask Orders, in case there are Orders in the Order Book (Price warning threshold).

Yearly and quarterly Contracts	Monthly Contracts	Weekly Contracts	Daily and weekend Contracts
5 %	5 %	10 %	50 %

3. Orders are rejected to constrain trading at a difference indicated below to the last Settlement Price if Settlement Price is available.

Yearly and quarterly Contracts	Monthly Contracts	Weekly Contracts	Daily and weekend Contracts
15 %	20 %	25 %	200 %

- b) for every item size maximum order value: max quantity * contract size * max price;
- c) maximum Order volume: max quantity * Contract size.

2.3.2. Natural Gas Segment

Basic parameters regarding the Orders:

- a) min price: 0,01 EUR/MWh
- b) max price: 1000 EUR/MWh
- c) min quantity: 1 MW
- d) max quantity: 1000 MW

According to Section III.8.1 of HUDEX Market Rules HUDEX carries out three types of pre-trade controls before the conclusions of transactions in all sessions of the trading, which are defined below:

a) price collars

1. Warning message is being sent at reaching the minimum sane Price of the Order (5 EUR/MWh) and the maximum sane Price of the Order (25 EUR/MWh).
2. Warning message is being sent at a difference indicated below to the best bid and/or the best ask Orders, in case there are Orders in the Order Book (Price warning threshold).

Quarterly and monthly Contracts	Yearly and seasonal Contracts	Balance of Month Contracts
5%	10%	10%

3. Orders are rejected to constrain trading at a difference indicated below to the last Settlement Price if Settlement Price is available with the exception of the Balance of Month Contracts.

Quarterly and monthly Contracts	Yearly and seasonal Contracts
25%	50%

- d) for every item size maximum order value: max quantity * Contract size * max price;
- e) maximum Order volume: max quantity * Contract size.

2.4. Applicable throttling limit in case of overload of the Trading System (Throttling)

According to Section II.5.13. of HUDEX Market Rules HUDEX is entitled to apply order throttling procedures for the individual HUDEX Members or for the whole market to avoid the overload of the Trading System.

HUDEX sets the throttling limit (overload limit) as referred to in Section II.5.13. of HUDEX Market Rules 100 orders entered per 1 second.

2.5. Obvious Error and Benchmark Price

In the event of an Obvious Error (wrong entry), HUDEX Members may request HUDEX Ltd. to cancel the Trade. In case of the verification of an Obvious Error, the Trade is being cancelled by HUDEX upon request without the counterparty's confirmation.

Members can only reference an Obvious Error when the Trade price differs markedly from the Settlement Price of the concerned Contract on the previous Trading Day, from the previous Trade price of the same Contract or in the absence thereof from the Benchmark Price.

2.5.1. Power Segment

Based on point 9.1 of Article 2 of the Market Rules and the definition of Obvious Error, the value of the Obvious Error is defined accordingly:

- a) If the previous Trading day's Settlement Price for the given Contract is available, an Obvious Error can be established, if the trade price's minimum deviation from the previous Trading day's price is the following:

Yearly, quarterly and monthly contracts	Weekly contracts	Daily and weekend contracts
10%	20%	100%

- b) If the previous Trading day's Settlement Price for the given Contract is unavailable, an Obvious Error can be established, if the trade price's minimum deviation from the Benchmark Price is the following:

Yearly, quarterly and monthly contracts	Weekly contracts
15%	25%

Based on point 9.1 of Article 2 of the Market Rules and the definition of Benchmark Price, the value of the Benchmark Price is defined accordingly:

- Weekly Contracts: average of the previous Trading day's other tradeable weekly Contracts
- Monthly Contracts: average of the previous Trading day's connecting quarterly and monthly Contracts
- Quarterly Contracts: average of the previous Trading day's connecting yearly and quarterly Contracts

- d) Yearly Contracts: determined by the nearest tradable yearly Contract's Settlement Price

In the case of Day and Weekend Contracts a Benchmark Price cannot be determined. An Obvious Error can only be established once the previous Trading Day's Settlement Price is available.

2.5.2. Natural Gas Segment

Based on point 9.1 of Article 2 of the Market Rules and the definition of Obvious Error, the value of the Obvious Error is defined accordingly:

- a) If the previous Trading day's Settlement Price for the given Contract is available, an Obvious Error can be established, if the trade price's minimum deviation from the previous Trading day's price is the following:

Quarterly and monthly Contracts	Yearly and seasonal Contracts
20%	25%

- b) If the previous Trading day's Settlement Price for the given Contract is unavailable, an Obvious Error can be established, if the trade price's minimum deviation from the Benchmark Price is the following:

Quarterly and monthly Contracts	Yearly and seasonal Contracts	Balance of Month Contracts
25%	50%	100%

Based on point 9.1 of Article 2 of the Market Rules and the definition of Benchmark Price, the value of the Benchmark Price is defined accordingly:

- a) Monthly Contracts: average of the available Settlement Price of the previous Trading day's connecting quarterly and monthly Contracts, weighted with the size of the Contracts.
- b) Quarterly Contracts: average of the Settlement Prices of the other quarterly Contracts of the previous Trading day, weighted with the size of the Contracts.
- c) Seasonal Contracts: the Settlement Price of the previous seasonal Contract in terms of delivery, which is for the same season on the previous Trading Day.
- d) Yearly Contracts: the Settlement Price of the previous yearly Contract in terms of delivery on the previous Trading Day.
- e) Balance of Month Contracts: the Benchmark Price is the Settlement Price of the last Contract in the same Contract series. If the Settlement Price of last Contract in the

same Contract series is not available, then the Settlement Price of the last Contract of the previous Contract series is the Benchmark Price.

2.6. Mechanisms to manage volatility

According to Section III.8.3. of HUDEX Market Rules HUDEX applies daily order-entry limitations in order to manage volatility.

The daily order-entry limitations applied by HUDEX consists on the one hand from pre-trade controls as defined in Section II.3 of these Technical Requirements and on the other hand from throttling limits as defined in Section II.4. of these Technical Requirements.

2.7. Position reports

HUDEX Members shall report details of their own open positions held through Products traded on HUDEX, as well as through those contracts concluded on OTC market which are economically equivalent to both OTC trades registered to HUDEX clearing and HUDEX Products, on a daily basis, as well as those of their clients and the clients of those clients until the ultimate beneficiary client is reached.

The HUDEX Member shall provide information according to Section II.3.1.1.7 of the Market Rules and according to the following requirements.

HUDEX will not provide position reports set out in Sections III.18. and II.3.1.1.7. of HUDEX Market Rules for the HUDEX Members with license set forth in Subsections a) i) of Section II.1.1.4, and the reporting obligations shall be fulfilled by these HUDEX Members.

HUDEX will create a draft position report according Section III.18. of the Market Rules of HUDEX based on the Trades concluded on HUDEX and OTC transactions registered for clearing on HUDEX OTC Clearing Registration Platform. When preparing the draft position report HUDEX will take into account the default setups for position reports and other information as indicated by HUDEX Member on the Application Form.

HUDEX Members shall check the draft position report and amend the information where necessary on a daily basis.

Members can access and amend the draft position report via secure file transfer protocol (SFTP) provided by HUDEX.

HUDEX Members shall add information on their positions not available to HUDEX. This additional information shall include among others the following details:

- a) ultimate parent company of the HUDEX Member. HUDEX stores this information in its reporting system for using until the next modification is done by the User;
- b) indicator of whether the position is risk reducing in relation to commercial activity;
- c) adjust the split up of positions between speculative and hedging purpose on client level;

- d) size of OTC positions for derivatives economically equivalent to Products and Contracts listed on HUDEX.

HUDEX will not check the correctness and validity of the additional information listed in Section II.7. of the Technical Requirements. HUDEX excludes its liability in this respect.

In case the HUDEX Member does not provide any additional information listed in Section II.7. of the Technical Requirements, HUDEX will submit the draft position report according to Section II.7. of the Technical Requirements to the Supervisory Authority assuming that it is complete.

HUDEX an operational guide for the position reporting procedure and makes it available to HUDEX Members.

2.8. Ratio of unexecuted Orders to Trades (OTR)

HUDEX calculates the ratio of unexecuted orders to those trades which were entered into or executed in the Trading Systems by the HUDEX Members (OTR) for each Segment in line with the Market Rules.

For the purpose of preventing disorderly trading and in accordance with Section 316/A of the Capital Market Act and Commission Delegated Regulation (EU) 2017/566 HUDEX calculates the maximum values of the OTR indicators for each Product and Market Segment on a non-discriminatory basis.

2.8.1. Maximum values of the OTR indicators

HUDEX determines the upper limits of the OTR indicators for each Segment based on the number of Orders and Trades and based on the volume of Orders and Trades.

	Upper limit of OTR indicator based on the numbers	Upper limit of OTR indicator based on the numbers (Market Maker)	Upper limit of OTR indicator based on the volumes	Upper limit of OTR indicator based on the volumes (Market Maker)
Power	1 000	2 000	5 000	10 000
Natural Gas	5 000	10 000	15 000	30 000

HUDEX calculates the OTR indicators for each HUDEX Member for each Segment for every Trading Day based on the following methodology.

- a) OTR indicator based on the numbers :

(number of Order actions by the Member / number of concluded Trades by the Member)

– 1

For the calculation of the number of Order actions HUDEX distinguishes the different Order actions with different weights:

Insert of Order: 1

Remove of Order: 1

Update of Order: 2

When the HUDEX Member does not conclude any Trade on a Trading Day, the OTR indicator equals to the number of Order actions.

b) OTR indicator based on the volumes :

$(\text{volume of Order actions by the Member} / \text{volume of concluded Trades by the Member}) - 1$

When the HUDEX Member does not conclude any Trade on a Trading Day, the OTR indicator based on the volumes equals to the volume of Order actions.

2.8.2. Verification and transgression of OTR limits

HUDEX Members can calculate and verify their own OTR indicators based on their own trading activity and compare with the upper limit of OTR indicators.

The OTR indicators of a HUDEX Member is appropriate if does not exceeds the upper limit of OTR indicator related to the Market Segment as regards both numbers and volumes.

In case at least one of the OTR indicators calculated on the above prescribed manner is higher than the upper limit for the given OTR indicator on one or more Segments for a HUDEX Member, HUDEX will apply the relevant regulations of the HUDEX Market Rules.

2.9. Maximum message number

HUDEX may define maximum message number in case of submission of Orders.

HUDEX does not define the maximum message number.

2.10. Simultaneous trading of Contracts

Simultaneous trading of Contracts is not available on HUDEX.

2.11. Designations and Definitions

2.11.1. Designation of Clearing Houses

a) Natural Gas Segment: KELER KSZF (registered under the Company Registration number 01-10-046985) has been designated by HUDEX as the Clearing House of HUDEX Natural Gas Segment.

b) Power Segment: European Commodity Clearing AG has been designated by HUDEX as the Clearing House of HUDEX Power Segment.

2.11.2. Designation of the TSO

- a) Natural Gas Segment: FGSZ Natural Gas Transmission Private Company Limited by Shares (registered under the Company Registration number 14-10-300230) has been designated by HUDEX as the TSO of HUDEX Natural Gas Segment.

2.11.3. Definition of the related SPOT organized markets

- a) Natural Gas Segment: CEEGEX Central Eastern European Gas Exchange Private Company Limited by Shares with registered office located at 1134 Budapest, Dévai u. 26-28., Hungary and registered under the Company Registration number 01-10-047091
- b) Power Segment: HUPX Hungarian Power Exchange Company Limited by Shares with registered office located at 1134 Budapest, Dévai u. 26-28., Hungary and registered under the Company Registration number 01-10-045666.

2.12. Operational support

HUDEX provides an operational support service for the Power and Natural Gas Segment that may be reached by telephone or by e-mail on Trading Days.

The phone calls of the operational support service will be recorded.

The availability hours on the Power Segment are from 7:50 am to 18:00 pm on every Trading Day.

The availability hours on the Natural Gas Segment are from 8:00 am to 18:00 pm on every Trading Day.

The Trading Calendar contains the list of the Trading Days. Trading Calendar shall be provided to the HUDEX Members and published on the HUDEX Website before the beginning of each calendar year.

The operational support service may be reached by telephone or per e-mail:

- a) Power Segment

E-mail: power@hudex.hu

Phone: +36 1 304 1091

- b) Natural Gas Segment

E-mail: gas@hudex.hu

Phone: +36 1 304 3241

3. IT requirements

3.1. Technical connection

HUDEX Member shall be equipped with the following necessary technical connection for trading on the Trading System of HUDEX:

a) Account properties:

1. Account Name: Hudex
2. IPTS: gvprod.hudex.hu
3. Keep-Alive interval: 120
4. Reconnection interval: 30

b) Connection settings:

1. Ports: ~~80, 443, 11997, 11995, 12003, 12995~~, 12997, ~~13997~~ (these ports need to be open on your firewall)
2. Connection type: Direct connection
3. Server Address: gvprod.hudex.hu
4. Encryption: Microsoft TCP

3.2. Order Routing Facilities

HUDEX Member is entitled to use Order Routing Facility („Front End”) provided either by HUDEX (HUDEX Client) or by third parties. Allowed Order Routing Facilities are:

- a) HUDEX Client: Trayport GlobalVision Front End which is downloadable from HUDEX's SFTP server
- b) Front End provided by third parties: Trayport Joule/Joule Direct (provided and installed by Trayport Limited)

3.3. Trading system access

HUDEX Member shall access HUDEX Markets solely through the following electronic order-transmission and reception systems specified by HUDEX: HUDEX Trading System: Trayport GlobalVision Exchange Trading System

3.4. Technical and operational documents

HUDEX provides the HUDEX Members with the following technical and operational documents downloadable from HUDEX's SFTP server needed to operate the technical facilities for accessing its services:

- a) HUDEX Trader User Guide;

- b) Trayport User Manual;
- c) Trayport API Guide.

3.5. Hardware and software environment

HUDEX Member agrees to maintain a hardware and software environment that complies with the Technical Specifications.

The following hardware specification is necessary for client machines:

- a) 2 GHz Pentium class or above processors
- b) At least 4 GB RAM
- c) The Microsoft Windows 7 or above operating systems are supported for client machines:
- d) Antivirus application has to be installed.

3.6. Types of the technical accesses

HUDEX is entitled to determine the types of the technical accesses which are required to use the different trading functions and possibilities: Only direct connection is allowed via internet.

3.7. Access conditions for data vendors

HUDEX may grant read only access for exchange data vendors if they fulfil all the conditions set forth in Sections III.1. to III. 6 of these Technical Requirements.

3.8. Halt of the Market in case of a technical problem

3.8.1. Cases of information of HUDEX Members

Upon point III.4. 1. b) of the HUDEX Market Rules HUDEX will inform the HUDEX Members in the following cases:

- a) shutdown of the Trading System, which affects all HUDEX Members and during which a modification in the status of the submitted Orders can occur;
- b) technical problem during the process of submission of Orders, the matching of Orders or clearing or any other technical problem affecting directly the trading, which has major effect on the majority of HUDEX Members in;
- c) in case of technical problem affecting only certain HUDEX Member(s) HUDEX informs only the affected HUDEX Member(s).

3.8.2. Technical problem of the Order Routing Facility provided by third party

HUDEX assumes no liability for the technical problem or failure occurring during the use of the Order Routing Facility provided by third parties as defined in point 3.2. b).

In case of technical problem or failure occurring during the use of the Order Routing Facility provided by third parties HUDEX Members should be informed in the first row by the third party, HUDEX has no information obligation in this case.

In case of technical problem or failure occurring during the use of the Order Routing Facility provided by third party HUDEX Members are entitled furthermore to use HUDEX Client, i.e. the Trayport GlobalVision Front End which is downloadable from HUDEX's SFTP server.

In case of technical problem or failure occurring during the use of the Order Routing Facility provided by third party HUDEX will not halt the Market in case HUDEX ensures the availability of the HUDEX Client for HUDEX Members.

3.8.3. Information of HUDEX Members in case of shutdown of the Trading System

In case the Trading System was shut down/will be halt by HUDEX due to technical problem and this results in the modification in the status of the submitted Orders (e.g. Active Orders turn to Withheld Orders) or the restoration of the previous positions of HUDEX Members will require an activity from the HUDEX Members, HUDEX informs the HUDEX Members about the beginning of the shutdown/expected beginning of the halt by HUDEX and the expected end of the halt. HUDEX will inform about the executed restart of the trading as soon as possible.

In case the shutdown of the Trading System is occurring in a way that that this does not enable the previous information and the technical problem can be solved in a very short timeframe HUDEX will information HUDEX Members as soon as possible only about the executed restart of the trading and the fact of the technical problem.

In case of planned maintenance and shutdown, which can be indicated at least 4 hours before it takes place HUDEX will send further notices and information beyond the ones described in the first paragraph.