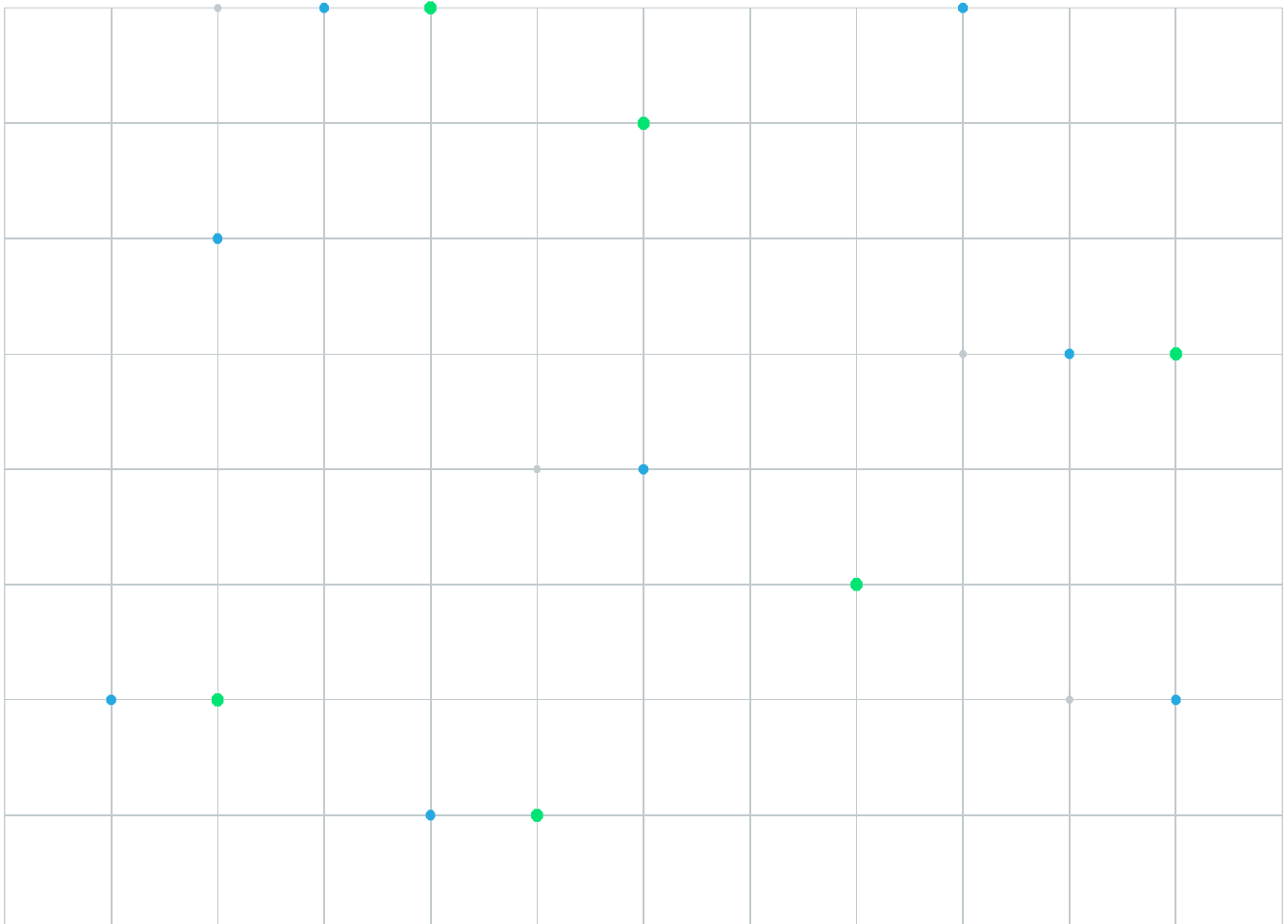


# BrokerTec EU RM Operational Parameters Annex

January 2021




---

## Introduction and Background

The BrokerTec EU Regulated Market (“BrokerTec RM”) is a Regulated Market under MiFID II. Under MiFID II legislation (Directive 2014/65/EU (“MiFID II”) and Regulation 600/2014 (“MiFIR”)), and relevant secondary legislation including regulatory technical standards (“RTS”), in particular Commission Delegated Regulation (EU) 2017/584 (“RTS 7”), CME Amsterdam B.V. (“the Operator”) is required to have in place effective systems, procedures and arrangements to ensure the fair and orderly functioning of the markets that it operates.

This Annex describes the various arrangements the Operator has put in place to meet its obligations. Where relevant, further technical details of each arrangement are set out within the Operator’s internal operational procedures.

## Contents

Introduction and Background .....	2
1. Pre-Trade and Post-Trade Controls .....	3
1.1. Pre-Trade controls .....	3
1.1.1. Price Controls .....	3
1.1.2. Value Controls .....	3
1.1.3. Order Entry Messaging Thresholds .....	3
1.2. Post-Trade Controls .....	4
1.2.1. Unexecuted Orders to Transactions Ratio .....	4
2. Volatility Interruptions.....	4
3. Testing Facilities .....	4
3.1. Overview .....	4
3.2. Fair Usage.....	5
4. Trading Venue Self-assessment.....	5
5. Participant Due Diligence .....	6
6. Disorderly Trading Conditions .....	6
6.1. Overview .....	6
6.2. Disorderly Trading Indicators .....	6
6.3. Process Overview .....	7
6.3.1. Monitoring.....	7
6.3.2. Communication Protocol .....	7
6.3.3. Resumption of normal trading .....	7
6.3.4. Post-mortem.....	7
7. Kill Functionality .....	7
7.1. Overview .....	7
7.2. Participant Initiated.....	8
7.3. Venue Initiated .....	8
7.4. CCP Initiated .....	8

7.5. Regulator Initiated .....	8
8. Suspension and removal of instruments.....	8
8.1. Venue Initiated .....	8
8.2. Regulator Initiated .....	9
9. Business Clock Synchronisation.....	9

## 1. Pre-Trade and Post-Trade Controls

### 1.1. Pre-Trade controls

As per RTS 7 requirements, the BrokerTec RM governs the use of its electronic order systems through pre-trade controls on price, value of orders and order entry messaging thresholds.

#### 1.1.1. Price Controls

The BrokerTec RM applies price collars/bands per instrument and automatically rejects orders submitted outside of the price bands.

The price collar values are set out in the table below.

Instrument Type	Low (price)	High (price)	Type
EGB	60.00	245.00	Static
Repo	-99.00	999.00	Static

#### 1.1.2. Value Controls

BrokerTec RM only accepts orders submitted at or above minimum and at or below maximum order values per instrument as per below.

Control	Minimum (million)	Maximum (million)	Type
EGB Size Limit	Market Specific	9,999	Static
Repo Size Limit	1	9,999	Static
Repo Size Limit GC	25	9,999	Static

For Cash Bonds, order value minimums are market and in some cases tenor-specific. These values are listed in the BrokerTec EU RM Rulebook under the Bonds Product Appendix.

#### 1.1.3. Order Entry Messaging Thresholds

##### 1.1.3.1. Order Throttling

---

Order messages submitted by BrokerTec RM participants' systems on an order entry session will be monitored by the number of messages sent over a predefined time interval. The time interval begins with the first message processed. At the end of the interval, if no violation has occurred, the message count and interval are reset pending the next message processed.

If an order entry session exceeds one or more of the thresholds, subsequent messages are rejected via a Session Level Reject message until the messages per second rate falls below the threshold. Exceeding a larger predefined threshold will result in a logout of the offending session.

## 1.2. Post-Trade Controls

### 1.2.1. Unexecuted Orders to Transactions Ratio

BrokerTec RM calculates the ratio of unexecuted orders to transaction for each of its participants at the end of every trading session in both volume terms and in number terms:

**Volume terms:** (Total volume of orders/Total volume of transactions) - 1

**Number terms:** (Total number of orders/Total number of transactions) - 1

Unexecuted orders to transaction ratios are monitored against the maximum thresholds, which have been determined taking into account the nature and liquidity of instruments on the BrokerTec RM and normal trading patterns.

The thresholds are subject to ongoing review and calibration and participants will be notified via the appropriate channels of any changes to these thresholds.

## 2. Volatility Interruptions

Article 48(5) MiFID II requires regulated markets to be able to temporarily halt or constrain trading if there is a significant price movement during a short period of time in a financial instrument on that market or a related market.

BrokerTec RM will monitor for significant price movements during short periods of time. In the event a price movement exceeds either a pre-defined static or dynamic threshold in a specific instrument, BrokerTec RM will review and determine whether to introduce a trading halt by transitioning the instrument into a reserved/pause state.

## 3. Testing Facilities

### 3.1. Overview

All algorithmic participants trading on the BrokerTec RM are required, prior to trading in production, to test their algorithmic trading systems for both conformance to BrokerTec RM specifications as well as to ensure their trading systems will be able to handle, and not contribute to, disorderly trading conditions.

The BrokerTec RM New Release environment is strictly separated from the production environment and is offered to participants, and prospective participants, on a scheduled basis to facilitate testing of their algorithms for conformance and for disorderly trading conditions.

---

Test conditions representative of production, as well as disorderly trading conditions scenarios, are recreated in the New Release environment using test symbols, a web facing testing application and replay injectors capable of replaying production-like messaging at various multiples of the original message rates. Within that environment, in addition to testing all aspects of conformance with BrokerTec RM specifications, participants can test their algorithms against a number of disorderly market conditions.

### 3.2. Fair Usage

BrokerTec RM makes the New Release environment available to participants and prospective participants for the purpose of conformance testing and to facilitate testing against disorderly trading conditions. There is no charge for the use of the testing facilities.

It is not intended that participants and prospective participants use the BrokerTec RM testing facilities to evaluate and iterate on the profitability of their trading models.

The BrokerTec RM reserves the right to restrict access to the testing facilities if usage is considered to be outside of expectations.

## 4. Trading Venue Self-assessment

RTS 7 sets out requirements for regulated market operators to assess at least once a year their compliance with the provisions of Article 48 of MiFID II including those relating to business continuity arrangements.

The following parameters are taken into consideration in the self-assessment:

#### Nature

- Nature of trading venue, instruments offered and their liquidity status
- Role of the trading venue in the market, whether instruments covered can be traded elsewhere

#### Scale

- Potential impact of BrokerTec RM on the fair and orderly functioning of the market
- Number of algorithms operating on the venue
- Messaging capacity
- Trading volumes
- Percentage of algorithmic trading and traded volume vs total activity
- Percentage of HFT activity and traded volume vs total activity
- Number of participants
- Ratio of unexecuted orders to transactions
- Number and percentage of API trading members
- Number of co-location sites provided
- Number of countries with business activity
- Volatility management mechanisms, dynamic or static trading limits used to halt trading or reject orders

#### Complexity

- Complexity of the BrokerTec RM offering and technical infrastructure
- Asset classes offered
- Trading protocols supported (order book, auction, hybrid)
- Pre-trade transparency waivers used
- Trading system diversity and level of control of parameters, software versions, testing and reviews

- 
- Trading system ownership, governance, operation and physical location
  - Level of technical and operational outsourcing
  - Frequency of changes to protocols, system and membership

## 5. Participant Due Diligence

Prospective participants of the BrokerTec RM are required to meet the eligibility criteria and participant obligations set out in the BrokerTec EU RM Rulebook upon onboarding and on an on-going basis.

Upon onboarding, BrokerTec RM will undertake KYC/AML checks and participants are required to complete a participant questionnaire to enable BrokerTec RM to review and assess the arrangements the participant has in place to meet the rules of the BrokerTec RM.

In accordance with MiFID II, BrokerTec RM requires each participant and prospective participant to maintain adequate organisational procedures relating to:

- Pre-trade controls on price and value of orders
- Post-trade controls on credit/clearing and market risk
- Usage controls on message transmission via API
- Software development control and conformance testing to the BrokerTec RM
- Ability to cancel one or all live orders via use of kill functionality
- Qualified and experienced staff in key positions

BrokerTec RM conducts a periodic risk-based assessment of its participants to review whether participants continue to meet the participant obligations set out above and in the BrokerTec EU RM Rulebook.

## 6. Disorderly Trading Conditions

### 6.1. Overview

In accordance with MiFID II, BrokerTec RM has put in place arrangements to prevent disorderly trading including:

- Pre-trade controls on price and value of orders;
- Usage controls on message transmission via API;
- Unexecuted orders to transactions ratios;
- Mechanisms to manage volatility; and
- Kill functionality

All algorithmic participants trading on the BrokerTec RM are required, prior to trading in production, to test their algorithmic trading systems or strategies to ensure that they do not contribute to disorderly trading conditions.

In the event of disorderly trading conditions, BrokerTec RM is required to notify its national competent authority, to inform participants that are subject to market making agreements that their obligations are suspended and to consider and communicate any further action to halt or constrain trading.

### 6.2. Disorderly Trading Indicators

---

The BrokerTec EU RM Rulebook defines disorderly trading conditions as a situation where the maintenance of fair, orderly and transparent execution of trades is compromised.

BrokerTec RM will consider a number of indicators to determine disorderly trading conditions including but not limited to the following:

- the price discovery process is interfered with over a significant period of time;
- the capacities of the BrokerTec RM's trading systems are reached or exceeded; and
- failure of mechanisms designed to protect against the risk of algorithmic trading.

## 6.3. Process Overview

### 6.3.1. Monitoring

BrokerTec RM monitors in real-time order entry rates and significant processes for its trading systems. Automated alerts are distributed when thresholds are breached based on defined internal procedures.

### 6.3.2. Communication Protocol

Participants will be notified of disorderly trading conditions through the publication of a market-wide broadcast message.

Participants that have entered into a market making agreement for the BrokerTec RM will be informed of the suspension of their obligations under their market making agreement until normal trading is resumed.

BrokerTec RM will notify its national competent authority of the disorderly trading conditions via email to the usual supervisory contact.

BrokerTec RM will consider and communicate any necessary additional measures such as trading halts or messaging restrictions.

### 6.3.3. Resumption of normal trading

Upon resumption of normal trading the communication protocol will be repeated and market making agreement obligations will apply to relevant participants.

### 6.3.4. Post-mortem

The appropriate internal teams conduct a post-mortem incident review for the BrokerTec management body to include the following points:

- Key findings
- Customer experience
- Process improvement

## 7. Kill Functionality

### 7.1. Overview

BrokerTec RM participants must be able to cancel immediately, as an emergency measure, any or all of its unexecuted orders by means of its kill functionality.

---

In accordance with RTS 7, BrokerTec RM operates a kill functionality to cancel unexecuted orders submitted by participants. Unexecuted orders may be cancelled at a single order level, at an instrument level or participant firm level.

BrokerTec RM's policy on the use of its kill functionality can be divided into four authorities:

- participant initiated;
- venue initiated;
- Central Counterparty (CCP) initiated; and
- regulator initiated

## 7.2. Participant Initiated

Participants may request the cancellation of unexecuted orders where the participant is technically unable to delete its own orders. Participants may call into Customer Support and request cancellation of one or many unexecuted orders.

Any such request must be made by an appropriately authorised individual and should include all necessary information relating to the orders to be cancelled.

Participants may be asked to provide further information relating to any technical failures that may have rendered their own kill functionality inoperable.

## 7.3. Venue Initiated

BrokerTec RM may use its kill functionality where required to preserve market integrity in the event of the order book containing erroneous duplicated orders or following a suspension initiated by a market operator or competent authority.

## 7.4. CCP Initiated

BrokerTec RM may be requested by an authorised person at a recognised CCP to cancel the unexecuted orders of a specific participant where provided for in the CCP's governing rules.

## 7.5. Regulator Initiated

BrokerTec RM may use its kill functionality at the initiative of its national competent authority following an instrument suspension or further to an instruction to suspend a specific participant's access to the trading systems.

# 8. Suspension and removal of instruments

The BrokerTec RM may suspend or remove an instrument from trading, unless such a step would be likely to cause significant damage to the interest of investors or the orderly functioning of the market. Furthermore, the competent authority may demand the suspension of an instrument from trading on the BrokerTec RM.

## 8.1. Venue Initiated

BrokerTec RM may decide to suspend or remove an instrument from trading under certain conditions including but not limited to the following:



- An International Securities Identification Number (ISIN – ISO 6166) is no longer assigned to the instrument
- The instrument is no longer available for trading, for example withdrawn by the issuer
- There is little or no liquidity in an instrument over a significant period of time
- The suspension or removal is unlikely to cause significant damage to investors' interest or the orderly functioning of the market
- If an instrument is suspended or removed, then any derivatives that reference that instrument will also be suspended or removed

BrokerTec RM may seek the views of participants, relevant issuers and its national competent authority prior to suspending or removing an instrument in order to determine the potential for significant damage to investors' interests or the orderly functioning of the market including the potential to increase systemic risk or where continued availability of the instrument on the BrokerTec RM is necessary to perform critical post-trade risk management functions.

## 8.2. Regulator Initiated

BrokerTec RM may be required to suspend or remove a specific instrument from trading upon notification from its national competent authority. In this event, BrokerTec RM is also required to consider whether to extend the decision to include related derivatives or other instruments.

BrokerTec RM will communicate any instrument suspension or removal to participants through the appropriate channels.

## 9. Business Clock Synchronisation

BrokerTec RM and its participants are required to ensure that the business clocks they use to record the date and time of any reportable event are synchronised with the Coordinated Universal Time (UTC) issued and maintained by the timing centres listed in the latest Bureau international des poids et mesures.

BrokerTec RM adheres to the levels of accuracy set out below taking into account that the gateway-to-gateway latency time of its trading system is below 1 millisecond.

Gateway-to-gateway latency time of the trading system	Maximum divergence from UTC	Granularity of the timestamp
≤ 1 millisecond	100 microseconds	1 microsecond or better

Participants must ensure that their business clocks adhere to the level of accuracy prescribed in RTS 25 Annex Table 2, which is reproduced below.

Type of trading activity	Description	Maximum divergence from UTC	Granularity of the timestamp
Activity using high frequency algorithmic trading technique	High frequency algorithmic trading technique	100 microseconds	1 microsecond or better
Activity on voice trading systems	Voice trading systems as defined in Article 5(5) of Commission Delegated	1 second	1 second or better

	Regulation (EU) 2017/583		
Activity on request for quote systems where the response requires human intervention or where the system does not allow algorithmic trading	Request for quotes systems as defined in Article 5(4) of Delegated Regulation (EU) 2017/583	1 second	1 second or better
Activity of concluding negotiated transactions	Negotiated transaction as set out in Article 4(1)(b) of Regulation (EU) No 600/2014.	1 second	1 second or better
Any other trading activity	All other trading activity not covered by this table.	1 millisecond	1 millisecond or better