TECHNICAL REQUIREMENTS

ANNEX II.

OF

HUPX MARKET RULES

Version 89.0

Effective from 01/0107/2025

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1. GENERAL RULES

1.1. GOALS OF THE TECHNICAL REQUIREMENTS

1. The Technical Requirements are set of rules applicable to technical conditions related to access and use of the Trading System of HUPX including parameters and prescriptions to ensure the technical conditions of the orderly trading and data reporting. Furthermore the Technical Requirements contain all rules referred to in HUPX Market Rules.

2. HUPX shall publish the Technical Requirements on its Website.

1.2. PERSONS BOUND BY THE TECHNICAL REQUIREMENTS AND EFFECTIVE DATE

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

2. The present Technical Requirements will become effective as defined in the Section 1.1.4.7 of HUPX Market Rules.

1.3. DEFINITION

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

2. GENERAL TECHNICAL REQUIREMENTS ON HUPX INTRADAY CONTINUOUS MARKET

2.1. IT REQUIREMENTS FOR HUPX INTRADAY CONTINUOUS MARKET TRADING SYSTEM

1. HUPX provides the HUPX Members the technical and operational documents, guides, manuals necessary for the orderly use of the Trading System any other documents needed to use the technical facilities for accessing its services.

2. HUPX publishes the documents on its Website.

2.2. TRADING SYSTEM AND TRADING VIA API

1. HUPX Member shall use the following electronic order-transmission and reception system in order to access HUPX Intraday Continuous Market:

    a) Trading System: Deutsche Börse M7
    b) Third party application, automatic trading (API trading) is available.

2.3. TECHNICAL AND COMPLIANCE TESTING

1. HUPX may require technical testing for access to the trading platform and/or to deliver changes or updates to the trading infrastructure or trading software.

2. HUPX communicates to the HUPX Members the eventual necessity of technical testing in an Operational Notice.

3. HUPX requires compliance testing of API solution before connecting to the Trading System. Compliance test is obligatory for API users with trader rights, in case of API read-only access the compliance test is not required. The compliance test can be performed via:

   3.1. individually performed compliance tests in case of user-specific software;

   3.2. compliance test of a certified ISV (independent software vendor) listed on the HUPX Website.

4. The compliance test covers – inter alia – the testing of the following main functions:

   4.1. General system requests and responses,

   4.2. Order entry function including entering modifying and cancelling various orders into trading system,

   4.3. Trading function and all relevant business data flow,

   4.4. "Kill function": member is able to revoke its active orders immediately, if necessary,

   4.5. In the frame of compliance testing member shall declare that its trading system is suitable:

      4.5.1. to handle basic to exceptional market circumstances;

      4.5.2. avoid submitting unnecessary amount of orders.

5. Compliance test scenarios are defined by HUPX and will be provided before compliance testing.

6. After performance of the compliance test (potential) HUPX Member is required to confirm that the test was successful via email from the Registered Email Address.

2.4. MAXIMUM MESSAGE NUMBER

1. HUPX may define maximum message number in case of submission of Orders.

2. HUPX defines the maximum number of order events per trading day:

   2.1. HUPX Member is allowed to execute maximum ~~110~~185,000 order events per Trading Day, unless a higher limit is specified in a Market Maker and/or Liquidity Provider Agreement with HUPX, applicable to fulfilling the obligations of that agreement,

   2.2. Order events will be considered with the following order action types: UADD (Order added by the User); UMOD (Order modified by the User).

   2.3. HUPX may suspend the trading right of the HUPX Member temporary or apply other sanctions set out in the HUPX Market Rules if the maximum order transaction limit is breached. In such case 2.3.8 of HUPX Market Rules is applicable. HUPX is also

entitled to restrict or revoke the permission to access trading via API in accordance with 2.5.1.2 of HUPX Market Rules.

2.5. TWO-FACTOR AUTHENTICATION

1. Trading System ensures the possibility of using 2FA (two-factor authentication) upon HUPX Member's request.

2. If a HUPX Member requires to use 2FA, it shall write an email to HUPX IDC Market Operations and request the setup for its User(s) from Registered Email Address.

2.6. THROTTLING FUNCTION

1. The throttler is a separate service which monitors the amount of OMT [single Order Management Transaction (Order entry, Order modification)] traffic generated by the Traders of individual Members which ensures the stable operation and avoid unnecessary load of the Trading System.

2. The following parameters are taken into account while operating the throttler:

2.1. Short throttling rule:

- Observation window: 10 sec
- L1 (OMT): 1 000
- L2 (OMT): 6 000
- tolerance: 30 sec
- cooldown: 10 sec

2.2. long Throttling rule:

- Observation window: 86 400 sec
- L1 (OMT): equal to HUPX Member's Order bandwidth * 1,5
- L2 (OMT): equal to HUPX Member's Order bandwidth * 2
- tolerance: 86 400 sec
- cooldown: 0 sec

3. OMT calculated by M7 Trading System based on HUPX Members' activity.

4. Meaning of the throttling parameters:

4.1. Observation window: the time frame within which the System evaluates the load (in OMT) generated by a Member. Interval in seconds.

4.2. L1 (OMT): within the Observation Window the L1 threshold defines the load which is sustainable for the given Member for a period no longer than the tolerance. At reaching or exceeding of the L1 a warning order throttling status change is triggered and the tolerance starts. The L1 is also the threshold below which a Member's load needs to reduce before the cooldown is initiated. (Warning, tolerance initiation, restriction release time calculation)

4.3. L2 (OMT): within the Observation Window the L2 threshold defines the load which is not sustainable for the given Member even momentarily. At reaching or exceeding of the L2 the restriction order throttling status change is triggered. (Immediate throttling)

4.4. Tolerance: the tolerance period (interval in seconds) defines the period within which a continuous load at or above L1 by a Member is tolerated by the Trading System. In the end of the tolerance period restriction will be applied. The tolerance is initiated at the moment of reaching or exceedance of L1 by a Member and ends either: 1. at a moment the load reduces below L1 within the tolerance Period; 2. with the application of the order throttling on the given Member (either through L2 breach or continuous L1 breach beyond the tolerance period)

4.5. Cooldown: The cooldown (interval in seconds) defines the minimum length of period which needs to fully pass after the restriction has been applied on a Member before the restriction is released. The cooldown starts at the moment the load generated by a throttled Member got below the L1.

3. GENERAL TECHNICAL REQUIREMENTS ON HUPX DAY-AHEAD MARKET AND HUPX INTRADAY AUCTION MARKET

3.1. IT REQUIREMENTS FOR HUPX DAY-AHEAD MARKET AND HUPX INTRADAY AUCTION TRADING SYSTEM

1. HUPX provides the HUPX Members the technical and operational documents, guides, manuals necessary for the orderly use of the Trading System any other documents needed to use the technical facilities for accessing its services.

2. HUPX publishes the documents on its Website.

3.2. TRADING SYSTEM AND TRADING VIA API

1. HUPX Member shall use the following electronic order-transmission and reception system in order to access its auction markets in accordance with the relevant Market Notices:

   a) Trading System: EPEXSPOT Trading System (ETS)
   b) Third party application, automatic trading (API trading) is available.

3.3. TECHNICAL AND COMPLIANCE TESTING

1. HUPX may require technical testing for access to the trading platform and/or to deliver changes or updates to the trading infrastructure or trading software.

2. HUPX communicates to the HUPX Members the eventual necessity of technical testing in an Operational Notice.

3. HUPX requires compliance testing of API solution before connecting to the Trading System. The compliance test can be performed via:

3.1. individually performed compliance tests in case of user-specific software;

3.2. compliance test of a certified ISV (independent software vendor) listed on the HUPX Website.

4. Compliance test scenarios are defined by HUPX and will be provided before compliance testing.

5. After performance of the compliance test (potential) HUPX Member is required to confirm that the test was successful via email from Registered Email Address.

4. TECHNICAL CONNECTION TO THE HUPX SFTP SERVER

1. The HUPX Member must meet the requirements set by HUPX for the access of HUPX sFTP server, which are published on the sFTP server for the HUPX Members or are provided for the HUPX members.

2. The port provided above must be allowed on the firewall of the computer running the client in order the gain access to the sFTP server.

3. One sFTP user can login from 10 instruments all at once.

4.1.1. SAFETY SETTINGS – SERVER FINGERPRINT

1. In order to create a safe sFTP connection, HUPX suggests that the HUPX Member validates the HUPX sFTP server fingerprint on first login. This requires a comparison the fingerprint received on first login to fingerprint provided by HUPX.

2. The valid HUPX sFTP fingerprint is published on the sFTP server or is provided for the HUPX Member.

3. In case of changing the fingerprint the HUPX Members will be informed by HUPX.

4.1.2. SAFETY SETTINGS – ALGORYTHMS

1. When connecting to the HUPX sFTP server, the client and server applications agree in the background on which algorithms shall be used during the communication (so-called "SSH handshake"). If the client and the server cannot agree on which algorithms shall be used the connection will be unsuccessful.

2. If the connection is unsuccessful because of the SSH handshake process, the HUPX Member must clarify whether the sFTP client supports one of the algorithms supported by HUPX sFTP.

3. The supported algorithms are published on the sFTP server or are provided for the HUPX Members.

4.1.3. PASSWORD REQUIREMENTS FOR CONNECTING HUPX SFTP SERVER

1. HUDEX determines the password requirements for joining HUPX sFTP server.

2. The password requirements are published on the HUPX sFTP server or are provided for the HUPX Members.

3. The HUPX Members are obliged to change their password related to the sFTP server in every 90 days regularly. The first modification must be made in 90 days after this regulation takes effect.

4. In case the HUPX Member does not change its password in 90 days, HUPX can block its access to the sFTP server which will be unblocked immediately as soon as the password has been changed.

5. In addition, HUPX suggests to the HUPX Members to establish an internal procedure considering password changes.

HUPX Technical Requirements

Annex II of HUPX Market Rules

4.1.4. PUBLICATION ON HUPX sFTP SERVER

1. HUPX publishes member and market report on its sFTP server.

   1.1. On Intraday Continuous Market reports are available in the morning hours for the previous trading day or updated in every 15 minutes – depending on the specification of the report.

   1.2. On Day-Ahead Market and Intraday Auction Market reports become available as soon as possible after the auctions. Please note that during IDA2 auctions block reports will be published only in the morning next day.

5. OPERATIONAL SUPPORT

1. HUPX provides an operating support service that may be reached by email or telephone on Trading Days. The phone calls of the operational support service will be recorded.

2. Intraday Continuous Market

   E-mail: idmarketops@hupx.hu

   E-mail for non-business hours (only as sender): idmarketops@duty.hupx.hu

   Phone: **+36 1 304 1092**

   2.1. Availability hours

   - Working days: **9:00 am to 18:00 pm**
   - Other days and hours: **Limited service** (password reset, trade recall)

3. Day-Ahead Market and Intraday Auction Market

   E-mail: auction@marketops.hupx.hu

   Phone: **+36 1 304 1096**

   3.1. Availability hours on Day-Ahead Market:

   - Working days: **8:30 am to 18:00 pm**
   - Non-working days: **8:30 am to 14:00 pm**

   3.2. Availability hours on Intraday Auction Market

   - Every day: **09:00 am to 19.00 pm**
   - Limited service, no mailbox helpdesk (incident management, password reset): **19:00 pm to 23.00 pm**

6. DESIGNATIONS

6.1. DESIGNATION OF CLEARING HOUSE

1. European Commodity Clearing AG (registered under Augustusplatz 9, 04109 Leipzig, Germany) has been designated by HUPX as the Clearing House of HUPX.

6.2. DESIGNATION OF THE TSO

1. MAVIR Magyar Villamosenergia-ipari Átviteli Rendszerirányító Ltd. (registered under Anikó utca 4., 1031 Budapest, Hungary) has been designated by HUPX as the TSO.

6.3. DESIGNATION OF SHIPPING AGENT

1. MAVIR Magyar Villamosenergia-ipari Átviteli Rendszerirányító Ltd. (registered under Anikó utca 4., 1031 Budapest, Hungary) has been designated by HUPX as Shipping Agent on HUPX Day-ahead, HUPX Intraday Auction and HUPX Intraday Continuous Markets.

6.4. DESIGNATION OF TRANSIT SHIPPER

1. MAVIR Magyar Villamosenergia-ipari Átviteli Rendszerirányító Ltd. (registered under Anikó utca 4., 1031 Budapest, Hungary) has been designated by HUPX as Transit Shipper on HUPX Intraday Market.