The Stock Exchange of Thailand

SET CONNECT Guideline

Version 1.7

Copyright © 2022 The Stock Exchange of Thailand

Disclaimer

No part of this document may be reproduced, copied, published, transmitted, or sold in any form or by any means without the expressed written permission of The Stock Exchange of Thailand ("SET").

While reasonable efforts have been made to ensure that the contents of this document are accurate, the document is provided strictly "as is", and no warranties of accuracy are given concerning the contents of the information contained in this document, including any warranty that the document will be kept up to date. SET reserves the right to change details in this document without notice. To the extent permitted by law no liability (including liability to any person by reason of negligence) will be accepted by SET or its employees for any direct or indirect loss or damage caused by omissions from or inaccuracies in this document.

About this document

This document provides the overall trading information of SET CONNECT.

Intended audience

The information in this document is aimed towards Independent Software Vendors ("ISV") or Member's in-house developers ("In-house") intending to develop order entry or market data clients or members who aim to understand the overall trading information of SET CONNECT.

Table of Contents

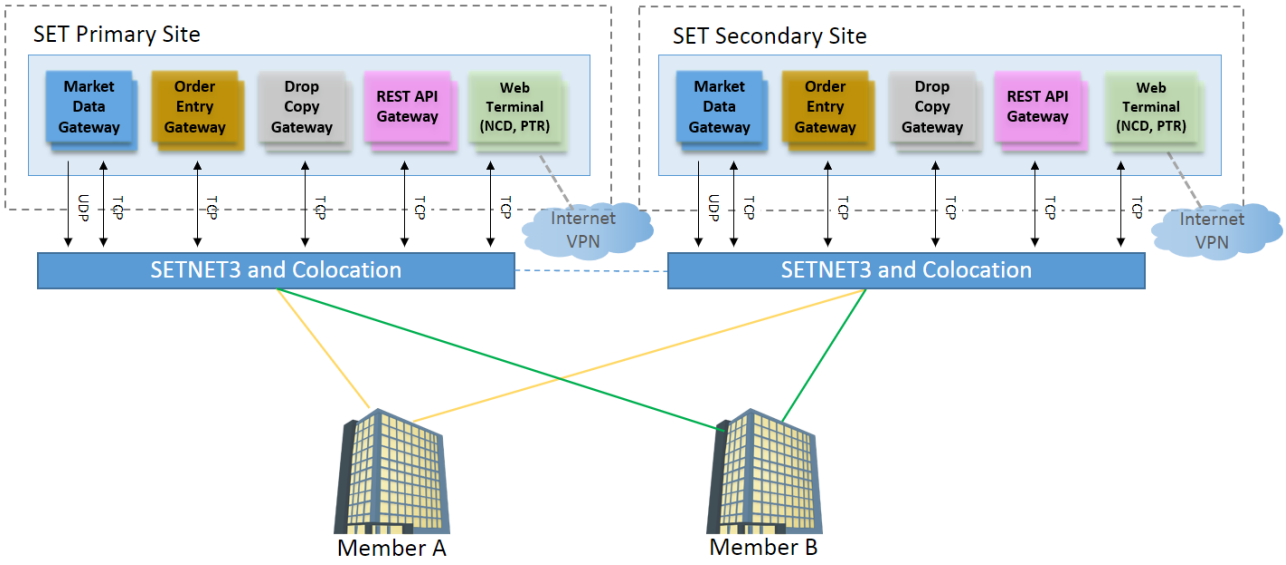
1. SET CONNECT System Overview 5
   1.1 Connectivity Practice 5
   1.2 Gateway reconnection 6
   1.3 General rules and policy (IT related) 7
2. Participant and User Structure 8
3. Market Structure 14
   3.1 Overview 14
   3.2 Equity Market Structure 15
   3.3 Derivatives Market Structure 17
4. Naming Convention 19
   4.1 Futures 19
   4.2 Options 20
   4.3 Derivatives Warrant 20
5. Session States and Trading Halt/Suspend 21
   5.1 States and display 21
   5.2 Trading Halt and Suspend 23
   5.3 Orderbook Circuit breaker (OBCB) 24
6. Order Management 25
   6.1 Order Types and Validity 25
      6.1.1 SET order type & Validity 25
      6.1.2 LIVE order type & Validity 26
      6.1.3 TFEX order type & Validity 26
      6.1.4 State type 27
   6.2 Iceberg Order 27
   6.3 Order and Trade Update (Partially Match) 28
      6.3.1 Update Orders 28
   6.4 Order log 28
7. Pre-Trade Risk Management (PTRM) 29
8. Quote Management 30
   8.1 Massquote 30
   8.2 Trading Group 30
   8.3 Market maker performance measurement (Allows both order & quote) 31
9 Trade Report Management 32
   9.1 Trade Report Type 32
10 Trading Schedule 33

10.1 Trading Session – Equity market 33
10.2 Trading Session – Live market 33
10.3 Trading Session – TFEX Day market 34
10.4 Trading Session – TFEX Night market 34
10.5 Trading Session – Allowed requests 35
11 Corporate Actions 44
12 Dates and Sign 45
12.1 Date 45
12.2 Notification Sign 45
12.2.1 NP (Notice Pending) and NR (Notice Received) 45
12.2.2 NC (Non Compliance) 45
12.2.3 C (Caution) Sign 46
12.3 Other Sign 46
13 Trader ID 47
14 Advertisement 48
15 Unintentional Crossing Prevention 48
16 Odd-lot 50
16.1 Symbol and Display 50
16.2 Odd-lot Flow 50
16.3 Placing Order 51
17 Protocol Comparison 51
18 Order Entry Protocol: OUCH vs FIX 52
18.1 Drop Copy Solution 52
19 Market Data: ITCH vs FIX 53
19.1 Market Data Gateway 53
19.2 Message Protocol Comparison 54
19.3 Technical Comparison 54
20 Order and Trade ID, Data Type 56
20.1 Order and Trade ID 56
20.2 OUCH and ITCH Data Type, Length 56
21 Operation Timetables (Draft) 57
21.1 Main System Time Table 57
21.2 Equity Market Time Table 57
21.3 Live Market Time Table 58
21.4 TFEX Market Time Table 58
22 Non-Functional Scenario 60

22.1 SET CONNECT - Gateway Failover 60
22.2 SET CONNECT - Site Failover 61
22.3 Member system or network failure 61
22.4 Load Test 61
22.5 Gateway Reconnection 62
23 Transaction cross protocol 63
24 Password 66
24.1 Change password 66
24.2 Password policy 66
25 Short Sell 67
26 Tick Size 67
27 Investor type 67
28 TFEX Trading Protection Limit (for order and quote) 67
29 Trade Rectify Model 68
30 Miscellaneous 68
30.1 Identify new list stocks 68
30.2 Lower/Upper price limit for long term suspension stock 68
30.3 TFEX Position limit 68
30.4 Maximum volume and value for Automated Order Matching (AOM) 68
30.5 Combination matching 69
30.6 Equilibrium Price 70
Revision History 71

1. SET CONNECT System Overview

The diagram below illustrates the high-level logical architecture of the infrastructure for the Production System. The order and drop copy gateways are configured as one primary and one standby for fault redundancy. In this configuration the standby node will open for connections automatically, if the primary node fails.



Matching engine of SET CONNECT are distributed SET and TFEX across three ME partitions. Partitioning is allocated by group of underlying (its Common Stock's sector). As a result, trigger order and combo order cannot perform across ME partition.

1.1 Connectivity Practice

All members and clients are required to behave as described by the connectivity practice as follows.

Background

- Connectivity protocol relies on <u>message sequences</u> for both TCP and UDP. Client has to <u>keep the latest sequence</u> receiving from Exchange (on both Client's Main and DR sites).
- The client system at Member's DR site is expected to have <u>synchronized data</u> from Member's Main site.

Order and Drop Copy Connectivity

- Client has to connect <u>only</u> to the gateway IP/Port assigned by the Exchange.
- <u>Only in case of incident</u>, Client is allowed to reconnect during the trading hour. Regular or Scheduled reconnection during the trading hour is not allowed.

- For reconnection:
  - Client must reconnect and replay the missing order response with the "latest sequence+1"
    - Once receiving the replayed events, Client must perceive the abnormal order/trade and recover the data if required.
    - Sending duplicated order token will be rejected by the gateway.
  - Replay the whole day of data is not allowed or using too small sequence number is not allowed in OUCH, FIX Order Entry, and FIX Drop Copy.
- Replaying the whole data for other purpose, e.g., order reconciliation in the evening, is prohibited. The order reconciliation source is Order log at Client, Trading Reporter file, data from SET CLEAR or TCH.
- Keep placing orders with a rate higher than allowed Order Throttle may result in disconnection.

Market Data Connectivity

- Client has to connect only to the gateway IP/Port assigned by the Exchange.

ITCH

- For the first connectivity of the day, ITCH Client must always start with Glimpse snapshot.
- Only in case of incident, Client is allowed to reconnect during the trading hour.
  - Regular or Scheduled reconnection during the trading hour is not allowed.
- For reconnection:
  - Very short period of disconnection: Client can reconnect by using the "latest sequence+1"
  - For other reconnection:
    - Must start with Glimpse for snapshot first, and then request receiving real time data according to sequence continue from Glimpse's snapshot data
    - Start replaying from the latest sequence from real time is not allowed
- Glimpse snapshot is allowed only as an initial state for connection or reconnection scenario.
  - Client must not request data from Glimpse snapshot in other situations.

FIX Market Data,

- Only in case of incident, Client is allowed to reconnect during the trading hour.
  - Regular or Scheduled reconnection during the trading hour is not allowed.
- Snapshot is served as an initial state for connection or reconnection scenario.
- Client should not make frequent repeated requests for snapshot data.
- Trade (MDEntryType=2) is allowed to be replayed from the sequence number next to the last received one in case of very short period of lost connection for real-time purpose. Requests to replay a lot of trades are not allowed.

1.2 Gateway reconnection

Client receives LoginRejected for any reasons e.g., incorrect username or password, user is locked, user is suspended.

- For the first login of the day, automatic reconnection is not allowed.
- Otherwise, client may automatically reconnect with 1-minute interval, not more than 30 attempts.
  - After that client have to try reconnecting manually to check if the problem has been resolved.

To prevent too many frequent reconnect attempts to the server

- Client must NOT connect to the server more frequent than a configurable delay of n seconds from both previous successful and failed attempts. (n >= 10 seconds)
-

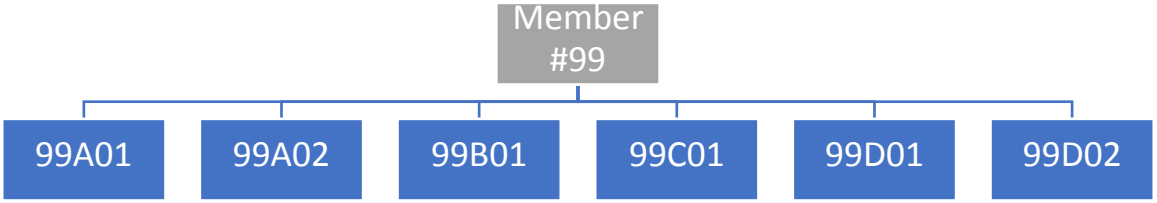
Concurrent logon handling: OUCH, ITCH TCP, Glimpse, FIXMD

- The latest successful logon attempt will cause the current session logged out

1.3 General rules and policy (IT related)

- Member's production system must comply all SET/SEC policy, rules and announcement
- Only Member's production systems are allowed to connect to SET's production system
  - All clients must pass Conformance test and get approval from SET's Market Operation before connecting to SET's production system
  - Test orders are not allowed to send to SET's production system
  - Member is not allowed to send order before Pre-Open or Not-allowed order session
- Member must provide sufficient IT staff personnel to administer Member's trading system on both trading hours and non-trading hours
- Order log or Transaction log between Member and Exchange must be recorded and available for Exchange's requests
- SET reserves rights to take necessary actions in case of misconduct behavior as following:
  - SET : ประกาศตลาดหลักทรัพย์แห่งประเทศไทย เรื่อง วิธีปฏิบัติที่เกี่ยวกับการซื้อขาย การชำระราคา และการส่งมอบหลักทรัพย์ในตลาดหลักทรัพย์ พ.ศ. 2560 ข้อ 44 หมวด 2 การกำกับดูแลการซื้อขายของสมาชิก https://media.set.or.th/rulebook/regulation/%E0%B8%A7%E0%B8%B4%E0%B8%98%E0%B8%B5%E0%B8%9B%E0%B8%8F%E0%B8%B4%E0%B8%9A%E0%B8%B1%E0%B8%95%E0%B8%B4%E0%B9%80%E0%B8%81%E0%B8%B5%E0%B9%88%E0%B8%A2%E0%B8%A7%E0%B8%81%E0%B8%B1%E0%B8%9A%E0%B8%81%E0%B8%B2%E0%B8%A3%E0%B8%8B%E0%B8%B7%E0%B9%89%E0%B8%AD%E0%B8%82%E0%B8%B2%E0%B8%A2%E0%B8%81%E0%B8%B2%E0%B8%A3%E0%B8%8A%E0%B8%B3%E0%B8%A3%E0%B8%B0%E0%B8%A3%E0%B8%B2%E0%B8%84%E0%B8%B2%E0%B9%81%E0%B8%A5%E0%B8%B0%E0%B8%81%E0%B8%B2%E0%B8%A3%E0%B8%AA%E0%B9%88%E0%B8%87%E0%B8%A1%E0%B8%AD%E0%B8%9A%E0%B8%AB%E0%B8%A5%E0%B8%B1%E0%B8%81%E0%B8%97%E0%B8%A3%E0%B8%B1%E0%B8%9E%E0%B8%A2%E0%B9%8C%E0%B9%83%E0%B8%99%E0%B8%95%E0%B8%A5%E0%B8%B2%E0%B8%94%E0%B8%AB%E0%B8%A5%E0%B8%B1%E0%B8%81%E0%B8%97%E0%B8%A3%E0%B8%B1%E0%B8%9E%E0%B8%A2%E0%B9%8C.pdf
  - SET : Procedures on Trading, Clearing and Settlement of Securities in the Exchange B.E. 2560 (2017) Section 2 Supervision of Member's Trading https://media.set.or.th/rulebook/regulation/ProceduresonTrading_Clearing_and_SettlementofSecuritiesintheExchange.pdf
  - TFEX : วิธีปฏิบัติ หมวด 400 การซื้อขาย : 401.01-2 ระบบคอมพิวเตอร์ของสมาชิกที่ใช้ในการซื้อขาย https://weblink.set.or.th/rulebook/#/regulation/content/7095
  - Procedures Chapter 400 Trading : 401.01-2 Member's Computer System Used in the Trading https://weblink.set.or.th/rulebook/#/regulation/content/7095?lang=en

2. Participant and User Structure



** This is the example.

A user is any entity connecting to the SET CONNECT. The user can be an application connecting via the provided API, or Backup Terminal (Core Desktop).

User protocol support.

User type	Protocol	Definition
Order Entry	OUCH	Order Entry API user through OUCH protocol
	FIX 5.0 SP2	Order Entry API user through FIX protocol
Market Data	ITCH	Market Data API user through ITCH protocol
	FIX 5.0 SP2	Market Data API user through FIX protocol
Drop Copy	FIX 5.0 SP2	Drop Copy API user through FIX protocol (Able to receive multiple Order Entry API user)
Backup Terminal	HTTPS over VPN	Order Entry / Market Data through Backup Terminal (Core Desktop)
REST API user	REST API	SET Portal user for accessing REST API gateway to send advertisement (SET Portal user role : “TRADING_ADS”)

Every user belongs to a user type, which determines if the user can enter orders, amend trades, and perform other actions.

All users accessing the system must belong to a registered participant. Users are registered with different authorization, depending on their needs and membership status. Some users, for example, may trade in only certain products. While others need to send specific transactions, such as a market maker sending two sided price quotations.

Naming convention for API user

User type definition

Type Definition	Equity Market	TFEX Market
Trading OUCH	A	J
Trading FIX	B	K
Backup Terminal - NCD	C	L
Drop copy - FIX	E	N
Market Data – ITCH MDF	F	O
Market Data – FIX	G	P
Market Data – ITCH MDFA	H	Q
PTR UI	Z	

Example

- 20A01 : Member 20, OUCH Equity #01
- 40K04 : Member 40, FIXOE TFEX #04
- 44C08 : Member 44, NCD Equity #08
- 39Z01 : Member 39, PTR-UI BothMkt #01
- A2A01 : Member 102 (MM), OUCH Equity #01
- 40FM1 : Member 40 , ITCH Equity #M1 (Glimpse ITCH MC)

ⓘ REST API" users utilize "SCP user" with pattern: **uMMtrANN** | A={e:Equity, d:TFEX}
e.g. u20tre01, u40trd01

ⓘ "NEWS SFTP" users use current user pattern

Configuration per request (Member level)

- Self-match prevention-reject order option

Configuration per request (User level)

- Cancel on disconnect
- Throttle in

Action on disconnect/logout

Condition	Cancel all orders/quotes	Cancel only day orders/quotes	Keep orders/quotes
Connection lost	✓	✓	✓
Exchange force logout	✓		
Logout			✓

Clients can choose an action for orders and quotes of each API user only on the condition “Connection lost”. There is no choice for the conditions “Exchange force logout” and “Logout”.

Logout and Connection Lost

- *Logout*

  When a client wants to voluntarily logout from SET-CONNECT, the client needs to send Logout message explicitly to the server. SET-CONNECT does not treat voluntarily logout as the lost connection, so the open transactions will remain unchanged.

- *Connection Lost*

  A connection failure may be detected from the underlying communication error immediately or by checking if the client is still alive from incoming messages. In case a client does not send any messages to the server within an appropriate period of time, the server will disconnect the pending session if any.

  Normally the selected actions on connection lost, e.g. cancel all orders, cancel only day orders, or keep orders, will be performed immediately after the connection lost. However, there are some situations, e.g. SET gateway failover, which take longer time to perceive client connection lost. In such cases, if the clients logon back to SET before the connection lost perceived, the selected actions on connection lost will not be performed.

ⓘ In general case of disconnection may consider the “Connection Lost” condition except voluntarily logout and force logout e.g. SET gateway fail, SET site fail, order exceed available TPS for the API user

Trading API user options

Trading User Option	Order	Quote	Mass Cancel (Order / Quote)	Allow update/cancel others’ transaction		Allow update / cancel During HALT/SUSPEND/PAUSE or No-matching state (e.g. intermission2)	
				Orders	Quote	Order	Quote
1. Normal Trading (Order)	✓			✓	-	✓	-
2. Normal Trading (Order) / MM (Order) - Normal Trading + MM - MM	✓			✓	-	✓	-
3. Normal Trading (Order) / MM (Order&Quote) - Normal Trading + MM - MM	✓	✓		✓	✓	✓	Not allowed
4. Normal Trading (Order) / MM (Order&Quote) + Mass Cancel - Normal Trading + MM + Mass cancel - MM + Mass cancel	✓	✓	✓*	Not allowed	✓ (one replace another)	✓	Update : Not allowed Cancel : Allow by using Mass Cancel

***Since mass cancelation may generate significant workload to the system, it is allowed only for MM purpose and must be used carefully as necessary. The same repeated mass cancellation is prohibited. SET reserves the right to terminate the use of mass cancelation at any time for any reason.**

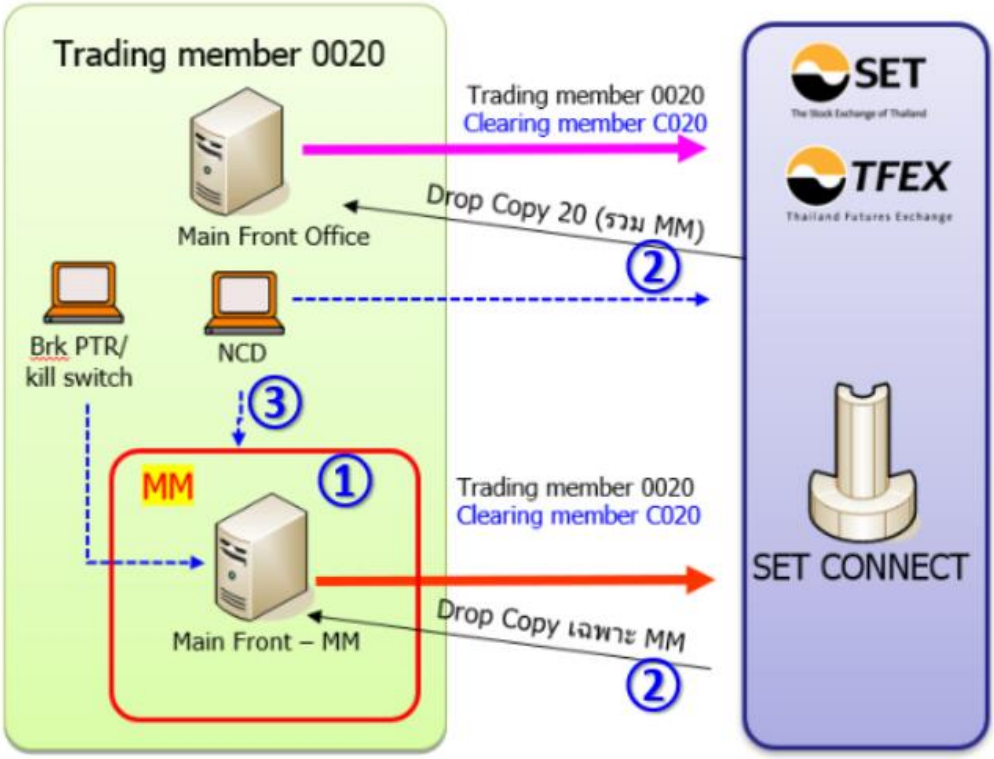
Note. Mass Cancelation is an order message for MM users.

General practice

- Since mass cancelation may generate significant workload to the system, It is allowed only for MM purpose and must be use carefully as necessary
    - In general case, the client should use order cancel message.
- The client must not send mass cancel request if there is no pending orders or quotes for that criteria.
- SET CONNECT allows only one concurrent Mass Cancel.
- The client can send another mass cancel request after receiving the response of the previous one
    - Client may send another mass request in case there is no previous response received within 1 second and it is possible that you will get rejected.

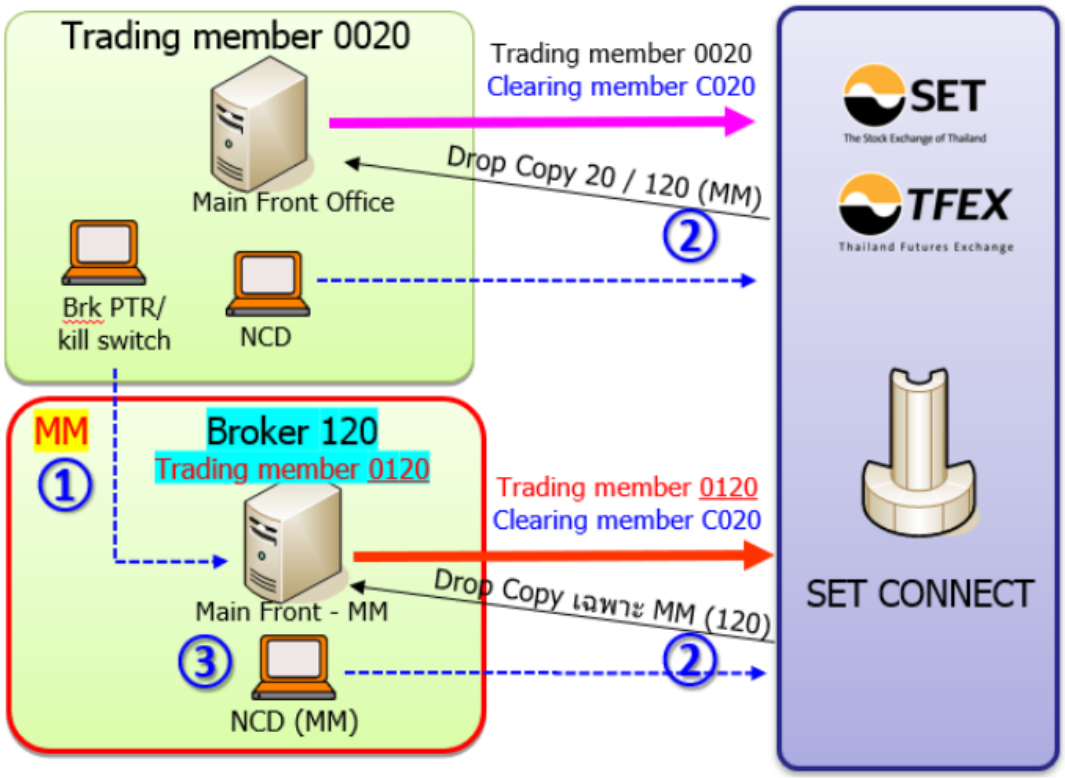
Market maker connectivity model

MM Model1 : MM User under existing member



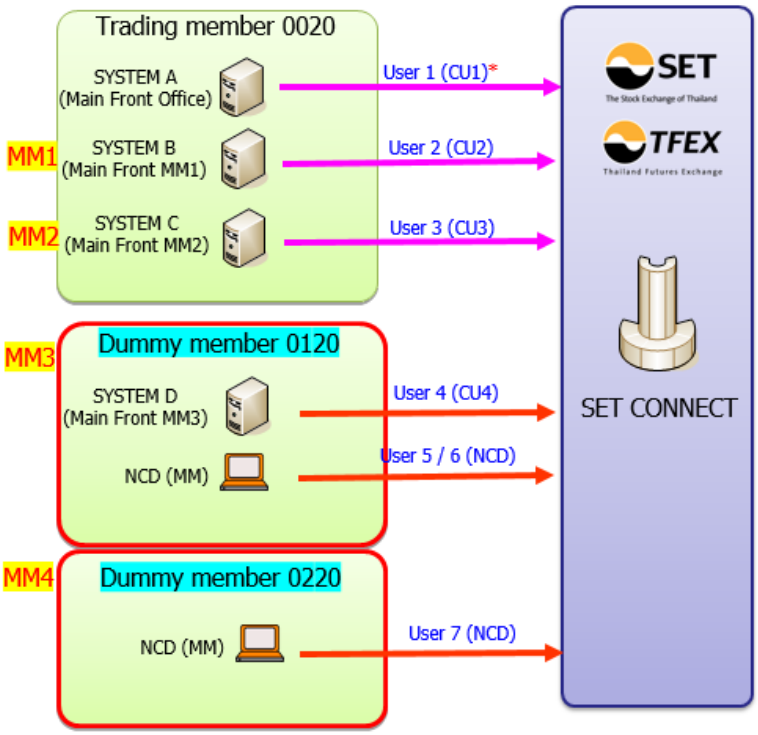
	Model 1 : MM User under the existing Broker
1.Trading Member	MM user is under the existing Trading member(#20)
2.Drop copy (Optional)	**Main Broker**(#20) : Can receive drop copy of MM **MM** : Can receive its own drop copy
3.Backup system (Optional)	**Main Broker** (#20) : Can use NCD to view/cancel MM order **MM** : No separate NCD(MM) available

MM Model2 : MM User in separate member



	Model 2 : MM User in separate member (dummy)
1.Trading Member	MM user located in a separate Trading member (#120)
2.Drop copy (Optional)	**Main Broker(#20)** : Can receive drop copy of MM (#120) **MM (#120)** : Can receive its own drop copy
3.Backup system (Optional)	**Main Broker(#20)** : Can use NCD(MM) to view/cancel only MM order **MM** : NCD(MM) is available

Configuration example.



3. Market Structure

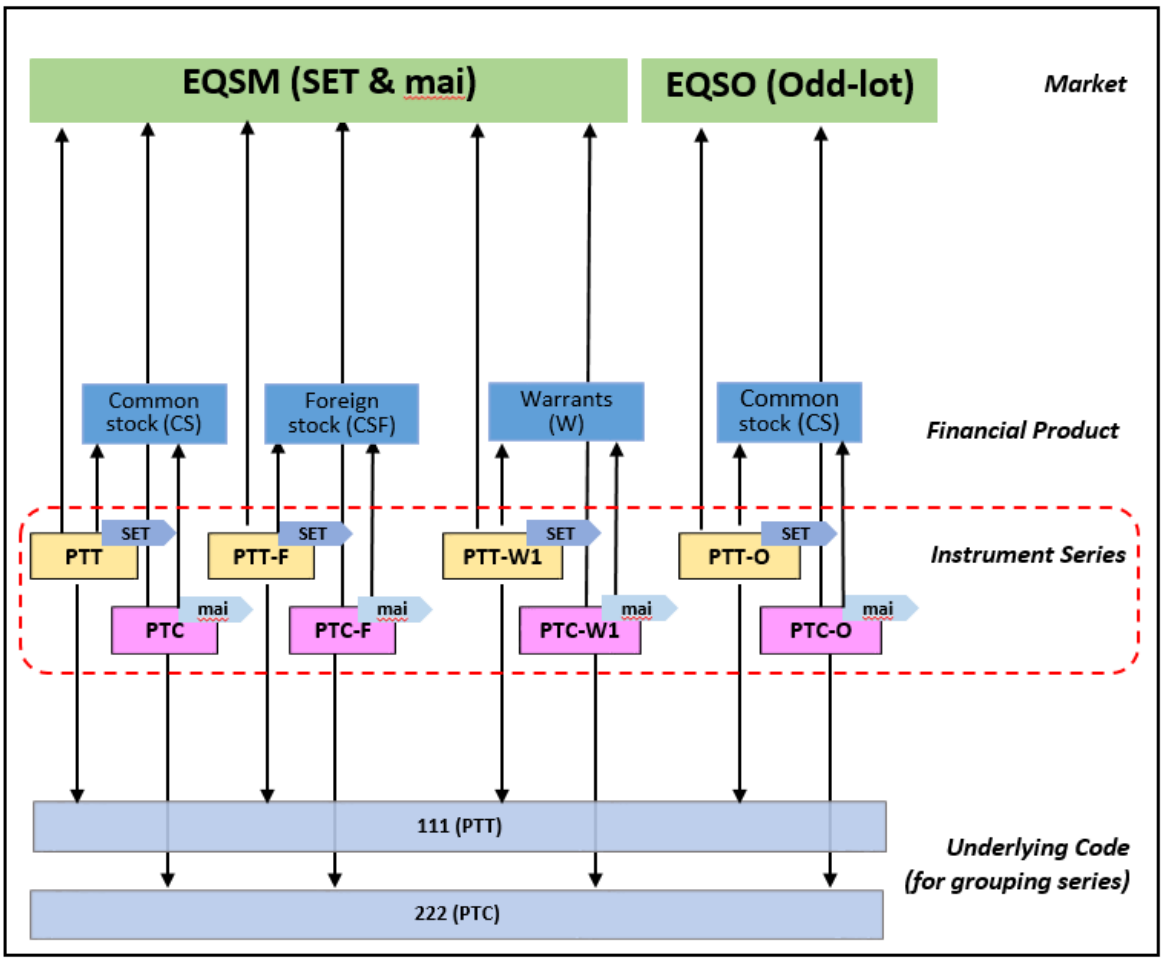
3.1 Overview

Attribute	Definition
Exchange	Exchange is the highest hierarchical structure. Each exchange can have one or more markets. For SET, the exchange is "TH".
Market	Market allows for the logical structuring of instrument series. A marketplace (SET CONNECT) have multiple market IDs, including Equity and Derivatives trading. The combination of the exchange number and the market ID uniquely defines a market. A market can be connected to several instrument types.
Financial Product	The Financial Product is a classification of different categories of instruments. Some document may refer financial product to instrument group.
Underlying	The underlying determines the underlying asset of the traded instrument. An underlying represents the primary tradeable instrument. For example, "PTT" is the underlying of PTT common stock, foreign stock, derivative warrant, futures, options, etc.
Instrument Series	Anything that is traded is considered an instrument. The instrument series give a general classification of the traded instrument, e.g. equity, call, put, futures, Expiration Date, Strike Price, etc.
Market Segment	Market Segment is a business term of market name, e.g. SET, mai, TXS, TXI.

ⓘ Each attribute is defined in different field names for each protocol which depends on the protocol standard. Above named attributes are referred to ITCH protocol. For FIX, the member will get such attributes via the following tags:

- MarketID tag for Exchange
- MarketSegmentID tag for Market
- SecurityType tag for Financial Product
- UnderlyingSymbol tag for Underlying
- SecurityClassificationGrp component for Market Segment

3.2 Equity Market Structure



List of markets

Market	Market Description
EQSM	Equity Main Market
EQSO	Equity Odd Lot Market
EQIM	Equity Inter Main Market
EQIO	Equity Inter Odd Lot Market
EQLI	Equity Live Market

ⓘ SET, MAI ,LIV is defined in MarketSegment field of OrderBookDirectory message

List of Financial Product

Equity Financial Product	Description
CS	Common Stock
CSF	Foreign Stock
PS	Preferred Stock
PSF	Preferred Foreign Stock
W	Warrant
TSR	Transferable Subscription Rights

Equity Financial Product	Description
DWC	Derivative Call Warrants
DWP	Derivative Put Warrants
ETF	Exchange Traded Fund
UT	Unit Trust
DR	Depository Receipts
UL	Underlying

Examples of instrument series and underlying

Instrument Series	Market	Financial Product	Market Segment	Underlying code
PTT	EQSM	CS	SET	111 (PTT)
PTT-F	EQSM	CSF	SET	111 (PTT)
PTT-W1	EQSM	W	SET	111 (PTT)
PTT-O	EQSO	CS	SET	111 (PTT)
PTT01C2012A	EQSM	DWC	SET	111 (PTT)
PTT01P2012A	EQSM	DWP	SET	111 (PTT)

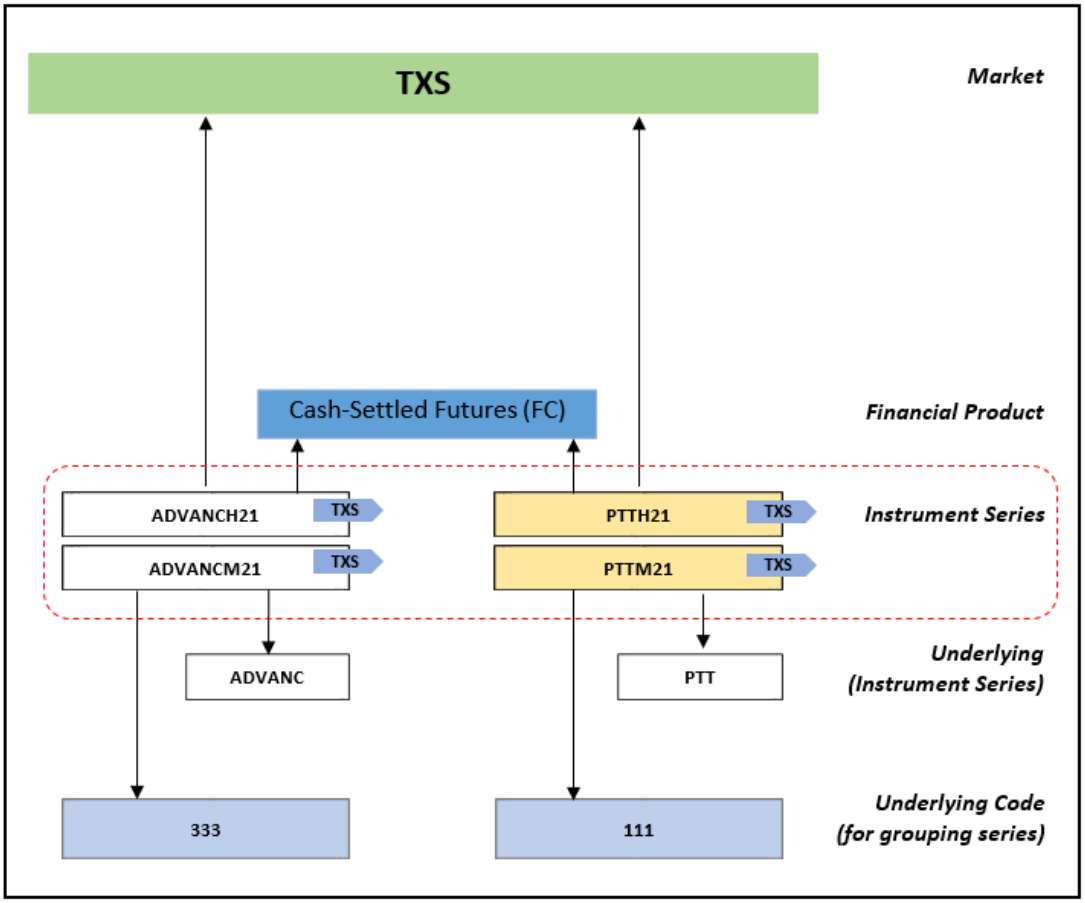
Instrument Series	Market	Financial Product	Market Segment	Underlying code
PTC	EQSM	CS	MAI	222 (PTC)
PTC-F	EQSM	CSF	MAI	222 (PTC)
PTC-W1	EQSM	W	MAI	222 (PTC)
PTC-O	EQSO	CS	MAI	222 (PTC)

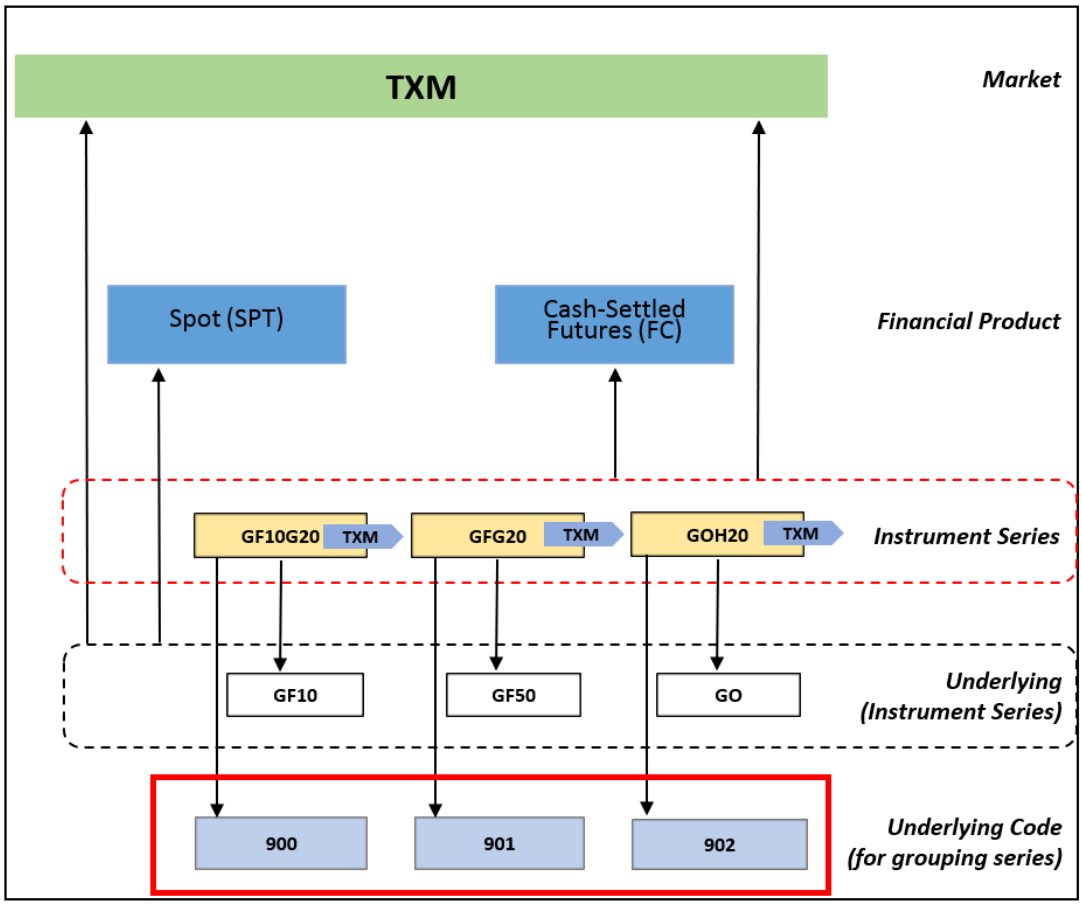
Instrument Series	Market	Financial Product	Market Segment	Underlying code
KTB	EQSM	CS	SET	888(KTB)
KTB-F	EQSM	CSF	SET	888 (KTB)
KTB-O	EQSO	CS	SET	888 (KTB)
KTB-P	EQSM	PS	SET	888 (KTB)
KTB-P-O	EQSO	PS	SET	888 (KTB)
KTB-Q	EQSM	PSF	SET	888 (KTB)

Instrument Series	Market	Financial Product	Market Segment	Underlying code
1DIV	EQSM	ETF	SET	444(1DIV)
1DIV-O	EQSO	ETF	SET	444(1DIV)

Instrument Series	Market	Financial Product	Market Segment	Underlying code
HSI28C2009A	EQIM	DWC	SET	666 (HSI)

3.3 Derivatives Market Structure





List of markets

Market	Market Description
TXI	TFEX Thailand Equity Index
TXS	TFEX Thailand Single Stock
TXM	TFEX Thailand Metal
TXR	TFEX Thailand Interest Rate
TXE	TFEX Thailand Energy
TXC	TFEX Thailand Currency
TXA	TFEX Thailand Agriculture
TXD	TFEX Thailand Deferred Contract

List of Financial Product

TFEX Financial Product	Description
FC	Cash-Settled Future
FP	Physical Delivery Future
OEC	European Call Options
OEP	European Put Options
CMB	Combination
SPT	Spot
WEC	Weekly European Call Options
WEP	Weekly European Put Options

Examples of instrument series and underlying

Instrument Series	Market	Financial Product	Market Segment	Underlying code
ADVANCH21	TXS	FC	TXS	333(ADVANC)
ADVANCM21	TXS	FC	TXS	333(ADVANC)
PTTH21	TXS	FC	TXS	111 (PTT)
PTTM21	TXS	FC	TXS	111 (PTT)
GF10G20	TXM	FC	TXM	900 (GF10)
GF10	TXM	SPT	~~TXM~~	900 (GF10)
GFG20	TXM	FC	TXM	901 (GF50)
GF50	TXM	SPT	~~TXM~~	901 (GF50)
GOH20	TXM	FC	TXM	902 (GO)
GO	TXM	SPT	~~TXM~~	902 (GO)

4. Naming Convention

4.1 Futures

The series symbol for Futures compose of the underlying symbol, month symbol and expiration year.

Symbol	M	YY

Below are the example of underlying.

Product	Underlying	Symbol
SET50 Index Futures	SET50	S50
SET50 Index Option: Call Options	SET50	S50
SET50 Index Option: Put Options	SET50	S50
Stock Futures	Stock symbol in the Stock market.	Stock symbol in the Stock market.
Gold Futures: 50 Baht	GF50	GF
Gold Futures: 10 Baht	GF10	GF10
Gold Online Futures	GO	GO
GOLD-D	GD	GD
Silver Online Futures	SVF	SVF
5Y Gov Bond Futures	TGB5	TGB5
3M BIBOR Futures	BB3	BB3
USD Futures	USD	USD
RSS3 Futures	RSS3	RSS3
RSS3D Futures	RSS3	RSS3D
Japanese Rubber Futures	JRF	JRF

The definition of Month symbol.

Symbol	Month
F	January
G	February
H	March
J	April
K	May
M	June
N	July
Q	August
U	September
V	October
X	November
Z	December

4.2 Options

The series symbol for Options composes of the underlying symbol, month symbol, expiration year, type and strike price.

Symbol	M	YY	Type	Strike price

The definition of type.

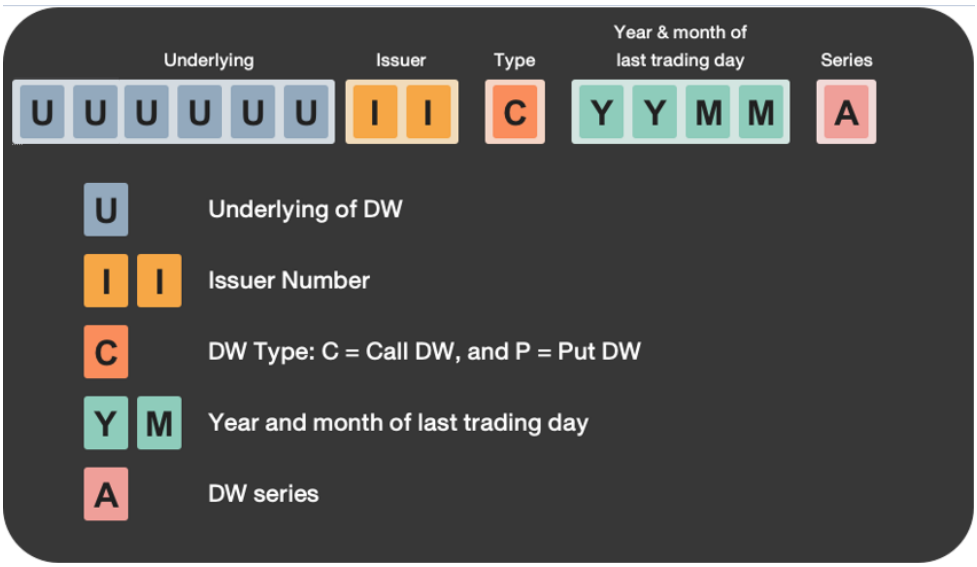
Type	Description
C	Call
P	Put

Strike price in symbol name may contain "." e.g., AAVM21C2.70X

4.3 Derivatives Warrant

DW is a financial option contract that gives the right to buy or sell an underlying stock or index at a fixed price at some future date.

- **Call DW** – A right to buy an underlying security. The price of Call DW will follow to the underlying price. A Call DW holder is expected to earn more value when the underlying price goes up. For example, the holder has a right to buy (Call DW) an underlying stock at THB 10. As the stock price increase to THB 20, DW holder will earn the profit at 10 THB (the holder able to buy the underlying stock at THB 10, rather than THB 20) which actually increases Call DW price.
- **Put DW** – A right to sell an underlying security. The price of Put DW will be opposed to the underlying price. The Put DW holder is expected to earn higher value when the underlying price goes down. For example, the holder has a right to sell (Put DW) an underlying stock at THB 20. As the stock price decrease to THB 10, DW holder will earn the profit at THB 10 (the holder able to sell the underlying stock at THB 20, rather than THB 10) which actually increases Put DW price.



5. Session States and Trading Halt/Suspend

Sessions identify which specific trading features are allowed, for example

- Allowed inputs, e.g., new orders, cancels
- Allowed order conditions
- Quoting allowed and quoting rules
- Matching rules
- Circuit breaker handling

Sessions also identify which of the following execution models is to be used.

- **Continuous Matching** - orders and quotes are immediately matched if possible, according to the matching rules of the exchange.
- **Auction -** orders and quotes are accepted and allowed to cross with no automatic matching occurring (e.g., a pre-open period).

5.1 States and display

Equity market

Session State	Execution models	State Id
CLOSE_E	-	-
STARTUP_E	-	-
PRE-OPEN1_E	Auction	N/A
PRE-OPEN_E	Auction	N/A
FREEZE1_E (Display "Freeze1")	-	-
OPEN1_E	Continuous Matching	N/A
OPEN_E	Continuous Matching	N/A
INTERMISSION_E	-	
PRE-OPEN2_E	Auction	N/A
FREEZE2_E (Display "Freeze2")	-	-
OPEN2_E	Continuous Matching	N/A
PRE-CLOSE_E	Auction	-
FREEZE3_E (Display "Freeze3")	-	-
OFF-HOUR_E	-	-
MARKETCLOSE_E	-	-
SAVECLOSING_E	-	-
RESET_STAT_E	-	-
CLOSE_E	-	-
PRE-OPEN_CB_E (Display "Pre-Open")	Auction	N/A

ⓘ PRE-OPEN_E state is used for Pre-Open state after lifting Circuit Breaker

ⓘ PRE-OPEN_CB_E is used for Pre-Open state of Orderbook Circuit Breaker

ⓘ FREEZEx_E state is a period where order/trade report activity is not allowed.

This state may be applied after Go-Live.

Live market

Session State	Execution models	State Id
CLOSE_L	-	-
STARTUP_L	-	-
PRE-OPEN_L	Auction	N/A
OFF-HOUR_L	-	-
MARKETCLOSE_L	-	-
SAVECLOSING_L	-	-
RESET_STAT_L	-	-

TFEX market

Session State	Execution model	State Id
CLOSE_D	-	-
SERIES_GEN_DAY_D	-	-
COMBO_GEN_DAY_D	-	-
PRE-MORNING_D	Auction	9
MORNING_D	Continuous Matching	6
DAY_D	Continuous Matching	5
PRE-OPEN_D	Auction	-
TRANSITION1_D	-	-
INTERMISSION_D	-	-
PRE-AFTERNOON_D	Auction	8
AFTERNOON_D	Continuous Matching	4
PRE-SETTLEMENT_D	-	-
TRANSITION2_D	-	-
SETTLEMENT_D	-	-
INTERMISSION2_D	-	-
SERIES_GEN_NIGHT_D	-	-
INTERMISSION3_D	-	-
PRE-NIGHT_D	Auction	10
NIGHT_D	Continuous Matching	7
DAYCLOSE_D	-	-
TRANSITION3_D	-	-
MARKETCLOSE_D	-	-
RESET_STAT_D	-	-
CLOSE_D	-	-
PRE-OPEN_CB_D (Display “Pre-Open”)	Auction	N/A

ⓘ PRE-OPEN_D state is used for Pre-Open state after lifting halt
ⓘ PRE-OPEN_CB_D is used for Pre-Open state of Orderbook Circuit Breaker

5.2 Trading Halt and Suspend

SET will send halt status per orderbook level. The below tables show recommended display status and allowed cancel or update order actions. Please note that new order is not allowed for all events.
Client will receive halt status via OrderBookState and HaltInformation messages for ITCH and SecurityMassStatus for FIX. In some cases, the orderbook may have status=Suspended which is set via ITCH OrderBookDirectory or FIX SecurityList message.

In case of OrderBook status = Suspended, this orderBook shall be considered as Suspend with display 'SP' (Override halt status via OrderBookState and HaltInformation messages)

Event	OrderBookState / HaltInformation			Display	Allow actions
	ITCH (Equity)	ITCH (Derivatives)	ITCH (Live)		
HALT	HALT_E	HALT_D	HALT_L	H	Cancel/update* order
SUSPEND	SUSPEND_E	SUSPEND_D	SUSPEND_L	SP	Cancel/update* order
CIRCUIT_BREAKER	CIRCUIT_BREAKER_E	CIRCUIT_BREAKER_D	-	Circuit Breaker	Cancel/update* order
PAUSE	PAUSE_E	PAUSE_D	-	P	Cancel/update* order
FULL HALT	FULLHALT_E	FULLHALT_D	FULLHALT_L	Full Halt	Not allow
EXPIRE	EXPIRED_E (Future implementation)	EXPIRED_D	-	Expired	Not allow

Event	OrderBookDirectory.Status	Display	Allow actions
SUSPEND	Suspended (S)	SP	Not allow

ⓘ Halt is not allowed for new orders but allowed for order cancellation.

ⓘ Full halt is not allowed for both new order and order cancellation.

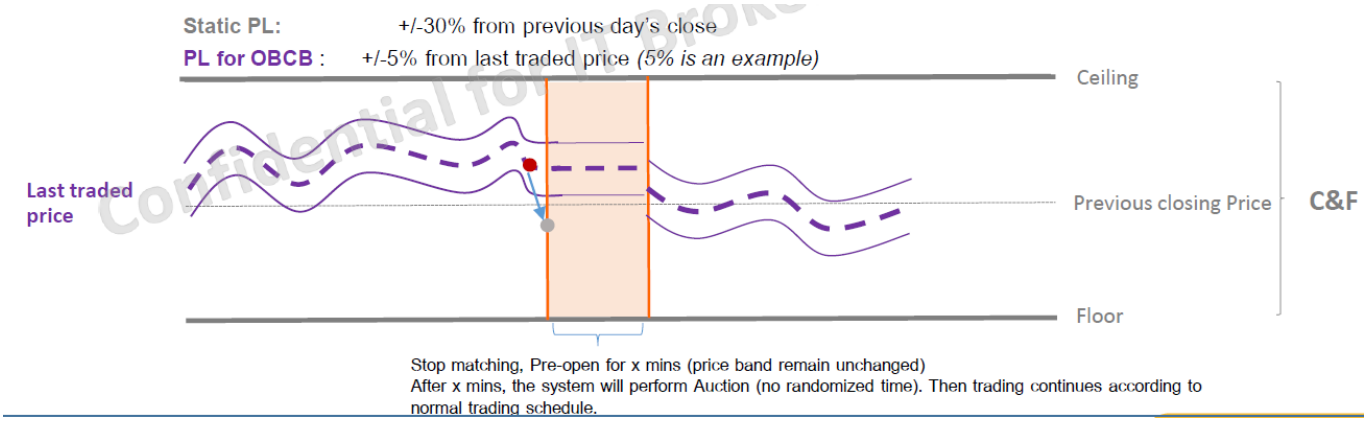
ⓘ Pause has the same allow actions as halt and suspend.

ⓘ *Client can update only order attributes which is not affect priority. For more detail please see update order detail in section 6.3.1.

5.3 Orderbook Circuit breaker (OBCB)

A mechanism to reduce sharp price movement of a stock. Applied to a particular orderbook

- OBCB can be applied per orderbook by specifying % price limit
- Can be used with Static price limit (Ceiling & Floor). If so, traded prices during the day will be within C&F
- SET CONNECT will stop matching when stock price has reached the trigger point (for example, > x% from Last traded price) then the orderbook will go to pre-open for a short period before uncross is performed (for price discovery)
- After uncross completed, the stock can be traded as normal (according to normal trading schedule)



6. Order Management

6.1 Order Types and Validity

Matching Engine includes several order types:

- **Limit Order** – an order submitted with a specified limit price; the order executes either in part or in full against eligible orders at its limit price or better
- **Market Order** – an unpriced order that will execute against the best priced orders in the order book.
- **Market-to-Limit Order** – a market order that executes at the best price, with any unexecuted portion stored in the book as a limit order, with the limit price made equal to the last executed portion

6.1.1 SET order type & Validity

Member can specify each type of order as the following:

Pre-trade session (No-Matching or Auction)

Order Type	Validity					Order Amendment	Order Cancellation
	DAY	FAK	FOK	DATE	CANCEL		
Limit Order	✓	✓		✓	✓	✓	✓
Limit Order – Short sell							
Market Order		✓					
Market to Limit order							

ⓘ Sending ATO and ATC order, member can specify order type with market order and validity with FAK.

ⓘ GTS or Good Till Session validity is not allowed.

ⓘ In case of changing in some trading parameters e.g. round lot size or NVDR changed or order price out of price limit range, exchange will cancel any long orders that don't meet new criteria.

ⓘ Iceberg order can be limit price, market price or market to limit price and validity will comply with that order type.

ⓘ Iceberg order will not be automatically cancelled when entering auction session and when stock is halted or suspended.

Open session (Round-Lot, Auto-Matching)

Order Type	Validity					Order Amendment	Order Cancellation
	DAY	FAK	FOK	DATE	CANCEL		
Limit Order	✓	✓	✓	✓	✓	✓	✓
Limit Order – Short sell	✓	✓	✓				
Market Order		✓	✓				
Market to Limit order	✓	✓	✓	✓	✓		

ⓘ For Good till Date and Good till Cancel order will valid in the system up to 30 calendar days.

ⓘ GTS or Good Till Session validity is not allowed.

ⓘ In case of changing in some trading parameters e.g., round lot size or NVDR changed or order price out of price limit range, exchange will cancel any long orders that don't

meet new criteria.

ⓘ Iceberg order can be limit price, market price or market to limit price and validity will comply with that order type.

ⓘ Iceberg order will not be automatically cancelled when entering auction session and when stock is halted or suspended.

Open session (Odd-Lot, Auto-Matching)

Order Type	Validity					Order Amendment	Order Cancellation
	DAY	FAK	FOK	DATE	CANCEL		
Limit Order	√			√	√	√	√

ⓘ Order lifetime for validity DATE and CANCEL is one business day.

6.1.2 LIVE order type & Validity

Pre-trade session (No-Matching or Auction)

Order Type	Validity					Order Amendment	Order Cancellation
	DAY	FAK	FOK	DATE	CANCEL		
Limit Order	√			√	√	√	√

ⓘ Order lifetime for validity DATE and CANCEL is one business day.

6.1.3 TFEX order type & Validity

Pre-trade session (No-Matching or Auction)

Series	Order Type	Validity					Order Amendment	Order Cancellation
		DAY	FAK	FOK	DATE	CANCEL		
Outright	**Limit Order**	√	√		√	√	√	√
	Market Order		√					
	Market to Limit							
	Stop Limit order	√	√	√	√	√		
	Stop Market order		√	√				
	Stop Market to Limit order	√	√	√	√	√		
Combo	**Limit Order**							
	Market Order							
	Stop Limit order	√	√	√	√	√		
	Stop Market order		√	√				

ⓘ Stop Order cannot be triggered.

ⓘ Bait-order cannot be generated.

ⓘ GTS or Good Till Session validity is not allowed.

ⓘ In case of changing in some trading parameters e.g., round lot size or NVDR changed or order price out of price limit range, exchange will cancel any long orders that don't meet new criteria.

ⓘ Outright can be an iceberg order with limit price, market price or market to limit price.
ⓘ Iceberg order will not be automatically cancelled when entering auction session and when stock is halted or suspended.

Open session (Auto-Matching)

Series	Order Type	Validity					Order Amendment	Order Cancellation
		DAY	FAK	FOK	DATE	CANCEL		
Outright	Limit Order	√	√	√	√	√	√	√
	Market Order		√	√				
	Market to Limit order	√	√	√	√	√		
	Stop Limit order	√	√	√	√	√		
	Stop Market order		√	√				
	Stop Market to Limit order	√	√	√	√	√		
Combo	Limit Order	√	√	√	√	√		
	Market Order		√	√				
	Stop Limit order	√	√	√	√	√		
	Stop Market order		√	√				

ⓘ Stop Order can be triggered.
ⓘ Bait-order can be generated.
ⓘ For Good till Date and Good till Cancel order will valid in the system up to 255 calendar days.
ⓘ GTS or Good Till Session validity is not allowed.
ⓘ In case of changing in some trading parameters e.g., round lot size or NVDR changed or order price out of price limit range, exchange will cancel any long orders that don't meet new criteria.
ⓘ Outright can be an iceberg order with limit price, market price or market to limit price.
ⓘ Iceberg order will not be automatically cancelled when entering auction session and when stock is halted or suspended.

6.1.4 State type

For a Good till Session order (GTS) and session-triggered order the data shall be specified as the session state id. Please refer state Id in table section 5.1 State and display.

6.2 Iceberg Order

Iceberg orders include an executable quantity that is only partially visible to the market. The quantity is automatically refreshed from a hidden quantity once the displayed quantity is fully executed. Refreshing the quantity is regarded as a new order from a time priority point of view, however, an incoming aggressive order will not trade through to the next price level until all of the displayed and hidden quantities available are executed (to offer incoming orders the best available executions).

6.3 Order and Trade Update (Partially Match)

An update request to a partially matched order will have an effect only on that order. The trades occurred earlier will not be changed by the order update request. In the equity markets, if a client would like to maintain the same properties' values, such as trading account, investor type, across the order and all its trades, the client has to send trade amend request separately.

6.3.1 Update Orders

Participants can update their single orders by specifying the trading system order identifier, Bid or Ask side and order book identifier. If the order to update is not found, the update is canceled. If the order is found, the update is processed and the change is implemented. A subsequent Participant Order View message will be published to indicate the change.

The order attributes can be divided into two categories:

- Order attributes that can be changed without loss of priority in the order book.
- Order attributes that cannot be changed at all.

Member are allowed to update some values in an order as follow.

1. Priority is lost when update price, increase quantity
2. Priority is not lost when update client/account (trading account), decrease quantity, Time In Force, open/close, customer info, display quantity, order info, crossing key, valid till data*, Investor type

* In case of update valid till data, member is required to specify the existing Time In Force.

Order Update – Partially match.

Member system has to send at least two update message types

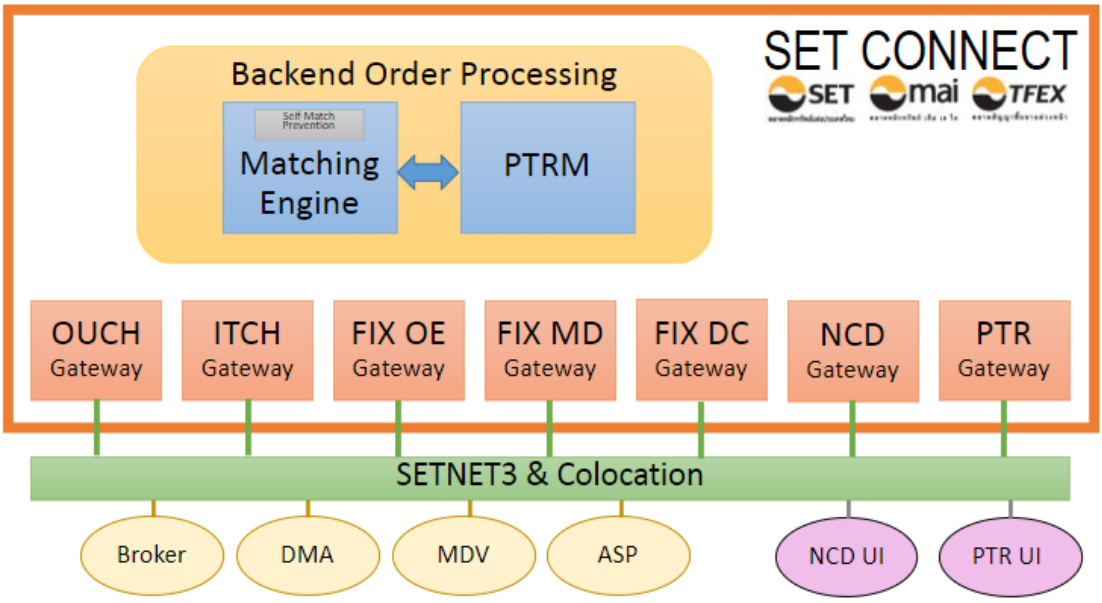
- One order update
- All trade update related to that matched order.

6.4 Order log

From the rule book "**Standard of Trading of Securities through Trading System**"
https://media.set.or.th/rulebook/regulation/StandardofTradingofSecuritiesthroughTradingSystem.pdf

Member is required to keep order/trade from order log (all traffic in/out with timestamp) and shall be immediately available for investigation upon the Exchange's request.

7. Pre-Trade Risk Management (PTRM)



The picture above illustrates interaction from order placing to Matching Engine and PTRM

In general, PTRM consists of two components:

- **Pre-trade checks (RXP)** occur before an order is placed on the book. Orders that fail the check are rejected. Example of Pre-Trade checks are: Price Limit, Max Order Size, Restricted instruments
- **At-trade checks (RX)** occur immediately after order is placed on the book or trades happened from order placing. Limit breaches cause future orders to be rejected. Example of At-Trade checks are: Total Buy/Sell, Max Open, Credit Limit Risk Check

8. Quote Management

For exchanges that use market makers, the trading system offers quoting capability. Quoting is provided by a special type of transaction that both has a bid side and a sell side with corresponding prices and quantities. Price quotations are similar to normal orders, but with the following additional characteristics:

- Price quotation can be single-sided or two-sided, i.e., both the bid and ask side can be provided in one transaction.
- A previous quotation can be replaced by a new quotation in the same order book (although it is possible to replace only one side with the other side retaining its priority). This is done in an atomic manner to enable market makers to provide continuous quotes.

8.1 Massquote

Mass quote is provided for market makers to respond to the price movement of orderbooks professionally and easily. Only one bid-price quote and one ask-price quote per member* can reside in an orderbook at a time. That is when a market maker enters another mass quote of the same orderbook and side with different price or quantity, it will replace an existing quote automatically without the need to cancel it. This means one replace another (per Orderbook per Member*).

The maximum number of quote item in one message is 6 orderbooks** all of which must be in the same partition. Each orderbook of quote item can have up to 2 sides, i.e., bid and ask.

**The maximum number of orderbooks in one mass quote can be changed later.

The transaction includes an array of the following information:

- Order Book Identifier
- Bid Price
- Bid Quantity
- Ask Price
- Ask Quantity

Bid and ask prices in an incoming quote are not allowed to cross or lock with each other, in that case, the quote is rejected. Bid and ask prices must conform to the price tick rules defined for the order book.

ⓘ Only limit price with day validity can be placed with mass quote.
ⓘ Massquote is not available for combination order.

8.2 Trading Group

Trading Group ID is the group number that assigned by SET and equals to Member Unit (MU) for Market Maker. The same trading Group ID in order, trade reports, quote is use for identify the same group of that transactions.

8.3 Market maker performance measurement (Allows both order & quote)

Obligations	Descriptions
Tick spread obligation	- Defined as the number of ticks between bid and ask 1.VWAS (volume weighted prices)
Spread obligation in percent	- Defined as (Offer-bid)/bid. 1.VWAS (volume weighted prices)
Quantity obligation	Volume per side
% of time that MM fulfills obligation comparing to total trading time	% of time

Example of VWAS calculation:

Assumptions:

1. MM obligations are as follows:
    a) Volume per side >= 10,000 shares
    b) Tick spread using VWAS calculation is applied. MM is obligated to maintain tick spread of 5 ticks or less.
    c) % of time that MM fulfills obligation comparing to total trading time is >= 70%

Orderbook belowed displays all quotes of a particular market maker (3 bid legs and 5 offer legs).
Tick size is 1 Baht.

9 Trade Report Management

Trade Reporting is available to administer trades agreed outside of the exchange, and then reported to the exchange for Post-Trade and market information purposes. Trade Reports are verified according to the rules determined by the exchange (e.g., within the spread of the market).

Trade reports can be entered with trade report half. Once the match has occurred, it becomes a trade, and it is no longer possible to cancel the matched trade report.

The two sides of the trade are matched by comparing the details of the two trade reports.
Matching occurs when:

- The order book is equal
- The trade report type is equal
- The price is equal
- The quantity is equal
- One is a buy and the other is a sell
- Both participants specify the other as counterparties
- Trade report control key must be equal (optional; recommended to use with a 2-char non-blank value to avoid confusion in matching trade halves across protocols and in displaying the value at NCD.)
- TR Special ID (default "N")

ⓘ Trade Report cancelation (busted) is not allowed.
Workaround: using reverse transaction

ⓘ The Trade Report Control Key is one of the matching criteria for trade report to prevent matching with another incorrect trade half.

9.1 Trade Report Type

Please see trade report type and detail in Trade Report Configuration. The configure available in SET CONNECT REST API. The details of downloading can be found in document "SET CONNECT REST API Specification".

10 Trading Schedule

Trading schedule setting for SET CONNECT can be in combination of the following level:

- Market
- Financial product
- Underlying (UL)

10.1 Trading Session – Equity market

SET CONNECT will send Trading session per order book level.

Market Status	Display	SET/MAI (EQSM)	Odd Lot (EQSO)	Foreign Product (EQIM)	Foreign Product – Odd Lot (EQIO)
CLOSE_E	Closed				
STARTUP_E		Before Login 06:00			
PRE-OPEN1_E	Pre-Open1	9:30	-	-	-
PRE-OPEN_E	Pre-Open	-	-	9:30	-
OPEN1_E	Open1	9:55-10:00	9:55-10:00	-	-
OPEN_E	Open	-	-	9:55-10:00	9:55-10:00
INTERMISSION_E	Intermission	12:30	12:30	-	-
PRE-OPEN2_E	Pre-Open2	14:00	-	-	-
OPEN2_E	Open2	14:25-14:30	14:25-14:30	-	-
PRE-CLOSE_E	Pre-Close	16:30	-	16:30	-
OFF-HOUR_E	OffHour	16:35-16:40	-	16:35-16:40	-
MARKETCLOSE_E	Closed	17:00	16:30	17:00	16:30
SAVECLOSING_E		17.03	17.03	17.03	17.03
RESET_STAT_E		03:05 (TBC)			
CLOSE_E		03:15 (TBC)			

ⓘ SAVECLOSING_E: Member will receive closing prices of the orderbook.
ⓘ RESET_STAT_E: Trade statistics will be cleared.
ⓘ Front Office must not send order to SET before receiving Market session Pre-Open of each stock

10.2 Trading Session – Live market

Market Status	Display	LIV
CLOSE_L	Closed	-
STARTUP_L		Before Login 06:00
PRE-OPEN_L	Pre-Open	9:30
OFF-HOUR_L	OffHour	10:30-10:35
MARKETCLOSE_L	Closed	11:00
SAVECLOSING_L		11:03
RESET_STAT_L		03:05 (TBC)
CLOSE_L		03:15 (TBC)

ⓘ SAVECLOSING_L: Member will receive closing prices of the orderbook.
ⓘ RESET_STAT_L: Trade statistics will be cleared.

10.3 Trading Session – TFEX Day market

SET CONNECT will send Trading session per order book level.

Market Status	Display	Day Market (TXI, TXS)	Day Market (TXR)	No Intermission (TXA)
CLOSE_D	Closed	-		
SERIES_GEN_DAY_D		05:30		
COMBO_GEN_DAY_D		05:55		
PRE-MORNING_D	Pre-Morning	9:15		
MORNING_D	MorningSession	9:45		-
DAY_D	DaySession	-	-	9:45
TRANSITION1_D	Intermission		12.30	-
INTERMISSION_D		12.30	12:31	-
PRE-AFTERNOON_D	Pre-Afternoon	13:45		-
AFTERNOON_D	AfternoonSession	14:15		-
TRANSITION2_D	Closed		16:00	16:55
SETTLEMENT_D		16:55	16:01	16:56
DAYCLOSE_D		17:05		17:05
RESET_STAT_D		03:05		
CLOSE_D		03:15		

ⓘ SERIES_GEN_DAY_D: Member will receive new outright series (if any).
ⓘ COMBO_GEN_DAY_D: Member will receive combination series (if any).
ⓘ RESET_STAT_D: Trade statistics will be cleared.
ⓘ Front Office must not send order to TFEX before receiving Market session Pre- Morning of each series

10.4 Trading Session – TFEX Night market

SET CONNECT will send Trading session per order book level.

Market Status	Display	Night Market	GOLD-D	Currency Futures
CLOSE_D	Closed	-	-	-
PRE-MORNING_D	Pre-Morning	9:15		
MORNING_D	MorningSession	9:45		
TRANSITION1_D	Intermission	12:30		
INTERMISSION_D		12:31		
PRE-AFTERNOON_D	Pre-Afternoon	13:45		
AFTERNOON_D	AfternoonSession	14:15		
PRE-SETTLEMENT_D	Intermission-Night	-	16:30	-
TRANSITION2_D		16:55	-	16:55

Market Status	Display	Night Market	GOLD-D	Currency Futures
SETTLEMENT_D		16:56	16:50	16:56
INTERMISSION2_D		17:05		17:05
SERIES_GEN_NIGHT_D		17:10		17:10
INTERMISSION3_D		18:30		18:30
PRE-NIGHT_D	Pre-Night	18:45		18:45
NIGHT_D	NightSession	18:50		18:50
TRANSITION3_D	Closed	03:00		23.55
MARKETCLOSE_D		03:01		23.56

ⓘ SERIES_GEN_NIGHT_D: Member will receive new outright series and traded on NightSession (if any).

ⓘ INTERMISSION3_D:

1. Member will receive combination series and traded on NightSession (if any)
2. Trade statistics will be cleared before NightSession.

ⓘ Front Office must not send order to TFEX before receiving Market session Pre-Morning of each series

10.5 Trading Session – Allowed requests

SET/MAI (EQSM)

Market Status	Allow requests	Related Market Data	Trade Report
CLOSE_E	-	Update reference data	None
STARTUP_E	Auto cancel order if lost (choose cancel option), force logout	Update reference data	None
PRE-OPEN1_E	Order insert, update, cancel Quote insert, update, cancel Auto cancel order if lost (choose cancel option), force logout	Equilibrium, MBP	None
OPEN1_E	Order insert, update, cancel Quote insert, update, cancel Trade report(new) Cancel trade report half Trade Amend Request for quote Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade	TR_BIGLOT TR_FOREIGN TR_BUYIN
INTERMISSION_E	Order update (info and decrease QTY), Cancel* Trade Amend Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	MBP	None
PRE-OPEN2_E	Order insert, update, cancel Quote insert, update, cancel	Equilibrium, MBP	None

Market Status	Allow requests	Related Market Data	Trade Report
	Cancel trade report half Trade Amend Auto cancel order if lost (choose cancel option), force logout		
OPEN2_E	Order insert, update, cancel Quote insert, update, cancel Trade report(new) Cancel trade report half Trade Amend Request for quote Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade	TR_BIGLOT TR_FOREIGN
PRE-CLOSE_E	Order insert, update, cancel Quote insert, update, cancel Trade report(new) Cancel trade report half Trade Amend Auto cancel order if lost (choose cancel option), force logout	Equilibrium, Public Trade	TR_BIGLOT TR_FOREIGN
OFF-HOUR_E	Trade report(new) Cancel trade report half Trade Amend Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade	TR_BIGLOT TR_FOREIGN TR_OFFHOUR
MARKETCLOSE_E	Auto cancel order if lost (choose cancel option), force logout	-	None
SAVECLOSING_E	System saves closing prices Auto cancel order if lost (choose cancel option), force logout	Update reference data	None

ⓘ * Allowed to update only order attributes which is not affect priority. MBP (Bid/offer) might be changed during Intermission if there are update or cancel orders from members.

Odd Lot (EQSO)

Market Status	Allow requests	Related Public Data Dissemination	Trade Report
CLOSE_E	-	Update reference data	None
STARTUP_E	Auto cancel order if lost (choose cancel option), force logout	Update reference data	None
OPEN1_E	Order insert, update, cancel Quote insert, update, cancel Trade Amend Request for quote Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade	None

Market Status	Allow requests	Related Public Data Dissemination	Trade Report
INTERMISSION_E	Order update (info and decrease QTY), Cancel* Trade Amend Auto cancel order if lost (choose cancel option), force logout	MBP	None
OPEN2_E	Order insert, update, cancel Quote insert, update, cancel Trade Amend Request for quote Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade	None
MARKETCLOSE_E	Auto cancel order if lost (choose cancel option), force logout	-	None
SAVECLOSING_E	System saves closing prices Auto cancel order if lost (choose cancel option), force logout	Update reference data	None

Foreign Product (EQIM)

Market Status	Allow requests	Related Public Data Dissemination	Trade Report
CLOSE_E	-	Update reference data	None
STARTUP_E	Auto cancel order if lost (choose cancel option), force logout	Update reference data	None
PRE-OPEN_E	Order insert, update, cancel Quote insert, update, cancel Auto cancel order if lost (choose cancel option), force logout	Equilibrium, MBP	None
OPEN_E	Order insert, update, cancel Quote insert, update, cancel Trade report(new) Cancel trade report half Trade Amend Request for quote Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade	TR_BIGLOT TR_BUYIN
PRE-CLOSE_E	Order insert, update, cancel Quote insert, update, cancel Trade report(new) Cancel trade report half Trade Amend Auto cancel order if lost (choose cancel option), force logout	Equilibrium, Public Trade	TR_BIGLOT
OFF-HOUR_E	Trade report(new) Cancel trade report half Trade Amend	MBP, Public Trade	TR_BIGLOT TR_OFFHOUR

Market Status	Allow requests	Related Public Data Dissemination	Trade Report
	Auto cancel order if lost (choose cancel option), force logout		
MARKETCLOSE_E	Auto cancel order if lost (choose cancel option), force logout	-	None
SAVECLOSING_E	System saves closing prices Auto cancel order if lost (choose cancel option), force logout	Update reference data	None

Foreign Product – Odd Lot (EQIO)

Market Status	Allow requests	Related Public Data Dissemination	Trade Report
CLOSE_E	-	Update reference data	None
STARTUP_E	Auto cancel order if lost (choose cancel option), force logout	Update reference data	None
OPEN_E	Order insert, update, cancel Quote insert, update, cancel Trade Amend Auto cancel order if lost (choose cancel option), force logout Request for quote	MBP, Public Trade	None
MARKETCLOSE_E	Auto cancel order if lost (choose cancel option), force logout	-	None
SAVECLOSING_E	System saves closing prices Auto cancel order if lost (choose cancel option), force logout	Update reference data	None

Live market

Market Status	Allow requests	Related Public Data Dissemination	Trade Report
CLOSE_L	-	Update reference data	None
STARTUP_L	-	Update reference data	None
PRE-OPEN_L	Order insert, update, cancel Auto cancel order if lost (choose cancel option), force logout	Equilibrium, MBP	TR_BIGLOT_LIV TR_FOREIGN_LIV
OFF-HOUR_L	Trade report(new) Cancel trade report half Trade Amend Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade	TR_BIGLOT_LIV TR_FOREIGN_LIV TR_OFFHOUR_LIV
MARKETCLOSE_L	Auto cancel order if lost (choose cancel option), force logout	-	None
SAVECLOSING_L	System saves closing prices Auto cancel order if lost (choose cancel option), force logout	Update reference data	None

TFEX Day market

Market Status	Allow requests	Related Public Data Dissemination
CLOSE_D	-	Update reference data
SERIES_GEN_DAY_D	-	Update reference data
COMBO_GEN_DAY_D	Auto cancel order if lost (choose cancel option), force logout	Update reference data
	Logon and retrieve reference data	Update reference data
PRE-MORNING_D	Order insert, update, cancel Quote insert, update, cancel Combo cancel Auto cancel order if lost (choose cancel option), force logout	Equilibrium, MBP
MORNING_D	Order insert, update, cancel Quote insert, update, cancel Request for quote Trade Report(new) Cancel trade report half Combo insert, update, cancel Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade
TRANSITION1_D INTERMISSION_D	Order update (info and decrease QTY), cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	MBP
PRE-AFTERNOON_D	Order insert, update, cancel Quote insert, update, cancel Combo cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	Equilibrium, MBP
AFTERNOON_D	Order insert, update, cancel Quote insert, update, cancel Request for quote Trade Report(new) Cancel trade report half Combo insert, update, cancel Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade
TRANSITION2_D SETTLEMENT_D	Save Closing price	MBP
DAYCLOSE_D	Auto cancel order if lost (choose cancel option), force logout	-
RESET_STAT_D	Reset statistic Auto cancel order if lost (choose cancel option), force logout	-
CLOSE_D	-	-

TFEX Day market – No Intermission (TXA)

Market Status	Allow requests	Related Public Data Dissemination
CLOSE_D		Update reference data
SERIES_GEN_DAY_D	Auto cancel order if lost (choose cancel option), force logout	Update reference data
COMBO_GEN_DAY_D	Auto cancel order if lost (choose cancel option), force logout	Update reference data
PRE-MORNING_D	Order insert, update, cancel Quote insert, update, cancel	Equilibrium, MBP
DAY_D	Order insert, update, cancel Quote insert, update, cancel Request for quote Trade Report(new) Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade
TRANSITION2_D SETTLEMENT_D	Save Closing price	MBP
DAYCLOSE_D	Auto cancel order if lost (choose cancel option), force logout	
RESET_STAT_D	Reset statistic Auto cancel order if lost (choose cancel option), force logout	-
CLOSE_D	-	-

TFEX Night market

Market Status	Allow requests	Related Public Data Dissemination
CLOSE_D	-	Update reference data
PRE-MORNING_D	Order insert, update, cancel Quote insert, update, cancel Combo cancel Auto cancel order if lost (choose cancel option), force logout	Equilibrium, MBP
MORNING_D	Order insert, update, cancel Quote insert, update, cancel Request for quote Trade Report(new) Cancel trade report half Combo insert, update, cancel Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade
TRANSITION1_D INTERMISSION_D	Order update (info and decrease QTY), cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	-

Market Status	Allow requests	Related Public Data Dissemination
PRE-AFTERNOON_D	Order insert, update, cancel Quote insert, update, cancel Advertisement insert, cancel Combo cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	Equilibrium, MBP
AFTERNOON_D	Order insert, update, cancel Quote insert, update, cancel Request for quote Trade Report(new) Cancel trade report half Combo insert, update, cancel Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade
TRANSITION2_D SETTLEMENT_D	Save Closing price	MBP
INTERMISSION2_D	Order update (info and decrease QTY), cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	-
SERIES_GEN_NIGHT_D	retrieve reference data Order update (info and decrease QTY), cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	Update reference data
INTERMISSION3_D	Combo gen Order update (info and decrease QTY), cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	-
PRE-NIGHT_D	Order insert, update, cancel Quote insert, update, cancel Combo cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	Equilibrium, MBP Clarify
NIGHT_D	Order insert, update, cancel Quote insert, update, cancel Request for quote Cancel trade report half Combo insert, update, cancel Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade
TRANSITION3_D MARKETCLOSE_D	Auto cancel order if lost (choose cancel option), force logout	-
CLOSE_D	-	-

TFEX Night market for GOLD-D

Market Status	Allow requests	Public Data Dissemination
CLOSE_D		Update reference data
PRE-MORNING_D	Order insert, update, cancel Quote insert, update, cancel Combo cancel Auto cancel order if lost (choose cancel option), force logout	Equilibrium, MBP
MORNING_D	Order insert, update, cancel Quote insert, update, cancel Advertisement insert, cancel Request for quote Trade Report(new) Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade
TRANSITION1_D INTERMISSION_D	Order update (info and decrease QTY), cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	-
PRE-AFTERNOON_D	Order insert, update, cancel Quote insert, update, cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	Equilibrium, MBP
AFTERNOON_D	Order insert, update, cancel Quote insert, update, cancel Request for quote Trade Report(new) Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade
PRE-SETTLEMENT_D	-	MBP
SETTLEMENT_D	Save Closing price	MBP
INTERMISSION2_D	Order update (info and decrease QTY), cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	-
SERIES_GEN_NIGHT_D	retrieve reference data Order update (info and decrease QTY), cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	Update reference data
INTERMISSION3_D	Combo gen Order update (info and decrease QTY), cancel Cancel trade report half	-

Market Status	Allow requests	Public Data Dissemination
	Auto cancel order if lost (choose cancel option), force logout	
PRE-NIGHT_D	Order insert, update, cancel Quote insert, update, cancel Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	Equilibrium, MBP
NIGHT_D	Order insert, update, cancel Quote insert, update, cancel Request for quote Cancel trade report half Auto cancel order if lost (choose cancel option), force logout	MBP, Public Trade
TRANSITION3_D MARKETCLOSE_D	Auto cancel order if lost (choose cancel option), force logout	
CLOSE_D	-	-

11 Corporate Actions

The Exchange may announce the following signs on any securities to indicate that the trading price is without rights or benefits. It is possible to handle such events in the system in order to update the reference data accordingly.

Sign	Meaning
1. XD (Excluding Dividend)	Trading price, excluding dividends payment
2. XR (Excluding Right)	Trading price, excluding the right to subscribe to newly issued securities to its shareholders in proportion of their existing securities holding and in the same class of such securities (Right Offering)
3. XB (Excluding Other Benefits)	Trading price, excluding the right to subscribe to newly issued securities except specified in 2
4. XW (Excluding Warrant)	Trading price, excluding the right to receive a warrant
5. XT (Excluding Transferable Subscription Right)	Trading price, excluding the right to receive transferable subscription rights
6. XN (Excluding Capital Return)	Trading price, excluding capital return
7. XA (Excluding All)	Trading price, excluding any benefit under 1 to 8 of more than one item.

Reference:
https://media.set.or.th/rulebook/regulation/PracticeGuidelineregardingTrading_Clearing_and_SettlementofSecuritiesintheExchange.pdf

12 Dates and Sign

12.1 Date

Date	Meaning
First trading date	First trading date is the first business date when the series is traded. First Trading Date is optional and if not specified the series is tradable from the day the series is activated.
First trading time	First trading time is the first date and time when the series is open for trading. First trading date and time is optional and if not specified the series is tradable from the day the series is activated.
Last trading date	Last trading date is the last business date when the series is traded. Last Trading Date is optional.
Last trading time	Last trading time is the last date and time when the series is closed from trading. Last Trading date and time is optional.
Expiration date	Expiration date is the expiration date of the series.
Notation date	Notation date is the create date of the series.

12.2 Notification Sign

12.2.1 NP (Notice Pending) and NR (Notice Received)

The Exchange may post the NP (Notice Pending) sign on securities to inform investors that the listed company has pending information to be submitted or reported to the Exchange.

After the Exchange receives complete and clear information and the information is disclosed to investors, the Exchange may remove the NP (Notice Pending) sign and post the NR (Notice Received) sign on such securities in order to inform the investors that the listed company has already submitted or reported the information to the Exchange.

For more information, please visit SET Website:
https://media.set.or.th/rulebook/regulation/ProceduresonTrading_Clearing_and_SettlementofSecuritiesintheExchange.pdf

12.2.2 NC (Non Compliance)

The Exchange may post the NC (Non-Compliance) sign on the securities to inform the investors that such securities are undergoing any of following events:
(1) the securities fit the criteria for which may be delisted; or
(2) the trading of the securities are temporarily suspended by the Exchange by posting the SP sign on such securities because the listed company materially violates or fails to comply with the law on securities and exchange, regulations, rules, notifications, orders, resolutions of the Board, listing agreement with the Exchange, and any circulars with which the Exchange requires compliance, and the Exchange orders such securities to be purchased through cash balance account.

When the listed company is able to eliminate the events under (1) and (2) of paragraph one, the Exchange may remove the NC (Non-Compliance) sign.

For more information, please visit SET Website:
https://media.set.or.th/rulebook/regulation/ProceduresonTrading_Clearing_and_SettlementofSecuritiesintheExchange.pdf

12.2.3 C (Caution) Sign

The Exchange may post C (Caution) sign on the securities on the business day following the date the Exchange announces the names of listed companies governed by the Measure so that investors are informed that the listed companies are governed by such Measure.

The Exchange may remove C (Caution) sign from the securities on
the business day following the date the Exchange announces the names of listed companies that are no longer governed by the Measure so that investors are informed that the listed companies are no longer governed by such Measure.

For more information, please visit SET Website:
https://media.set.or.th/rulebook/regulation/ProceduresonTrading_Clearing_and_SettlementofSecuritiesintheExchange.pdf

12.3 Other Sign

Sign	Meaning
L	Delete long orders effected from CA
N	New List
NG	Non Performing Group
S	Split
X	Delist

13 Trader ID

Trader ID	Trader ID of Broker	Trader ID of Sub-broker ** (Below is an example of Sub-broker no.28)
Trader ID (Individual)	Individual trader ID of broker (e.g., 2315, A134)	Individual trader ID of Sub broker 3457, B528
Internet - General	I1111	I11-28
Internet - Institution	I9999	I99-28
DMA	D9999	D99-28
Market Marker	Individual trader ID of broker (e.g. 2315, A134)	Individual trader ID of Sub-broker 3457 ,B528

ⓘ ** Sub-broker number must be specified with trader ID of Sub-broker.

User & Trader ID Relationship

	Purpose of use	User Type (OUCH,FIX)	Trader ID
1	Trader	T = Traditional trading P = Program trading M = Market making G = Market making with Program trading	Individual trader ID e.g., 2315 or A134
2	DMA	T = Traditional trading P = Program trading M = Market making G = Market making with Program trading	D9999
3	Retail Internet	T = Traditional trading P = Program trading M = Market making G = Market making with Program trading	I1111
4	Institution Internet	T = Traditional trading P = Program trading M = Market making G = Market making with Program trading	I9999

14 Advertisement

SET provides Advertisement feature as a communication channel for buyer or seller broker who wants to announce its intention to buy or sell securities as well as the contact information. After buyer and seller have negotiated and concluded the trade (probably over the phone), they will record the trade transaction in the SET CONNECT system via a trade report.

Sending Advertisement can be done through "REST API gateway" (utilizing user on SET Portal). The details of REST API can be found in document "SET CONNECT REST API Specification".

The Advertisement successfully entered into the system will be published to all participants via the market data, i.e., ITCH MDF – MarketAnnouncement and FIX MDF – News

Market	Allowed transaction
Equity	09:30-17:00
Derivatives	09:15-17:00

15 Unintentional Crossing Prevention

The Self Match Prevention functionality helps participants to prevent un-wanted matching between own users. For example, matching between different trading desks.
Member can add a crossing key to the order, and if the crossing key is equal, the match is not allowed and one of the orders* is canceled. There is a configuration* which will decide what side that should be cancelled.

* Reject order option - configured by SET/TFEX on member level (TBC)

- Reject aggressive order
- Reject passive order

Example of scenarios.

Scenarios	Prevention method	Result
Limit-Day Order 1. (P1) Send Buy BTS 100@9, SelfMatchKey=3 2. (P2) Send Buy BTS 500@9, SelfMatchKey=5 3. (A1) Send Sell BTS 800@9, SelfMatchKey=5	Cancel Aggressive	- P1 match A1 (Qty=100) - P2 is in Orderbook queue - Remaining Qty of A1 (700) is canceled
	Cancel Passive	- P1 match A1 (Qty=100) - P2 is canceled - Remaining Qty of A1 (700) is in OB
Limit-FOK Order 1. (P1) Send Buy BTS 100@9, SelfMatchKey=5 2. (A1) Send Sell BTS 100@9, validity=FOK, SelfMatchKey=5	Cancel Aggressive	- P1 is in Orderbook queue - A1 is canceled
	Cancel Passive	- P1 is in Orderbook queue - A1 is canceled *
Limit-FAK Order	Cancel Aggressive	- P1 is in Orderbook queue - A1 is canceled

Scenarios	Prevention method	Result
1. (P1) Send Buy BTS 100@9, SelfMatchKey=5 2. (A1) Send Sell BTS 100@9, validity=FAK, SelfMatchKey=5	Cancel Passive	- P1 is canceled due to self match prevention ** - A1 is not entered into the OB since FAK order
<u>Market-FOK Order</u> 1. (P1) Send Buy BTS 500@9, no SelfMatchKey 2. (P2) Send Buy BTS 200@9, SelfMatchKey=5 3. (P3) Send Buy BTS 500@9, SelfMatchKey=1 4. (A1) Send Sell BTS 1000@MKT, validity=FOK, SelfMatchKey=5	Cancel Aggressive	- P1, P2, P3 are in Orderbook queue - A1 is canceled
	Cancel Passive	- P1, P3 match with A1 (Qty=1000) - P2 is canceled
<u>Stop Order</u> 1. (P1) Send Buy BTSM22 10@9, SelfMatchKey=3 2. (P2) Send Buy BTSM22 50@9, no SelfMatchKey 3. (P3) Send Buy BTSM22 20@9, SelfMatchKey=5 4. (A1) Send Sell Stop BTSM22 100@9, SelfMatchKey=5 - trigger condition: BTSM22 Last>=9 5. (A2) Send Sell BTSM22 20@9, no SelfMatchKey	Cancel Aggressive	- P1 match A2 (Qty=10) - P2 match A2 (Qty=10) - P2 match A1 (Qty=40) - P3 is in Orderbook queue - Remaining Qty of A1 (Qty=60) is canceled
	Cancel Passive	- P1 match A2 (Qty=10) - P2 match A2 (Qty=10) - P2 match A1 (Qty=40) - P3 is canceled - Remaining Qty of A1 (Qty=60) is in OB

** SET CONNECT tries to match an FOK order in its entirety, and if this is not possible the transaction is rolled back and everything is back to original state. Since there is no match in the case, the roll back is done and the buy order remains in the orderbook.*

*** For an FAK order, the roll back to the original state is not performed. The passive buy order is canceled.*

ⓘ The functionality does not apply for
- Combination vs outright matching
- Trade report

ⓘ The functionality applies for
- Continuous Matching (e.g., Open, Morning, Afternoon and Night session)
- Order and massquote

16 Odd-lot

16.1 Symbol and Display

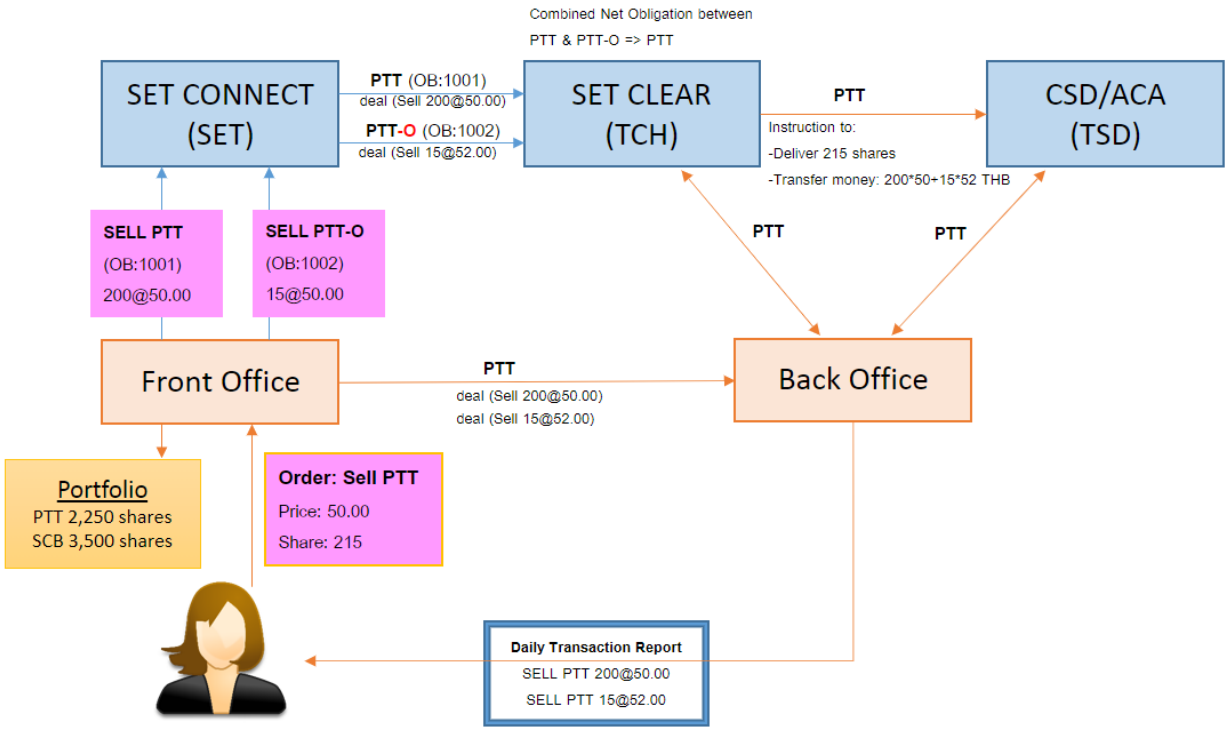
Guideline: Odd-lot stock

Items	SET CONNECT System
Orderbook ID	Different Orderbook ID
Order placing	Use Orderbook ID as key identifier
Symbol in Ref data	Different Symbol from Round-lot Odd-lot has "-O" padding
Odd-lot market data display	Using the same symbol as Round-lot
Portfolio display	Grouping Round-lot and Odd-lot together
Integration with Backoffice	Same symbol for both Round-lot and Odd-lot stock
Max order quantity	The order quantity allowed on an odd-lot orderbook is from 1 to the round-lot size - 1. The round-lot size can be found at the round-lot orderbook information. Most of the orderbook round-lot sizes are 100 but some can be 50.

ⓘ "-O" suffix will be reserved only for Odd lot stock and cannot be used in regular stock symbol

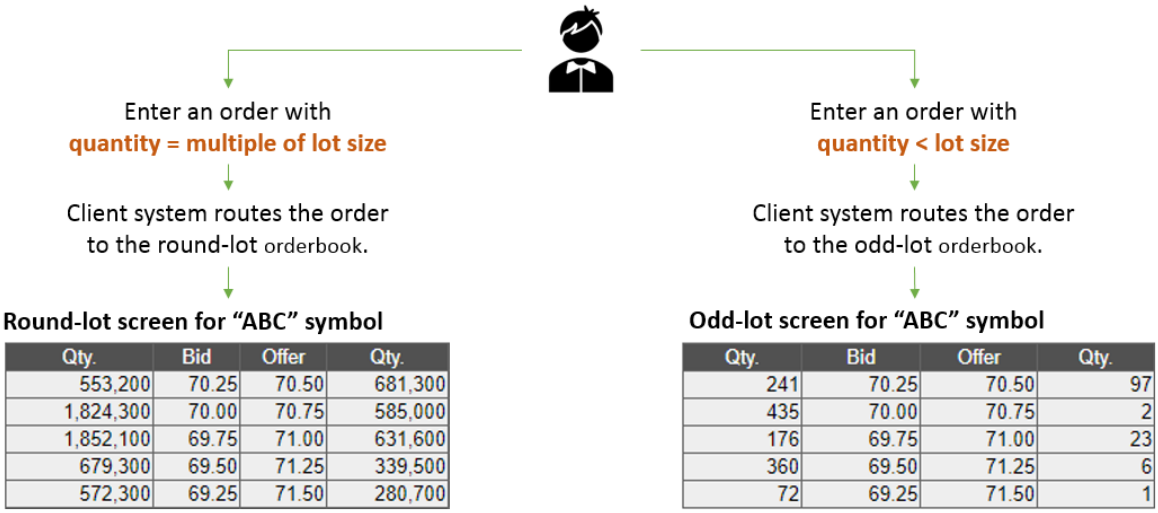
ⓘ Member/ISV can refer Odd lot to Round lot stock by removing "-O" from Odd lot name

16.2 Odd-lot Flow



16.3 Placing Order

Key concept: Use the same order routing logic and the same presentation for market data as currently done.



ⓘ The odd-lot orderbook has the same underlying as the underlying of the round-lot orderbook where its instrument name has the suffix "-O", e.g., PTT (round lot), PTT-O (odd-lot).

ⓘ There is no odd-lot orderbook for derivatives warrant.

17 Protocol Comparison

	OUCH/ITCH	FIX 5.0 SP2
Standard	Nasdaq Standard	FIX Standard
Message Encoding	Binary encoded	Tag-value ascii encoded
Message Size	Small size	Larger size *(message overhead)*
Bandwidth usage *	Low bandwidth	High bandwidth
Development	Java client library provided (version 11+)	FIX engine needed
Software adoption	Worldwide	Worldwide
Data visibility	PrivateFlow (per session) PublicFlow	PrivateFlow (per session) Drop Copy (per member) PublicFlow

18 Order Entry Protocol: OUCH vs FIX

Order functionality comparison for OUCH and FIX Protocol.

	OUCH	FIX
Supported transactions	Order Quote Trade Report	
Order types	Same	
Market Maker	Allow order and quote	
Mass Quote (MM Only)	Mass quote (multi-leg) Limit 2-sided per orderbook, and 6 orderbooks per transaction One replace another concept	

Technical comparison for OUCH and FIX Protocol.

	OUCH	FIX
Gateway connectivity	Fixed Gateway IP Active/Standby model	
Connectivity	SETNET3 (Same group as current) and Co-location	
Bandwidth Requirement	Smaller message size comparing to EMAPI	Same message size as current FIX
Latency* (Measure at SET gateway)	1x	1.8x
Throttle In	Same limit and pro-rate algorithm as current system. No credit mechanism (Different from current system)	
Data Content	Only order related messages (reference data, e.g. security profiles must be get from market data channel)	
Snapshot Support	No	Request order status allows only one order per request
Replay Support	Yes, Soupbin standard	Yes. FIX Standard

*Latency roundtrip measurement was preliminary test around Q2/2021 on SET production environment

18.1 Drop Copy Solution

SET CONNECT offers Drop Copy solution for participants on specific FIX Drop Copy user by SET Market Operation.

Filtering Options

1. Drop Copy Order from All order session within participants
2. Drop Copy Order from Specific Drop copy group of trading API user (config by SET)

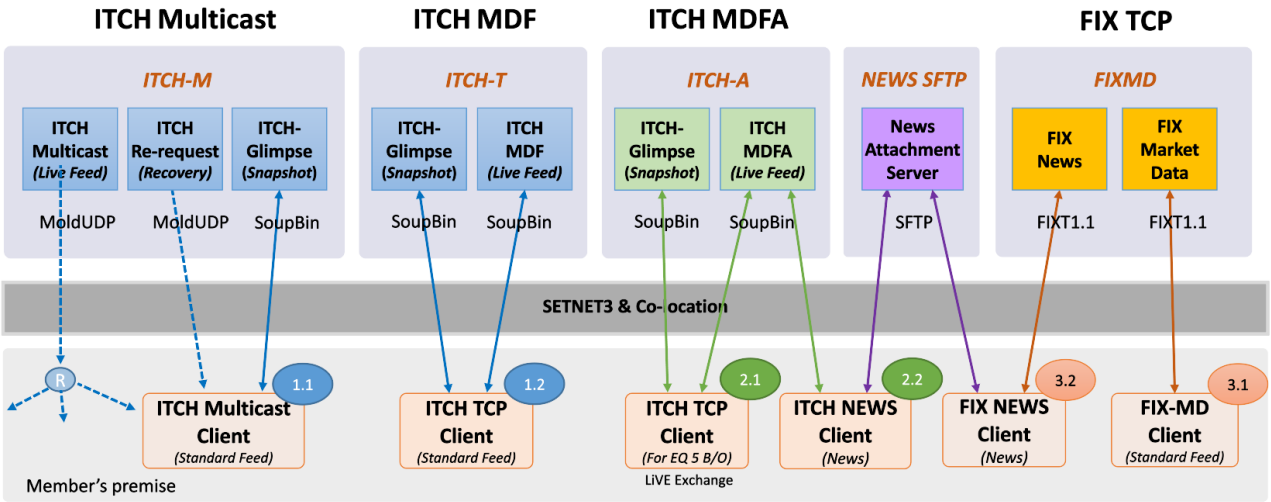
19 Market Data: ITCH vs FIX

19.1 Market Data Gateway

The diagram below illustrates the high level logical architecture of the infrastructure for the market data. The market data service provides three types of gateways as follow.

- ITCH Multicast
- ITCH TCP
- FIX (TCP Unicast)

For more information see the SET CONNECT ITCH Specification.pdf



Equity Market		ITCH Multicast	ITCH MDF	ITCH MDFA	FIX MD
Standard feed	Equity 10 bid/offer and other price feeds	✓ 1.1	✓ 1.2	×	✓ 3.1
Additional Feed	Equity News	×	×	✓ 2.2	✓ 3.2
	Equity 5 bid/offer and other price feeds	×	×	✓ 2.1	✓ 3.1
	LiVE Exchange	×	×	✓ 2.1	✓ 3.1

TFEX Market		ITCH Multicast	ITCH MDF	ITCH MDFA	FIX MD
Standard feed	TFEX 5 bid/offer and other price feeds	✓ 1.1	✓ 1.2	×	✓ 3.1
Additional Feed	TFEX News	×	×	✓ 2.2	✓ 3.2

ITCH Market Data: UDP Multicast vs TCP

	TCP Unicast	UDP Multicast
Guarantee Deliverables	Yes	No
Data-level Management	Flexible	Inflexible
Connection Management	Straight forward, less complexity	Need to develop mechanism to handle missing packets
Suitable for	SETNET3 and Colocation	Colocation or separated SETNET3 link ** Using multicast via SETNET3 might lost some sequences during microburst. Member's applicable should be able to recover the missing sequence, e.g. using TCP/IP as a backup, via redundancy multicast
Bandwidth Usage	Based on numbers of TCP users	Single copy + redundancy

19.2 Message Protocol Comparison

	ITCH (TCP)	ITCH (UDP)
Message encoding	Binary encoded	Same as ITCH (TCP)
Java client library	Provided (version 11+)	Connectivity: Not support Message conversion: Provided (version 11+)
Gateway	Pre-defined by exchange	Not applicable *(Network multicast)*
Login	Required	Not required
Subscription	Pre-defined by exchange	Pre-defined by exchange
Snapshot	Snapshot via Glimpse server *(Snapshot for all data)*	Snapshot via Glimpse server *(Snapshot for all data)*
Recovery	Login and recovery using last sequence	• Redundant message from another multicast copy • Recovery missing sequence via Re-Request server

19.3 Technical Comparison

	ITCH Multicast	ITCH TCP/IP	FIX
Required Users / Channel	No user for live feed. 1 Glimpse user for snapshot. Recommend to have backup channel either another multicast copy or ITCH TCP.	1 ITCH user for live feed 1 Glimpse user for snapshot	1 FIX user
Connectivity	Co-location Separated SETNET3 link	Co-location SETNET3 Group 1 and 2	Co-location SETNET3 Group 1 and 2

	ITCH Multicast	ITCH TCP/IP	FIX
Bandwidth Requirement	40 Mbps	5 Mbps for each market	10 Mbps per market
Throttle Out	No	Yes. To avoid the burst of market data messages to affect order messages	
Latency (Measure at SET gateway)	No latency different between ITCH and FIX when message is released from SET Gateway. However, other factors, e.g., network protocol, message size, programming, and infrastructure, might impact latency at client side.		
Data Content	- Only standard level of bids/offers (10 for SET, 5 for TFEX) - Exclude news	**SET:** Bid/offer level is configurable to be 5 levels or 10 levels **TFEX:** Bid/offer level is 5 levels	
Snapshot Support	Yes, via Glimpse	Yes, via Glimpse	Yes
Replay Support	Yes, via re-request server	Yes, by specifying expected message sequence.	Yes, only trades and news

20 Order and Trade ID, Data Type

20.1 Order and Trade ID

The Order ID and Match ID is 8 bytes binary value and is displayed as 16 char hexadecimal.
The Order ID is unique under combination of Order ID and Orderbook and side.
The Match ID is unique under combination of Match ID and side which is applicable for normal trades and trade reports.

	SET CONNECT System
Order ID - pattern	8-byte binary value Must be presented as a 16-char hexadecimal e.g., ABCDEF100000002A
Order ID - uniqueness	Unique under combination of Order ID + Orderbook + Side
Match ID - pattern	8-byte binary value Must be presented as a 16-char hexadecimal e.g., ABCDEF100000002A
Match ID - uniqueness	Unique under combination of Match ID + Side

Guideline order and deal pattern when contact SET Support (separate by "-").

1. Order pattern: orderbook-side-orderid e.g., "765263-B-ABCDEF100000002A"
2. Deal pattern: side-matchid e.g., "S-12CDEF100000002A"

20.2 OUCH and ITCH Data Type, Length

1. Instrument Series can be up to 20 character length. The system has to support this length, including display, and reports
2. The others, please see OUCH and ITCH specification.

ⓘ Stock symbol may include alphabets, number, hyphen, full stop, &

21 Operation Timetables (Draft)

The operating timetable is shown as below. In summary, the clients should connect to the servers after 6:00 a.m. BKK time and disconnected after your received data is end of transmission.

21.1 Main System Time Table

No.	Time (BKK Time)	Description
1	06:00	Members can log on
2	06:30	Start sending News feed
3	22:40	Stop sending News feed - Equity
4	03:05	Stop sending News feed - TFEX
5	03:05	Equity market and TFEX Day market send cleared trade statistics message
6	03:20	Members logout
7	03:30	Servers are stopped (clients will be disconnected)

21.2 Equity Market Time Table

Apart from Trading Session in Section 9.1, Operation time table of Equity Market are below.

Remark: All files generated are snapshot from realtime data, e.g. reporter1, reporter3

No.	Time (BKK Time)	Description
1	After morning logon	Client gets updated sign “L” for cancel long order due to CA
2	17:00	SET/mai market are closed
3	17:05 - 17:30	SET disseminate reference price and new/update instrument series (if any)* All CA sign posting
4	17:30	Next trading day’s reference data ready

EOD Files schedule

No.	Time (BKK Time)	Description
1	17:30	Next trading day's reference data ready
2	17:25	reporter1.zip ready for download at SET Portal
3	17:30	reporter2.zip ready for download at SET Portal
4	17:35	reporter3.zip ready for download at SET Portal
5	18:00	eq_cashbalance ready for download at SET Portal
6	18:30	member.zip (End of month only) ready for download at SET Portal

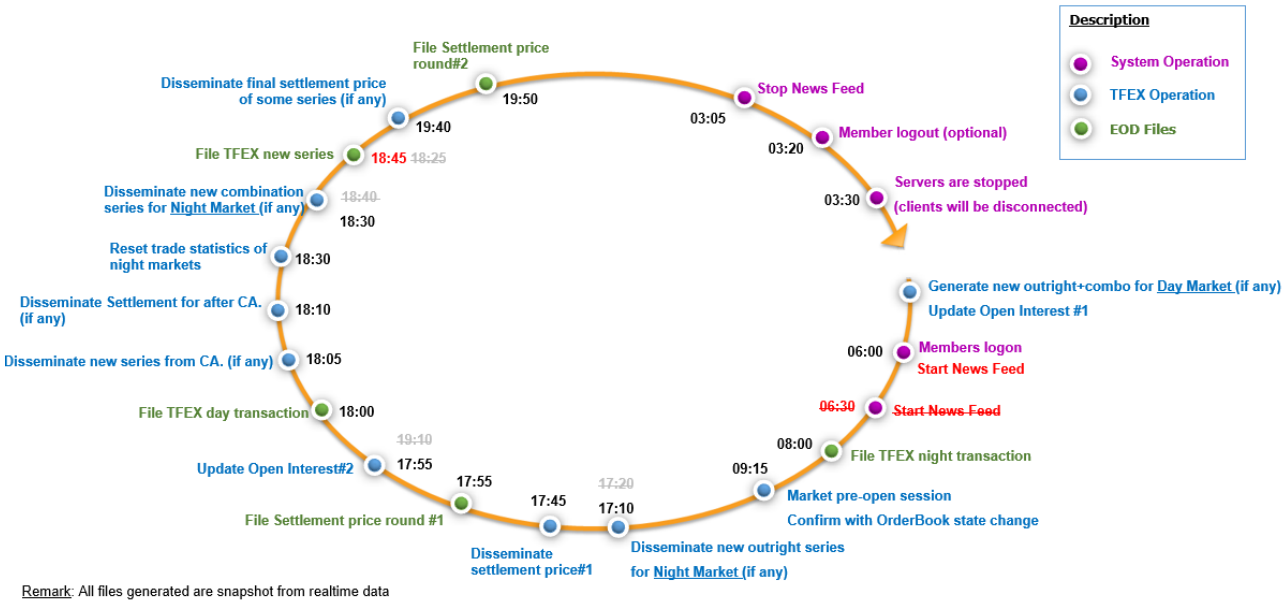
21.3 Live Market Time Table

Apart from Trading Session in Section 9.2, Operation time table of Live Market are below

No.	Time (BKK Time)	Description
1	06:00	Members logon
2	09:30	LIVE market is Pre-Open
3	11:00	LIVE market is closed
4	17:05 - 17:30	LIVE disseminate reference price and new/update instrument series (if any)* All CA sign posting
5	17:30	Next trading day's reference data ready

21.4 TFEX Market Time Table

Apart from Trading Session in Section 9.2 and 9.3, Operation time table of TFEX are below.



Remark: All files generated are snapshot from realtime data

No.	Time (BKK Time)	Description
1	After morning logon	Client gets updated open interest; new outright futures/options series (if any); and restored trade statistics of markets which have night trade.
2	17:10	TFEX disseminate new outright futures/options series for night market (if any)

No.	Time (BKK Time)	Description
3	17:55	TFEX disseminate open interest
4	18:05	TFEX disseminate new series from CA. (if any)
5	18:30	TFEX sends cleared trade statistics message of markets which have night trade
6	18:30	TFEX disseminate new combination series (if any)

EOD Files schedule

No.	Time (BKK Time)	Description
1	17:55	tfex_settlementprice_r1 ready for download at SET Portal
2	18:00	tfex_transaction_day.zip ready for download at SET Portal(TFEX_Transaction_day.zip : order, quote, deal, trade report transaction files during day transaction)
3	18:45	tfex_newseries_profile ready for download at SET Portal (include series profile for new series and CA)
4	19:50	tfex_settlementprice_r2 ready for download at SET Portal
5	08:00 (next day)	tfex_transaction_night.zip ready for download at SET Portal (TFEX_Transaction_night.zip : order, quote, deal, trade report transaction files during night transaction)

22 Non-Functional Scenario

22.1 SET CONNECT - Gateway Failover

Gateway	Operating mode	When gateway is not available
OUCH	Primary-Standby (SoupBinTCP)	1. Connect to the standby OUCH gateway (pre-defined by SET*) 2. Login Request with values according to OUCH spec 2.1.2 - Requested Session - Request Sequence Number (must specifies the next sequence number)** 3. Check recovery outbound message 4. If the client chooses to resend the messages, the server will reject the request with the reason of duplicate token if the server has received those messages. 5. After the recovery, client can send new requests and receive responses normally. **Clients must connect to only the pre-defined servers. Outbound messages will not be replayed if connecting to wrong servers.* ***Client can request for replay only messages lost from the main application. It is not allowed to request for replay from the beginning of the day as a normal automatic recovery.*
FIX Order Entry **FIX Drop Copy**	Primary-Standby (FIXT1.1)	1. Connect to standby the FIX gateway (predefined by SET*) 2. Recovery according FIXT.1.1 standard. Please see FIXOE spec section 2.11, 2.12** 3. After the recovery, client can send new requests and receive responses normally. **Clients must connect to only the pre-defined servers. Outbound messages will not be replayed if connecting to wrong servers.* ***Client can synchronize the sequence number and request to resend messages only the lost messages. It is not allowed to request for replay from the beginning of the day as a normal automatic recovery.*
ITCH Multicast (UDP Multicast)	Active-Active (MoldUDP64)	1. Rejoin to the other multicast IP (pre-defined by SET) 2. Check missing sequence 3. Recover messages from Re-request server ⓘ Please see detail in SET CONNECT ITCH Specification - ITCH Client Development (ITCH Multicast) section.
ITCH Re-request (UDP Unicast)	Active-Active (MoldUDP64)	1. Connect to the other ITCH Re-request gateway (pre-defined by SET). 2. Send a re-request packet which consists of Session ID, Expected Sequence Number and Message Count to re-request server.

Gateway	Operating mode	When gateway is not available
		3. Check recovery market data messages. ⓘ Please see detail in SET CONNECT ITCH Specification - ITCH Client Development (ITCH Multicast) section.
ITCH MDF ITCH MDFA (Price feed) (TCP)	Active-Active (SoupBinTCP)	1. Connect to the other ITCH MDF/MDFA gateway (pre-defined by SET). 2. Send Login request with specific Sequence Number. 3. Check recovery market data messages. 4. After the recovery, client can receive updated messages as normal. ⓘ Please see detail in SET CONNECT ITCH Specification - ITCH Client Development (ITCH MDF and MDFA for Price Feed) section.
ITCH Glimpse (TCP)	Active-Active (SoupBinTCP)	1. Connect to the other ITCH Glimpse gateway (pre-defined by SET). 2. Send Login request with Sequence Number=1. 3. Check snapshot market data messages.
ITCH MDFA News (TCP)	Active-Active (Apr-2022) (SoupBinTCP)	1. Connect to the other ITCH MDFA gateway (pre-defined by SET). 2. Send Login request with specific Sequence Number. 3. Check recovery market data messages. 4. After the recovery, client can receive updated messages as normal. ⓘ Please see detail in SET CONNECT ITCH Specification - ITCH Client Development (ITCH MDFA for News) section.
FIX MD	Active-Active (FIXT1.1)	1. Connect to the other FIX MD gateway (pre-defined by SET). 2. Send requests as normal per FIX standard. Only Trade and News messages can be recovery. 3. Check snapshot and recovery market data messages as per request.

22.2 SET CONNECT - Site Failover

Client can connect and recovery by using the same step as topic 21.1 SET CONNECT – Gateway Failover.

22.3 Member system or network failure

In case of member's system or network failure. Client must be able to recover the system and resume trading using latest sequence (connect using "sequence = 1" is not allowed without permission from SET).

22.4 Load Test

Member's system can send load at least 50-100 TPS, depends on member's capacity and throughput requirement.

22.5 Gateway Reconnection

For OUCH, ITCH TCP, Glimpse, FIXMD

Scenario	Reconnection
Client receives LoginRejected for any reasons, e.g., incorrect username or password, user is locked, user is suspended.	For the first login of the day reconnection is not allowed. Otherwise, client may automatically reconnect with 1-minute interval of a logon not more than 30 attempts. After that client have to try reconnecting manually to check if the problem has been resolved.
To prevent too many frequent reconnect attempts to the server	Client must NOT connect to the server more frequent than a configurable delay of n seconds from both previous successful and failed attempts. (n >= 10 seconds)
Concurrent logon handling: Clients can manually prevent their applications from concurrent logon unintentionally.	If case the client's applications concurrently logon with the same user, the latest successful logon attempt will cause the current session logged out.

For FIXOE, FIXDC

Scenario	Reconnection
Client receives LoginRejected for any reasons, e.g., incorrect username or password, user is locked, user is suspended.	For the first login of the day reconnection is not allowed. Otherwise, client may automatically reconnect with 1-minute interval of a logon not more than 30 attempts. After that client have to try reconnecting manually to check if the problem has been resolved.
To prevent too many frequent reconnect attempts to the server	Client must NOT connect to the server more frequent than a configurable delay of n seconds from both previous successful and failed attempts. (n >= 10 seconds)

23 Transaction cross protocol

	Original protocol	Changed protocol	Result
Update order	OUCH	FIX	Not support
	FIX	OUCH	Not support
Cancel order	OUCH	FIX	Allowed
	FIX	OUCH	Allowed
Update trade	OUCH	FIX	Allowed
	FIX	OUCH	Allowed

Scenario 1 Update order cross protocol

Scenario 1.1: Enter Order via OUCH then update order via FIX – Not support

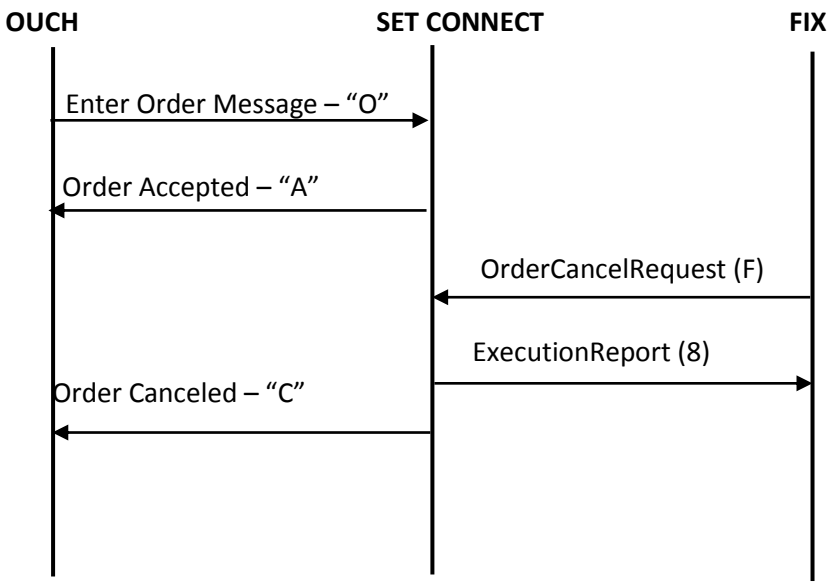
Work around: Cancel via FIX by order ID and then insert new order

Scenario 1.2: Enter Order via FIX then update order via OUCH – Not support

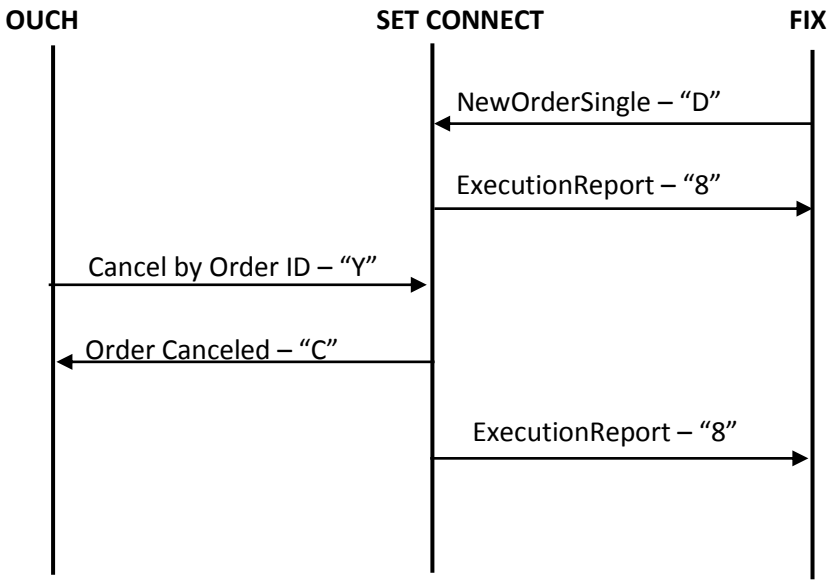
Work around: Cancel via OUCH by order ID and then insert new order

Scenario 2 Cancel order cross protocol

Scenario 2.1: Enter Order via OUCH then cancel order via FIX(Cancel by OrderId)



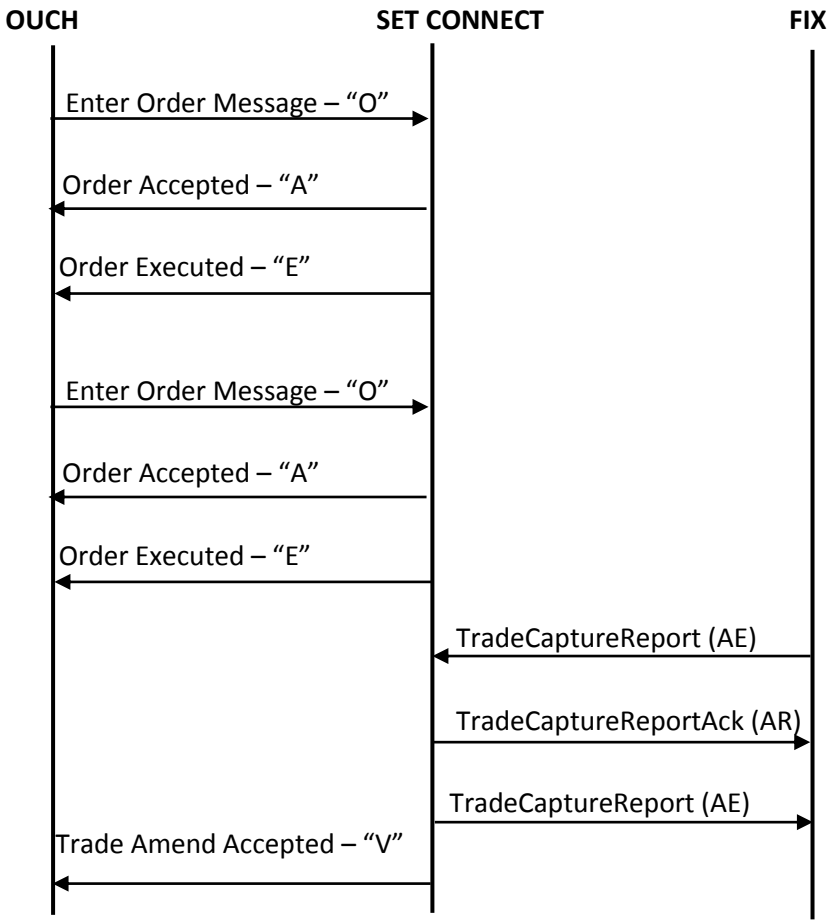
Scenario 2.2: Enter Order via FIX then cancel order via OUCH(Cancel by OrderId)



Scenario 3 Update trade cross protocol

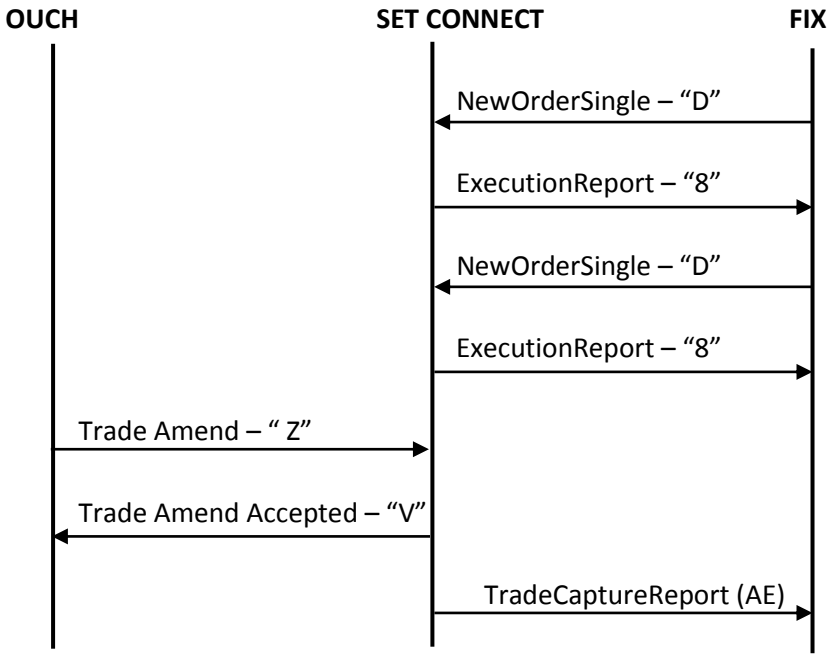
Scenario 3.1: Update trade :

Enter order and match via OUCH then update trade via FIX



Scenario 3.2: Update trade :

Enter order and match via FIX then update trade via OUCH (TBD)



24 Password

24.1 Change password

	Change by protocol (Change via API)	Change by NCD Admin of Member
OUCH	-	Yes
ITCH MDF, Glimpse (SoupBinTCP)	-	-
ITCH MDFA	-	Yes
FIX OE/DC/MD	Yes (Logon message)	Yes
NCD	Yes	Yes

ⓘ ITCH MDF, Glimpse password is managed by exchange.
ⓘ ITCH Multicast does not require any authentication.

24.2 Password policy

1. Minimum length 8 characters
2. Password will be combinations of character types:
   2.1. Letters
   2.2. Numbers
   2.3. Special character*
3. Account lock – after fail login 5 attempts **
4. Password history: 30 calendar days

For NCD web user

5. Force change password after reset by SET market operator

Additional policy

~~1. Force change if changed by SET market operator~~

1. Password age recommendation to member consideration (no enforce by system)

* Not support special character #, &, +, %, \
Minimum required special character are: ! @ $?
Special character can be in any password string position i.e. $Abc@123 ?Abc123! @Abc?23$

** Applicable to user type as follow.

1. Trading OUCH user
2. Trading FIX user
3. Backup Terminal – NCD
4. Drop copy - FIX
5. Market Data -FIX
6. Market Data – ITCH MDFA
7. PTR UI

Advertisement user/password policy

Manage and regulate under SETPortal policy.

25 Short Sell

Detail information of short sell, please visit SET Website:
https://media.set.or.th/rulebook/regulation/%E0%B8%AB%E0%B8%A5%E0%B8%B1%E0%B8%81%E0%B9%80%E0%B8%81%E0%B8%93%E0%B8%91%E0%B9%8C%E0%B8%81%E0%B8%B2%E0%B8%A3%E0%B8%82%E0%B8%B2%E0%B8%A2%E0%B8%8A%E0%B8%AD%E0%B8%A3%E0%B9%8C%E0%B8%95.pdf

Short sell price validation is a control implemented both Exchange and Member's system
System support 3 category

- Zero plus Tick
- Uptick
- No validation

Uptick price validation implementation on member front office is currently optional.

26 Tick Size

The Exchange disseminate AOM Tick size table through market data ITCH and FIX protocol.

For more information, please visit SET Website:
https://media.set.or.th/rulebook/regulation/PracticeGuidelineregardingTrading_Clearing_and_SettlementofSecuritiesintheExchange.pdf

27 Investor type

Investor type can be classified as follows:
(1) investment for accounts of Members or Non-member Securities Company (Principal)
(2) foreign client (Foreign)
(3) clients who are asset management companies, banks, capital companies, non-life insurance companies, life insurance companies, juristic persons in the type of corporation, private funds, government pension funds, provident funds or other juristic persons of the same nature (Institution)
(4) clients other than the three types above (Customer)

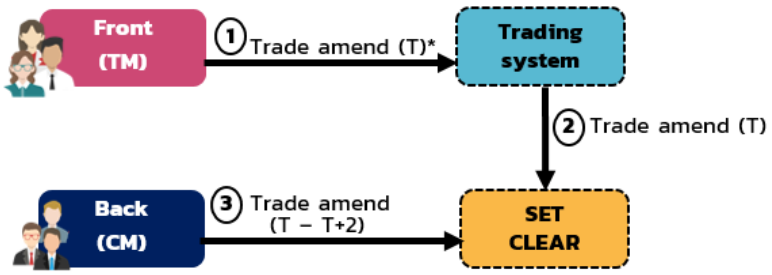
For more information, please visit SET Website:
https://media.set.or.th/rulebook/regulation/PracticeGuidelineregardingTrading_Clearing_and_SettlementofSecuritiesintheExchange.pdf

28 TFEX Trading Protection Limit (for order and quote)

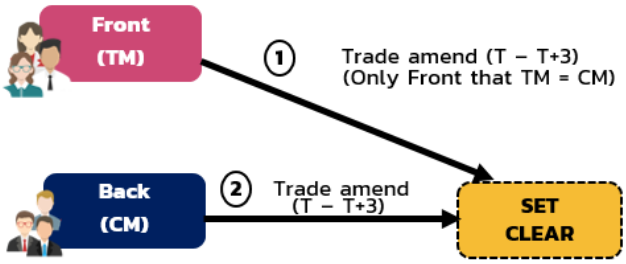
Please follow information in TFEX website:
https://weblink.set.or.th/rulebook/#/regulation/content/29781?lang=en

29 Trade Rectify Model

For Equity market



For Derivatives market



ⓘ TM is Trading Member
ⓘ CM is Clearing Member

30 Miscellaneous

30.1 Identify new list stocks

Please see the detail in SET CONNECT ITCH Specification.

30.2 Lower/Upper price limit for long term suspension stock

Lower/Upper price limit for long term suspension stock is 0.01/21474.

30.3 TFEX Position limit

Position limit calculation is considered using underlying and/or financial product criteria. For more details, please see SET_CONNECT_Guideline_PositionLimit

30.4 Maximum volume and value for Automated Order Matching (AOM)

Each bid or offer shall not be more than 20 million units of such securities in volume and shall have a total value of not more than Baht 500 million. Please follow the updated information in SET website:
https://media.set.or.th/rulebook/regulation/PracticeGuidelineregardingTrading_Clearing_and_SettlementofSecuritiesintheExchange.pdf

Maximum volume and value for each stock may be different.

30.5 Combination matching

Combination matching price may be outside price limit. By design, the matching of 2 combination orders or the matching of combination order and outrights can make the price to be outside price limit. However, this case can occur when the outright price and combo price are almost at the end of price limit. (Rare case)

Example 1: Matching of 2 combination orders can make the outright price to be outside price limit.

Step: #1 - Enter Bid for USDJ21K21 1@-2.43

INSTRUMENT		MARKET				TRADE INFORMATION	TRADE INFORI
ID	TSS	BQTY	BID	ASK	AQTY	PL LOW	PL HIGH
USDJ21	MORNING_D					29.68000	32.14000
USDK21	MORNING_D	10	31.20000			29.71000	32.17000
USDJ21K21	MORNING_D #1	1	-2.43000			-2.43000	2.49000

Floor Ceiling

Then, #2 - Enter Ask for USDJ21K21 1@-2.43

⇒ Match with Combo Bid #1

⇒ Due to combo matched with combo, the system will generate the matching price of 2 outrights automatically which may be outside price limit.

Ticker:

INSTRUMENT ID	MATCH ID	QTY	PRICE	TIME	DEAL SOURCE
USDJ21K21	66EE1BC300000001	1	-2.43000	4/21/21 8:36:08 AM	Combination order
USDK21	66EE1BC300000002	1	29.89000	4/21/21 8:36:08 AM	Combination order
USDJ21	66EE1BC300000003	1	32.32000	4/21/21 8:36:08 AM	Combination order

The outright price generated by system is higher than upper limit (32.14)

Example 2: Matching of combination order vs 2 outrights can make the combo price to be outside price limit.

Step:

#1 - Enter Ask for GFM21 10@26000

#2 - Enter Bid for GFQ21 10@27000

Equivalent to have Bid order for GFM21Q21 10@1000

INSTRUMENT		MARKET				TRADE INFORMATION	
ID	TSS	BQTY	BID	ASK #1	AQTY	PL LOW	PL HIGH
GFM21	AFTERNOON_D			26,000.00	10	23,400.00	28,600.00
GFQ21	AFTERNOON_D #2	10	27,000.00			23,490.00	28,710.00
GFM21Q21	AFTERNOON_D					-100.00	300.00

Floor Ceiling

Then,

#3 - Enter Ask for GFM21Q21 1@Mkt Price

⇒ The following trades are created.

GFM21: ORD#1 and ORD#3

GFQ21: ORD#2 and ORD#3

Ticker:

INSTRUMENT ID	MATCH ID	QTY	PRICE	TIME	DEAL SOURCE
GFM21	670BA3C300000003	1	26,000.00	5/12/21 12:56:20 PM	Matched by system, automatically
GFQ21	670BA3C300000004	1	27,000.00	5/12/21 12:56:20 PM	Matched by system, automatically
GFM21Q21	670BA3C300000005	1	1,000.00	5/12/21 12:56:20 PM	Combination order

Combo price is generated at 1,000 which is higher than upper limit.

30.6 Equilibrium Price

The Trading System shall calculate opening prices or closing prices in accordance with the rules. For more information please visit SET Website:
https://media.set.or.th/set/Documents/2023/Jan/revised_trading_criteria_SET_EN.pdf

However, the equilibrium price from auction uncross may be higher than ceiling 1 tick or lower than floor 1 tick.

These are steps for Equilibrium price (EP) calculation in NASDAQ system.

Step 1 Maximize executed quantity
Step 2 Minimize surplus quantity
Step 3 Let market surplus decide
Step 4 Choose price closest to reference price

Additional algorithm in NASDAQ system:

- The price used in selection of EP are all valid price ticks between and including the highest limit order price plus one tick, and the lowest limit order price minus one tick.
- Since NASDAQ baseline software separate function in EP calculation and price limit validation, therefore there may be scenario as follows.

If highest limit price = ceiling -- > EP may equal ceiling + 1 tick

If lowest limit price = floor -- > EP may equal floor -1 tick

Example. EP price outside Ceiling & Floor

Example : Series A

- Reference price = 10
- Ceiling & Floor 30% = 13 & 7
- Tick size = 0.01

The price used in selection of EP are all valid price ticks between and including the highest limit order price **plus one tick,** and the lowest limit order price **minus one tick.**

bid		ask	
300	Mkt	Mkt	100
100	**13.00**	**13.00**	100
100	12.98		

Mkt bid = highest limit order + 1 tick
= 13 + 0.01
= 13.01

Mkt ask = lowest limit price - 1 tick
= 12.98 - 0.01
= 12.97

TT bid	Bid	price	Ask	TT ask	Matched vol	surplus
	300	Mkt				
★ 300		13.01		200	200	100
400	**100**	13.00 ceiling	**100**	200	200	200
400		12.99		100	100	300
500	**100**	12.98		100	100	400
500		12.97		100	100	400
500		12.96		-	-	500
		Mkt	**100**			

EP = 13.01 [higher than ceiling 1 tick]
✓ Max matched quantity (200)
✓ Min surplus (100)

Confidential for IT Broker Meeting Only

Revision History

Release Date	Effective Date	Version	Change Summary
30-Oct-2020	TBD	0.1	Initial document
22-Jan-2021	TBD	0.2	Update Drop Copy Solution (remove OUCH DC) Update REST API in Gateway list Update 5.1 States and display Update 19.2 Character length Update 20. Operation time table Add 22. Non-Functional scenario Add 23. Transaction cross protocol
5-Mar-2021	TBD	0.3	SET order type & Validity -Add validity cancel
2-Apr-2021	TBD	0.4	Update 5.1 State and display of TFEX market. Update 5.2 Trading Halt and Suspend Update 9.2 Trading Session – TFEX Day Market Update 10. Corporate Actions Update 18.1 Market Data Gateway (Picture)
28-May-2021	TBD	0.5	Update: 2. Participant and User Structure 3.2 Equity Market Structure 4.2 Options 5.1 States and display 5.2 Trading Halt and Suspend (Draft) 6.1.1 SET order type & Validity 6.1.2 TFEX order type & Validity 6.3.1 Update Orders 8.Trade Report Management 9.4 Trading Session – Allowed requests 10.Corporate Actions - Remove Corporate action XI, XP 11.Dates and Sign 14.Unintentional Crossing Prevention 15.2 Placing Order 17.1 Drop Copy Solution 19.2 OUCH and ITCH Data Type, Length 20.Operation Timetables (Draft) New: 5.3 Orderbook Circuit breaker (OBCB) 7.3 Market maker performance measurement (Allows both order & quote) 9.4 Trading Session – Allowed requests 13.Advertisement 24.Password

Release Date	Effective Date	Version	Change Summary
			25.Short Sell 26.Trader ID Naming Convention 27.Tick Size 28.Investor type 29.Trading Protection Limit (for order and quote) 30.Trade Rectify Model 31.Miscellaneous
5-Jul-2021	TBD	1.0	1. SET CONNECT System Overview - update statement 2. User Types - update ITCH News to ITCH MDFA 3.2 Equity Market Structure - add new financial product(CBC,CBP) 3.3 Derivatives Market Structure - add new financial product (WEC, WEP) 4.3 Derivatives Warrant - update underlying length up to 6 characters 5.1 States and display - add session state STARTUP_E, PRE-OPEN_CB_E, CIRCUIT_BREAKER_E, FULLHALT_E - add session state PRE-OPEN_CB_D, CIRCUIT_BREAKER_D, FULLHALT_D 5.2 Trading Halt and Suspend (Draft) - update FULLHALT status, H, SP 6.1.2TFEX order type & Validity - add order type MTL for combo 7.1 Massquote - update statement 8.1 Trade Report Type - update file name 9.1 Trading Session – Equity market (Draft) - add market status STARTUP_E 9.2 Trading Session – TFEX Day market (Draft) - update time for market status SERIES_GEN_DAY_D and COMBO_GEN_DAY_D 9.4 Trading Session – Allowed requests - update table 10. Corporate Actions - move The corporate action process table to ITCH Spec. and FIX MD Spec. 11. Dates and Sign - add 11.1 Date 12. Equilibrium Price -remove

Release Date	Effective Date	Version	Change Summary
			17 Order Entry Protocol: OUCH vs FIX - Remove Multi-Level Quote - Add Technical comparison 17.1 Drop copy Solution - update drop copy filtering options 18.1 Market Data Gateway - Update picture 18.3 Technical Comparison - New Item 20.3 TFEX Market Time Table -update TFEX EOD File Schedule - tfex_newseries_profile 22. Transaction cross protocol -update "Update trade" 23.2 Password policy - add password policy 26. Trader ID Naming Convention - move to 12. Trader ID Remove item 31.2 IPO price
16-Aug-2021	TBD	1.1	Update 3.1 Market Structure Overview - add note. 3.2 Equity Market Structure - remove Financial Product CBC,CBP 3.3 Derivatives Market Structure - remove (TBD) 5.2 Trading Halt and Suspend - add more details and SUSPEND table - update allow actions for EXPIRE 21.1 SET CONNECT – Gateway Failover 21.2 SET CONNECT – Site Failover - add more details
13-Sep-2021	TBD	1.2	6.1.2 TFEX order type & Validity -Removed market to limit/stop market to limit order in Pre-trade session for outright and Open session for Combo. 6.3.1 Update Orders - Updated allowed values 18.1 Market Data Gateway -Added more details for UDP Multicast 21.1 SET CONNECT – Gateway Failover 21.2 SET CONNECT – Site Failover - Added more details for ITCH
4-Oct-2021	TBD	1.3	2. Participant and User Structure

Release Date	Effective Date	Version	Change Summary
			- Revise Configuration per request (User level) 5.1 States and display - Update State Id for TFEX 9. Trading Schedule - Additional information 9.2 Trading Session – TFEX Day market (Draft) - Update Market status 9.4 Trading Session – Allowed requests - Additional information for cancel on disconnect 14. Unintentional Crossing Prevention - Example of scenarios. 17.1 Drop Copy Solution - Update filtering for clarification 18.1 Market Data Gateway - Add Glimpses for MDFA in diagram 18.3 Technical Comparison - Update bandwidth for market data 19.1 Order and Trade ID - Pattern for contact SET Support 21.1 SET CONNECT - Gateway Failover - Additional information for MDFA
15-Nov-2021	TBD	1.4	2. Participant and User Structure - Add detail about “Logout and Connection Lost” 4.1 Futures - Correct underlying symbol for RSS3D Futures
20-Dec-2021	TBD	1.5	5.1 States and display -Revise table and move display state to 9.1 - 9.3 Trading Session -Add state DAYCLOSE_D, TRANSITIONx_D 5.2 Trading Halt and Suspend - Add new status PAUSE_E and PAUSE_D 6.1.2 TFEX order type & Validity - Add GTS information 9.1 Trading Session – Equity market (Draft) - Add display column 9.2 Trading Session – TFEX Day market (Draft) -Add display column -Add market status TRANSITION1_D, TRANSITION2_D and adjust time 9.3 Trading Session – TFEX Night market (Draft) -Add display column -Add market status TRANSITION1_D, TRANSITION2_D, TRANSITION3_D and adjust time

Release Date	Effective Date	Version	Change Summary
			9.4 Trading Session – Allowed requests - Remove logout option from auto cancel order if lost because default is keep. - Auto cancel order if lost will active follow by client's option - Add market status TRANSITIONx_D 27. TFEX Trading Protection Limit (for order and quote) - Remove table and add URL of TFEX website for follow this information
07-Mar-2022	TBD	1.5.1	2. Participant and User Structure - Adjust the description of - Action on disconnect/logout - Logout and Connection Lost 6.3.1 Update Orders - Add more detail for account(trading account) 10. Corporate Actions - Rewrite 23.2 Password policy - Add % and \ at not supported characters
25-Apr-2022	TBD	1.5.2	1. SET CONNECT System Overview -Add more information 2. Participant and User Structure - Rewrite Naming convention for API user - Add Market maker connectivity model 3.2 Equity Market Structure - Add Equity Live Market 5.1 States and display -Add Live market 5.2 Trading Halt and Suspend - Add Live market 6.1 Order Types and Validity - Add "In case tick size or round lot size changed, long order will be cancelled by exchange." - Add 6.1.2 Live Order type & Validity 7.1 Massquote - Remove “*SET is considering adjust scope from member to API user level.” - Add “Massquote is not available for combination order.” 9. Trading Schedule - Add 9.2 Trading Session – Live market 9.5 Trading Session – Allowed requests - Add Live market

Release Date	Effective Date	Version	Change Summary
			14. Unintentional Crossing Prevention - Add note 15 Odd-lot - Add 15.2 Odd-lot Flow 17 Order Entry Protocol: OUCH vs FIX - Add tentative latency roundtrip measurement 18.1 Market Data Gateway - Add more information 18.2 Message Protocol Comparison - Correct the snapshot for ITCH(TCP) 18.3 Technical Comparison - Correct Bandwidth Requirement 20 Operation Timetables (Draft) -Add 20.3 Live Market Time Table 21 Non-Functional Scenario - Add 21.5 Gateway Reconnection 29 Miscellaneous - Add 29.5 Maximum volume and value for Automated Order Matching (AOM)
06-Jun-2022	TBD	1.5.3	2. Participant and User Structure - Update note for disconnection, - Update Trading API user options 4.1 Futures - Update Naming convention 6.1.1 SET order type & Validity - Add odd-lot order type - Update cancellation by exchange 7. Pre-Trade Risk Management (PTRM) - New topic 8. Trade Report Management - Add TR Special Id in matching criteria 9. Trade Report Management - Add TR Special ID for matching criteria 16.1 (Odd-lot) Symbol and Display - Add the clarification about max order quantity on an odd-lot orderbook.
20-Jun-2022	TBD	1.5.4	9. Trade Report Management - Add recommendation to use the Trade Report Control Key with a 2-char value.
4-Jul-2022	TBD	1.5.5	6.1.1 SET order type & Validity - Add allow validity GTD and GTC in Open session (Odd-Lot, Auto-Matching) 6.4 Order log - New topic

Release Date	Effective Date	Version	Change Summary
			9. Trade Report Management - Add more detail for trade report control key 10. Trading Schedule - Add more information "Front Office must not send order to SET before receiving Market session Pre-Open of each stock 10.5 Trading Session-Allowed requests - Add allow update/cancel order - intermission 30.5 Combination matching - New topic
18-Jul-2022	TBD	1.5.6	6.1.1 SET order type & Validity - Update cancellation by exchange 6.1.2 LIVE order type & Validity - Add validity DATE and CANCEL
25-Jul-2022	TBD	1.5.7	21.2 Equity Market Time Table - Update Operation Time Table Picture – change time of start News Feed from 06:30 to 06:00 21.4 TFEX Market Time Table - Update Operation Time Table Picture – change time of start News Feed from 06:30 to 06:00
8-Aug-2022	TBD	1.5.8	6.1.1 SET order type & Validity - Update Iceberg order 6.1.3 TFEX order type & Validity - Update order type and validity
15-Aug-2022	TBD	1.5.9	9.1 Trade Report Type - Update the reference of Trade report type
19-Aug-2022	TBD	1.6	1.1 Connectivity Practice 1.2 Gateway reconnection 1.3 General rules and policy (IT related) - Add new 3 Topics 3.3 Derivatives Market Structure - Correct the example values of the Market Segment of spot underlying instruments.
7-Nov-2022	TBD	1.6.1	2. Participant and User Structure - Add more clarification of the connection lost detection.
21-Nov-2022	TBD	1.6.2	24.2 Clarify minimum required for special character and possible position in string password
26-Dec-2022	TBD	1.6.3	24.2 Password policy -Add more detail 10.1 Trading Session – Equity market -Update SAVECLOSING_E time

Release Date	Effective Date	Version	Change Summary
			10.5 Trading Session – Allowed requests -Add allow request in Intermission session for Odd Lot (EQSO)
24-Jan-2023	TBD	1.6.4	2. Participant and User Structure -Add Mass cancelation general practice
13-Feb-2023	TBD	1.6.5	3.2 Equity Market Structure - Update Market Segment form mai to MAI 10.4 Trading Session – TFEX Night market - Update currency futures trading session 19.1 Market Data Gateway - Update detail for UDP Multicast
3-Apr-2023	TBD	1.7	6.1.1 SET order type & Validity - Exchange will cancel long order in case of order price out of price limit range 6.1.3 TFEX order type & Validity - Exchange will cancel long order in case of order price out of price limit range 14. Advertisement -Add more details for REST API 24.2 Password policy - Update NCD and Additional policy 30.6 Equilibrium Price - New topic