Accessing TFX Interest Rate System 2019

October 8, 2019

Ver 1.1

Tokyo Financial Exchange Inc.

Revision History

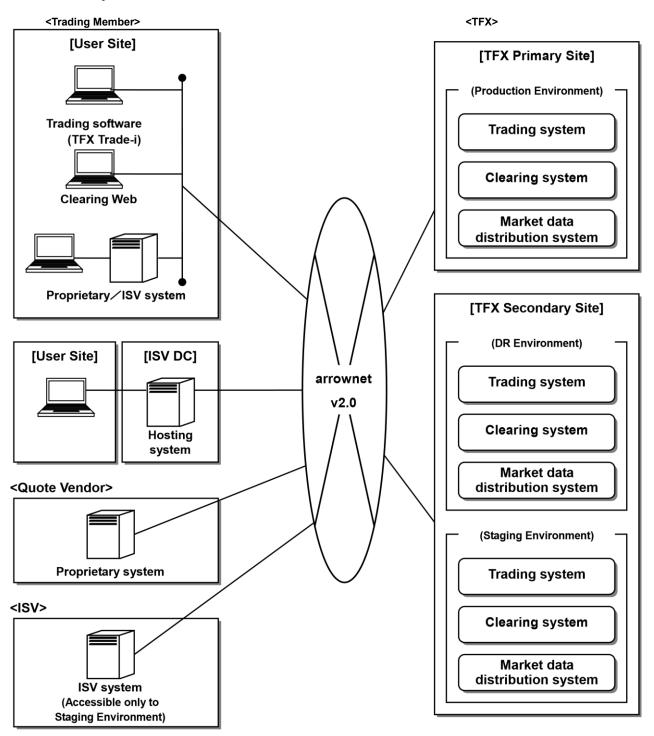| Version	Issued Date	Content of Revision
Ver 1.0	August 18, 2014	・Issued Version 1.0
Ver 1.1	October 8, 2019	・Revision with the start of TFX Interest-rate System 2019.

Contents

1. About this guide

This document is intended to provide general information on TFX Interest-rate System 2019 of Tokyo Financial Exchange Inc. (TFX), covering its key features and functions, to the following person(s)/party(s);

- New personnel (Traders, Sales, Back office staff) of Euroyen Futures Trading Members and Euroyen Futures Remote Trading Members

- Financial firms and institutional investors, who are interested in trading on TFX Interest-rate market.

- Financial markets software developers (Independent Software Vendors, Quote Vendors etc.), who wish to get an overview of TFX Interest-rate System 2019.

* For more details, please visit our website http://www.tfx.co.jp/en.

2.   TFX Interest-rate System Overview

2.1.   System Outline

2.2. Types of Environments

Production Environment	・Trading environment of TFX
DR Environment	・When the Production Environment becomes unavailable due to natural disaster etc., the DR Environment will be functioned as an production environment. ・As the Production Environment switches to the DR Environment when DR plan is invoked, users will be able to continue its business operation.
Staging Environment	・ This is an environment in which trading members, quote vendors and ISVs conduct various tests. It has a functionality equivalent to the Production Environment. ・The Staging Environment will become unavailable when DR plan is invoked

2.3. Types of Usage

User	Type	Detail
Trading Member	TFX Trading Software （TFX Trade-i）	Trading member is able to access Trading system and Market data distribution system via TFX Trading software installed on user's own computer terminal.
	Clearing Web	Trading member is able to access Clearing system from its own computer terminal via the web browser (Clearing Web)
	Proprietary System	Trading member is able to access Trading, Clearing and Market data distribution systems via its proprietary system, which is developed in conformity with the specifications provided by TFX.
	ISV System	Trading member is able to access Trading, Clearing, and Market data distribution systems by implementing an ISV system, which is developed in conformity with the specifications provided by TFX.
	ISV (Hosting)	Trading member is able to access Trading and Market data distribution systems through a hosting service provided by ISVs.
Quote Vendor	Proprietary System	Quote vendor is able to access Market data distribution system via its proprietary system, which is developed in conformity with ITA Wave Interface Specification provided by TFX.
ISV	ISV System and Hosting System	ISV is able to provide a front-end / back office / hosting system which are developed in conformity with the specifications provided by TFX.

2.4. Network

For accessing TFX Interest-rate System 2019, users must connect through arrownet v2.0 network provided by Tokyo Stock Exchange Inc ("TSE"). It is necessary for users to conclude service agreement with TSE for using arrownet network.

*A user who will access TFX Interest-rate System 2019 through an ISV's hosting service does not need to procure an arrownet network by itself.
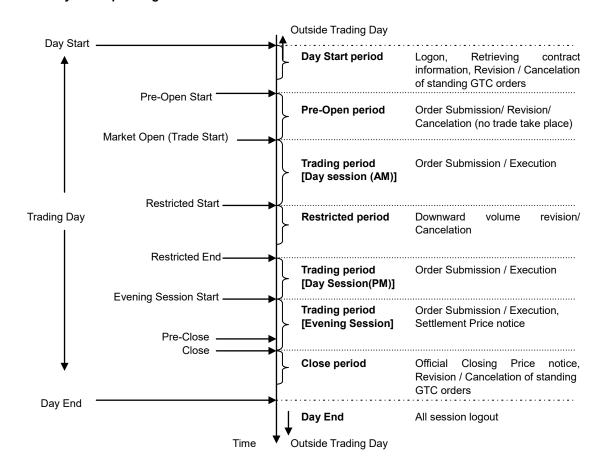
3. Operating Hours

3.1. Trading Hours (Production Environment)

	Day Start	Pre-Open	Open	Restricted	Evening Session	Pre-Close	Close	Day End
Tokyo	7:30	8:30	8:45	11:30 - 12:30	15:30	19:58	20:00	22:00
New York	17:30 (18:30)	18:30 (19:30)	18:45 (19:45)	21:30 - 22:30 (22:30-23:30)	1:30 (2:30)	5:58 (6:58)	6:00 (7:00)	8:00 (9:00)
Singapore	6:30	7:30	7:45	10:30 - 11:30	14:30	18:58	19:00	21:00
Chicago	16:30 (17:30)	17:30 (18:30)	17:45 (18:45)	20:30 - 21:30 (21:30- 22:30)	0:30 (1:30)	4:58 (5:58)	5:00 (6:00)	7:00 (8:00)
London	22:30 (23:30)	23:30 (0:30)	23:45 (0:45)	2:30 - 3:30 (3:30 - 4:30)	6:30 (7:30)	10:58 (11:58)	11:00 (12:00)	13:00 (14:00)

* ( ) Day Light Saving Time

3.2. System Operating Hours

3.2.1.　Day Start [7:30～8:30]

From Day Start, users are able to logon to the Trading System. Once logged on, users can access essential data including tradable contract, contract month, and strike prices. Also revision / cancelation of standing GTC orders* (see page 10) are possible during this period.

*exiting GTC orders that have not reached expiry date.

3.2.2.　Pre-Open [8:30～8:45]

Pre-Open is a period in which users can submit orders prior to Open. During this period, order matching will not take place. Only submission, revision and cancelation of orders are possible.

3.2.3.　Open (Trading period) [8:45～11:30、12:30～15:30～20:00]

During this period, users can submit and execute orders.

The Period is divided into two sessions: Day Session (Morning Session and Afternoon Session) and Evening Session. These sessions are also called as Session 1 (=Day Session) and Session 2 (=Evening Session) respectively. The Morning Session commences following Pre-Open and ends at 11:30 when Restricted begins. Following to the Restricted period, the Afternoon Session starts from 12:30 and ends at 15:30. The Evening Session begins at 15:30 and continues until Close.

Transition from the Day Session to the Evening Session will be made seamlessly without interruption. Orders executed during the Day Session on a day will be cleared as such day's trades while trades made during the Evening Session of the same calendar day will be cleared as the next business day's trades.

After the end of the Day Session, settlement prices of each contract will be calculated and notified to users. TFX does not specify a time of notice due to the reasons that time required for this calculation varies day by day.

3.2.4.　Restricted [11:30～12:30]

During this period, order matching and execution will not occur. The Trading System will not accept the submission of new orders during this time. However, orders submitted prior to the Restricted remain in the central order book and can be canceled or have their volume revised downwards. (No revision of prices is allowed.)

3.2.5.　Close [20:00～22:00]

Once Close has commenced, all trading ceases and no further orders are accepted until the next Pre-Open period. However, standing GTC orders can be revised and canceled until Day End. (See Page 11)

After Close of market, official closing prices for each contract (excl. options) will be calculated and notified to users. TFX does not specify a time of notice due to the reasons that time required for this calculation varies day by day.

3.2.6.　Day End [22:00～]

At the beginning of the Day End period, all sessions will be logged out and all orders except for standing GTC orders are automatically deleted.

4. Contract Specifications (Production Environment)

Contract Name	Three-month Euroyen Futures	Options on Three-month Euroyen Futures	Six-month Euroyen LIBOR Futures（※1）	Over-Night Call Rage Futures（※1）
Contract Code	EY	EYO	EL	ON
Contract Group	EY		EL	ON
Contract Name (English)	Three-month Euroyen Futures	Options on Three-month Euroyen Futures	Six-month Euroyen LIBOR Futures	Over-Night Call Rate Futures
Contract Months	20 quarterly months 2 serial months Contract interval: 3M	5 quarterly months No serial month Contract interval:3M	20 quarterly months 2 serial months Contract interval:3M	First 6 months* No serial month Contract interval:3M *Between BOJ MPMs
Trading Unit	100,000,000	100,000,000	100,000,000	300,000,000
Strike Price Interval	—	125/1000	—	—
Tick Size Information — Denominator	1,000	1,000	10,000	1,000
Tick Size Information — Numerator	5	5	25	5
Tick Size Information — Numerator (Final Settlement Price)	1	1	1	1
Last Trading Day	Two business days prior to the third Wednesday		Two London Business days prior to the third Wednesday（※2）	The last day of the BOJ MPM which TFX designates
Settlement Price Notification Day	Last Trading Day		The first business day following the last trading day	The first business day following the last trading day
Final Settlement Day	The first business day following the last trading day		The second business day following the last trading day	The second business day following the last trading day
First Trading Day of New Contract Month	The first business day following the last trading day		The second business day following the last trading day	The first business day following the last trading day
Matching Algorithm	Price/Time priority			
Strategy — Calendar Spread (Implied functionality)	○（Available）	×	○（Available）	○（Available）
Strategy — Pack (Implied functionality)	○（Only Implied In orders is available）	×	×	×
Strategy — Bundle (Implied functionality)	○（Only Implied In orders is available）	×	×	×
Order conditions and modifier — Limit Order（standard）	○	○	○	○
Order conditions and modifier — Limit Order（GIS）	○	○	○	○
Order conditions and modifier — Limit Order（GTC）	○（※3）	○	○	○

Market Order	○	○	○	○
Market Order（On-Open）	○	○	○	○
Block Trade	○	○	○	○
Maximum Order Volume	99,999	99,999	99,999	99,999
Minimum Order Volume for Block Trade	100	100	100	100

Contract			Three-month Euroyen Futures	Options on Three-month Euroyen Futures	Six-month LIBOR Euroyen Futures	Over-Night Call Rate Futures
Auction Trading Hours （JST）	Normal	Day Start	7:30			
		Pre-Open Start	8:30			
		Open	8:45			
		Restricted Start	11:30			
		Restricted End	12:30			
		Evening Session Start	15:30			
		Pre-Close	19:50			
		Close	20:00			
		Day End	22:00			
	Last Trading Day	Day Start	7:30		7:30	7:30
		Pre-Open Start	8:30		8:30	8:30
		Open	8:45		8:45	8:45
		Restricted Start	—		11:30	11:30
		Restricted End	—		12:30	12:30
		Evening Session Start	—		15:30	—
		Pre-Close	10:58		19:58（※4）	15:28
		Close	11:00		20:00（※4）	15:30
		Day End	22:00		22:00	22:00
Block Trade	Normal	Day Application Start	8:45			
		Day Application Break	11:3）			

			Three-month Euroyen Futures	Options on Three-month Euroyen Futures	Six-month LIBOR Euroyen Futures	Over-Night Call Rate Futures
Application/ Approval Hours (JST)		Day Application Restart	12:30			
		Day Application End	15:10			
		Evening Application Start	15:30			
		Evening Application End	19:40			
		Approval Process Start	8:45			
		Approval Process End	20:00			
	Last Trading Day	Day Application Start	8:45		8:45	8:45
		Day Application Break	—		11:30	11:30
		Day Application Restart	—		12:30	12:30
		Day Application End	10:45		15:15	15:15
		Evening Application Start	—		15:30	—
		Evening Application End	—		19:45（※4）	—
		Approval Process Start	8:45		8:45	8:45
		Approval Process End	11:00		20:00（※4）	15:30
Last Trading Day / Pre-Close			10:58	10:58	19:58（※4）	15:28
Last Trading Day / Close			11:00	11:00	20:00（※4）	15:30
Last Trading Day / End of Clearing Operation			15:00	13:45	11:00	15:00
Block Trade can be applied until			15 min before Close	15 min before Close	15 min before Close	15 min before Close
Enterable Maximum Order Price			999998	999998	9999998	999998
Contract			Three-month Euroyen Futures	Options on Three-month Euroyen Futures	Six-month LIBOR Euroyen Futures	Over-Night Call Rate Futures
Clearing Operation Hours		Start of Clearing Online Hours	8:00			
		Start of Clearing Operation	8:30			
		Close of Application for today's deposit / return	11:00			
		Receipt available from (for viewing)	15:00			

	Setup for next day's operation start from	15:30
	End of Clearing Operation (for today's trade)	17:00
	End of Clearing Operation	20:30

（※1）Trading of Six-month Euroyen LIBOR futures and Over-Night Call Rate Futures have been suspended.

（※2）If Last Trading Day falls on a Japanese bank holiday, the immediately preceding business day shall be the last trading day. However, trades occurred in evening session of the Last Trading Day will be trades of the next business day.

（※3）A Trading Member cannot apply GTC for any bid or offer of Pack and Bundle.

（※4）During Day Light Saving Time in the UK, events occur one hour earlier than times shown.

5. Trading

5.1. Standard Order Type

① Limit Order

An order matched at the price specified or better. Any residual volume from an incomplete limit order is retained in the central order book until cancelled or traded or reached an expiry of any of the following modifiers added to such order.

● Standard

Order will expire at the end of trading day that is submitted.

● GIS : Good In Session

A Limit Order with GIS modifier will be valid until the end of session that the order is submitted. A GIS order submitted during Day Session will automatically be canceled right before 15:30 when Evening Session starts. You cannot designate a session that is different from the session the order is submitted.

● GTC : Good Till Cancelled

A Limit Order with GTC modifier will be valid until the end of trading on a designated business day. Even if you designated an expiry date which is later than the last trading day of the contract, the order will be canceled on its last trading day.

② Market Order

A Market Order will be executed at the best price available in the market when submitted until all available volume at that price has been traded. The order then will be executed at the next best price and so on until all the order volume has been filled. Any residual volume from an incomplete market order will be immediately cancelled. When submitting a Market Order during Pre-Open period, it is necessary to add the following modifier: On-Open.

● On-Open

At the start of the Day Session, it will be matched against Market Orders at the uncrossing price (For more details, please visit TFX website from the link referred on page 12 section 5.4.) Any unfiled volume will be converted into a Limit Order at the relevant uncrossing price. However, an order of contract month or series that an uncrossing price is not calculated from the uncrossing process will automatically be canceled at the end of the Pre-Open period.

5.2. Block Trade

Block Trade is a trade, executed outside of the competitive auction, in which the "corresponding sales and purchase contracts" are made simultaneously for a specific contract month or series in the volume larger than the amount designated by TFX. A Block Trade can be made by one Member covering the corresponding sales and purchase contracts (cross trade), or bilaterally between two different Members. For executing a Block Trade, TFX's prior authorization is necessary.

Please refer to https://www.tfx.co.jp/en/wholesale/products/pdf/c1a02_en.pdf for detail.

5.3. Strategy Trade

Strategy Trade allows you to submit a combination of multiple orders as a single Strategy order.

Currently, "Calendar spread" "Pack" "Bundle" strategy are available for all futures contracts listed on TFX. Calendar spread strategy also supports an implied function that increases the liquidity and matching opportunity by linking outright markets and strategy markets.

Please refer to https://www.tfx.co.jp/en/wholesale/products/order_addition.html "What is Implied Function" for detail.

5.4. Matching Algorithm

TFX uses price/time priority algorithm for order matching. Under this algorithm, higher bid (lower offer) takes priority, and where the price is identical, earlier order takes priority.

Please refer to https://www.tfx.co.jp/en/wholesale/products/pdf/matching_e.pdf for the matching algorithm at the Market Open.

5.5. Price Control

At TFX, "Price Control" functionality has been implemented in order to maintain price continuity and to prevent fat finger. Price Control is the system in which TFX rejects orders submitted by Members with prices exceeding a certain price range (higher bid/lower offer) that TFX designates.

*As Price Control functionality is applied only at time of order submission, this functionality will not work on orders that have already been submitted. Therefore, even if price of an existing order exceeds the Price Range due to a change in the market after the submission, such existing order will not automatically be canceled. If TFX deems it necessary by considering market condition etc. at time, it will change base price and price range, or suspend Price Control system itself. Base price does not always reflect an actual price level of the market and does not prevent from all errors. When trading, please confirm your order entry and then submit.

5.6. Calculation / Release of Settlement Price and Official Closing Price

Every business day, TFX releases Settlement Price for all futures and options contracts listed on its market, regardless of with or without trades/open interest. By publishing Settlement Price, it is expected to further strengthen publicity of the listed products as the indices for future interest rates. Settlement Prices for options are principally theoretical values which TFX calculates based on implied volatility ratio per contract.

TFX also generates and publishes Official Closing Price for all futures contract months listed (excl.options), regardless of with or without trades/open interest every business day.

Calculation method applies here is the same as the one used for determining Settlement Price. Official Closing Prices shall be generated for the purposes of (1) calculating mid-prices for determining options' strike prices on the following business day (only for 3 month Euroyen futures) and (2) calculating base prices for price limit functionality during Pre-Open on the following business day.

6. Trading Risk

6.1. Price Fluctuation Risk

Fluctuations in interest rates may cause a loss. Since the transaction amount is much larger than the deposited exchange margin, these fluctuations may cause a loss exceeding the deposited exchange margin, depending on market conditions

6.2. Credit Risk

TFX has introduced the clearing system under which it acts as a counterparty to a TFX Trading Member in each contract and TFX segregates all exchange margins deposited by Customer; therefore, all deposited margins are in principle protected. Provided, however, that non-payments by a TFX Trading Member etc., due to changes in credit status or bankruptcy by a TFX Trading Member etc., may cause delays in completing refund procedures or unexpected loss.

6.3. System Failure Risk

If a failure occurs in the system of TFX or a TFX Trading Member, or network system among Customers, TFX Trading Members and TFX, delivery of market information, etc, placement of order or execution thereof may be delayed or become impossible, and as a result, an unexpected loss may be caused.FX has introduced the clearing system under which it acts as a counterparty to a TFX Trading Member in each contract and TFX segregates all exchange margins deposited by Customer; therefore, all deposited margins are in principle protected. Provided, however, that non-payments by a TFX Trading Member etc., due to changes in credit status or bankruptcy by a TFX Trading Member etc., may cause delays in completing refund procedures or unexpected loss.

6.4. Risks of changes in tax systems, laws, etc.

Changes in tax systems, laws or their future interpretation may cause unfavorable results.