PMD MARKET

FIX CERTIFICATION PROGRAMME

ORDER ENTRY STAGE

April 2025 , Version 1.6

PREPARATION BEFORE PARTICIPATION IN THE TEST

Institutions that want to receive FIX API Certification must test their software in BISTECH test environments before coming to the certification tests. They must follow the scenario steps in the certification documents according to the market they want to receive certification in and make sure that they can successfully complete all the steps.

In addition to the tests conducted in the BISTECH test environment, the institution can also use the FIX simulator application developed by BISTECH and offered to members so that institutions can test the scenario steps on their own software and successfully complete the process in a short time. Access to the FIX Simulator application and user manual files can be provided via the BIST Connect platform of the relevant test environment.

PMD MARKET

FIX CERTIFICATION PROGRAMME

ORDER ENTRY STAGE

…………………………………………………….. BISTECH FIX ORDER ENTRY STAGE CONNECTIVITY TEST

To attention to our Members:

The purpose of this test is to enable our members to test their systems in the current BISTECH FIX environment.

Certification process;

      1. System Connection Tests

      2. Order Enrty and Function Tests

           a. Basic level

           b. Advanced

      3. System Closing Tests

Institutions that have previously received BISTECH FIX certification for the Equity Market, Debt Securities Market or Futures and Options Market will be assumed to have passed the Basic Level. These institutions can skip the System Connection Tests, Basic Level and System Closing Tests sections and perform only the Advanced Level tests.

Institutions that have received a certificate for Equity Market, Fixed Income Market or Futures and Options Market and want to have a Basic Level certificate for PMD Market do not need to obtain a certificate again. Institutions that want to have an Advanced Level certificate for PMD Market must complete the Advanced Level sections.

Institutions that have not previously received BISTECH FIX certification are required to perform the steps in the System Connection Tests, Basic Level and System Closing Tests sections. The Advanced Level section depends on the preference of the institutions.

Please follow the steps below one by one and be sure to check the messages you receive at each step.

First, determine the expected effect when the order is sent to the system.

After the order or any request is sent to the system, both the completeness of the sent message and whether the response is processed correctly in the member system will be checked. After the checks, the appropriate option under each step will be marked to indicate whether the expected effect has occurred (Expected messages received / There is a problem with the messages).

In case of an unexpected situation, report the problem to the authorities immediately.

After filling out the section allocated to you in the last part of the test, submit it to Borsa Istanbul officials.

In case of disputes that may arise between members and their customers who do not use the optional order and transaction functions included in the BAP current trading rules and allowed to be used by the Stock Exchange with BISTECH FIX in their own FIX programs, the legal liability will entirely belong to the member.

For this reason, it is recommended that our members inform their customers about this issue and establish the appropriate legal basis between them and their customers.

It is entirely the responsibility of our members to ensure that the member system operates flawlessly.

SECTION 1: SYSTEM CONNECTION TESTS

1. *Logon with Password Change*
➢ Send the first Logon message of the day with sequence number 1. (Password=LLL)
➢ Receive Logout message from the system with "Password Expired" message. (SessionStatus=8 – Password Expired)

( ) Expected messages are received.   ( ) Problem with messages

➢ Send Logon message with Password Change. (554=LLL 925=MMM). Receive Logon message from the system with "Password Changed" status.

( ) Expected messages are received.   ( ) Problem with messages

2. *Logout Message*
➢ Send Logout message and receive Logout message from the system with "Logout Complete".

( ) Expected messages are received.   ( ) Problem with messages

3. *Logon Message with Reset Sequence Number Flag*
➢ Send Logon message with reset sequence number. (ResetSeqNumFlag=Y, SeqNum=1). Receive Logon message from the system with "Active" status. (SessionStatus=0 SeqNum=1)

( ) Expected messages are received.   ( ) Problem with messages

4. *Sending Resend Request Message*
Enter Order
➢ Send below orders to the system and receive Execution reports (Accepted):
  o AU_US_S_995.0_BIM_1K_DDMM BUY PRICE: 1360 Quantity: 5   **[ClOrdID=1]**
  o AU_US_S_995.0_BIM_1K_DDMM BUY PRICE: 1355 Quantity: 10   **[ClOrdID=2]**
  o AU_US_S_995.0_BIM_1K_DDMM BUY PRICE: 1350 Quantity: 15   **[ClOrdID=3]**

( ) Expected messages are received.   ( ) Problem with messages

Logout
➢ Send Logout message and receive Logout message.

( ) Expected messages are received.   ( ) Problem with messages

Executions

While user is logged out, orders that will match with user's orders will be entered to the system. Orders of the user will be executed and execution messages (Execution Report - Trade) will be written to the message queue of the user.

Logon and Resend Request
- ➢ Send Logon message to the system <u>without</u> resetting the sequence number and receive Logon message from the system.

( ) Expected messages are received.   (   ) Problem with messages

- ➢ Send Resend Request message to the system due the fact that higher sequence number than expected is received. Following Execution Report messages will be received from the system as response to the Resend Request:

  - ○ AU_US_S_995.0_BIM_1K_DDMM BUY PRICE: 1360 Quantity: 5 fully traded.
  - ○ AU_US_S_995.0_BIM_1K_DDMM BUY PRICE: 1355 Quantity: 10 fully traded.
  - ○ AU_US_S_995.0_BIM_1K_DDMM BUY PRICE: 1350 Quantity: 15 fully traded.

( ) Expected messages are received.   (   ) Problem with messages

5. *Logout*
- ➢ Send Logout message and receive Logout message.

( ) Expected messages are received.   (   ) Problem with messages

6. *Replying Resend Request Message*

Before user logs in to the system, expected sequence number on the server side will be decreased to a lower number manually. When user logs in to the system without resetting the sequence number, Resend Request message will be sent from the system.

Logon
➢ Send Logon message **without** resetting Sequence number and receive Logon message from system.

( ) Expected messages are received.   ( ) Problem with messages

➢ Resend request message will be received from the system right after the Logon message. Resend Request message must be replied according to below principals. System will not respond with any message if there is not a problem with resent messages.
  o Sequence Reset message with GapFillFlag=Y and NewSeqNum field should be sent instead of session messages that will be resent.
  o Application messages should be resent with PossDupFlag=Y and OrigSendingTime fields.

( ) Expected messages are sent.   ( ) Problem with messages

7. *Logout*
➢ Send Logout message and receive Logout message.

( ) Expected messages are received.   ( ) Problem with messages

SECTION 2 :

ORDER ENTRY AND FUNCTIONALITY

Information about the series to be used during the test is as follows:

System Connectivity Test and Basic Level	
Instrument	**Partition**
AU_US_S_995.0_BIM_1K_DDMM	6
AU_US_S_995.0_BOM_1K_DDMM	6
AU_TL_S_995.0_BIM_1K_DDMM	6
AU_TL_S_995.0_BOM_1K_DDMM	6
AG_TL_S_99.90_GOM_25K_DDMM	6
AG_US_S_99.90_GOM_25K_DDMM	6
AU_US_T_995.0_BIM_1K_DDMM	6
AU_US_S_999.9_BIM_1K_DDMM	6
AU_US_F_995.0_MIM_20.0G_DDMM	6

Advanced Level	
PD_EU_S_99.95_BIM_1K_DDMM	6
AU_US_S_995.0_BIM_1K_DDMM	6
AU_US_S_1000_NOM_12.34567K_DDMM	6
AU_US_S_999.90_LIM_429.25O_DDMM	6

Information about the series defined in the test environment (Security Definition, Security Status, Price Limits, etc.) can be obtained via the FIX Reference Data channel.

Notes

- ✓ Unless stated otherwise in order entries, orders must be sent with Limit PRICE, Good Till Cancel (GTC) and Portfolio. It is mandatory to fill in the AFK field for all order types.
- ✓ Software that does not use the OrderCancelReplace message can perform the order change function by canceling the existing order and entering a new order. In cases where time priority cannot be lost with an order change message, using Order Cancellation and New Order entry will cause the order to lose time priority.
- ✓ The AFK code assigned to members for portfolio account type orders to be entered within the scope of the scenarios will be PM-P.
- ✓ The date to be used instead of the DDMM expression in the asset codes for order entry will be the certification date (T0). For example, if the certification date is 29.03.2023; The security coded AU_US_S_995.0_BIM_1K_DDMM in the table above should be used as AU_US_S_995.0_BIM_1K_2903 in order submission.

DropCopy Connection

Connect to the DropCopy Port (will be given before test) with FIX DropCopy user. User should be stay connected during the test. After test is completed, message log file of DropCopy connection will be requested in addition to the message log files of FIX Order Entry connection.

> ➢ Send Logon message with resetting sequence number and receive Logon message from the system.

( ) Expected messages are received.   (   ) Problem with messages

BASIC LEVEL

CONTINOUS AUCTION

1. Enter orders listed below and receive Execution Reports (Accepted).

   i. AU_US_S_995.0_BOM_1K_DDMM– BUY – 1 Quantity – 1335 PRICE – Day **[ClOrdID=10]**

   ii. AU_US_S_995.0_BOM_1K_DDMM+1 – BUY – 2 Quantity – 1310,95 PRICE – Day**[ClOrdID=20]**

   iii. AU_US_S_995.0_BOM_1K_DDMM – BUY – 5 Quantity – 1333 PRICE – Day **[ClOrdID=30]**

   iv. AU_TL_S_995.0_BIM_1K_DDMM– BUY – 7 Quantity – 176.950,50 PRICE – Day **[ClOrdID=40]**

   v. AU_TL_S_995.0_BIM_1K_DDMM – BUY – 4 Quantity – 175.852,50 PRICE – GTC **[ClOrdID=50]**

   vi. AU_TL_S_995.0_BIM_1K_DDMM+1 – SELL – 6 Quantity – 179.550,50 PRICE – GTC **[ClOrdID=60]**

   vii. AU_TL_S_995.0_BOM_1K_DDMM – SELL – 3 Quantity – 173.700 PRICE – Day **[ClOrdID=70]**

   viii. AG_TL_S_99.90_GOM_25K_DDMM – SELL – 5 Quantity – 2245,10 PRICE – GTC **[ClOrdID=80]**

   ix. AG_US_S_99.90_GOM_25K_ DDMM – SELL – 9 Quantity – 17,23 PRICE – Day **[ClOrdID=90]**

( ) Expected messages are received. ( ) Problem with messages

2. Cancel the order below and check the Execution Report messages.

   i. (ClOrdID=40) AU_TL_S_995.0_BIM_1K_DDMM – BUY – 7 Quantity – 176.950,50 PRICE – Day **[ClOrdID=100]**

   ii. (ClOrdID=70) AU_TL_S_995.0_BOM_1K_DDMM – SELL – 3 Quantity – 173.700 PRICE – Day **[ClOrdID=110]**

( ) Expected messages are received. ( ) Problem with messages

3. Modify quantity and Price of below orders and receive Execution Report messages. (modified).

   i. (ClOrdID=30) AU_US_S_995.0_BOM_1K_DDMM – BUY – **8** Quantity – 1333 PRICE – Day **[ClOrdID=120]**

   ii. (ClOrdID=90) AG_US_S_99.90_GOM_25K_ DDMM – SELL – 9 Quantity nominal – **17,25** PRICE – Day **[ClOrdID=130]**

( ) Expected messages are received. ( ) Problem with messages

4. **AU_US_S_995.0_BIM_1K_DDMM** enter below orders and check the Execution Report messages.

  i. AU_US_S_995.0_BIM_1K_DDMM – BUY – 6 Quantity – 1325,85 PRICE – Day **[ClOrdID=140]**

  Check the Execution Report and Trade Capture Report messages regarding the order that matches the order entered by Borsa Istanbul.

  i. Trade 1: 3 Quantity 1325,85 PRICE

( ) Expected messages are received. ( ) Problem with messages

5. **AU_US_S_995.0_BIM_1K_DDMM** Enter the following order update into your partially traded order in the series and check that Execution Report messages are received correctly.

  i. (ClOrdID=140) AU_US_S_995.0_BIM_1K_DDMM – BUY – **5 Quantity*** – 1325,85 PRICE – Day **[ClOrdID=150]**

( ) Expected messages are received. ( ) Problem with messages

6. **AU_TL_S_995.0_BIM_1K_DDMM** enter the following order and check the Execution Report messages.

  i. AU_TL_S_995.0_BIM_1K_DDMM – BUY – 4 Quantity –176.850 PRICE – Day

    [ClOrdID=160]
  ii. AU_TL_S_995.0_BIM_1K_DDMM – SELL – 7 Quantity – 176.850 PRICE – Day

    [ClOrdID=170]

Check the Execution Report and Trade Capture Report messages of the following trade.

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* Your order, whose original Quantity was 6, was partially traded and was listed as 3 in the order book. When you change the Order Quantity to 5, the partial trade will be calculated and the Quantity in the order book will be updated to 2. In the Execution Report message, check that the LeavesQty field is 2 nominal (151=2) and that this Quantity is processed correctly in your system. (This warning is valid for members who use the order change message - Order Cancel Replace.)

   i.   Trade 1: 4 Quantity 176.850 PRICE

Cancel the order below and check that you receive the Order Cancel Reject message stating that the order has been cancelled.

   i.   (ClOrdID=160) AU_TL_S_995.0_BIM_1K_DDMM – BUY – 4 Quantity –176.850 PRICE – Day
         [ClOrdID=180]

( ) Expected messages are received. ( ) Problem with messages

7. **AG_US_S_99.90_GOM_25K_DDMM** enter the following order and check the Execution Report messages.

   i.   AG_US_S_99.90_GOM_25K_DDMM – BUY – 200 Quantity – 16,99 PRICE – Day.
        [ClOrdID=190]

   Make a Quantity change on the entered order and check that you receive the next Order Cancel Reject message stating that the maximum order Quantity has been exceeded.

   i.   (ClOrdID=190) AG_US_S_99.90_GOM_25K_DDMM – BUY – **10100 Quantity** – 16,99 PRICE – Day
         [ClOrdID=200]

   Change the security price on the entered order and check that you receive the Order Cancel Reject message when the security's PRICE is outside the PRICE limits.

   i.   (ClOrdID=190) AG_US_S_99.90_GOM_25K_DDMM – BUY – 200 Quantity – **18,85 PRICE** – Day
        [ClOrdID=210]

( ) Expected messages are received. ( ) Problem with messages

8. **AU_US_S_995.0_BOM_1K_DDMM** enter the following order and check the Execution Report messages.

   i.   AU_US_S_995.0_BOM_1K_DDMM – BUY – 16 Quantity – 1345 PRICE – Day
        [ClOrdID=220]
   ii. AU_US_S_995.0_BOM_1K_DDMM – SELL – 12Quantity – 1345 PRICE – Day**[ClOrdID=230]**

Check the upcoming Execution Report and Trade Capture Report messages for the trade below.

   i.   Trade 1: 12 Quantity 1345 PRICE

( ) Expected messages are received.   ( ) Problem with messages

9. **AU_US_S_995.0_BOM_1K_DDMM** Enter the following order change into your partially traded order in the series and check that Execution Report messages are received.

   i.   (ClOrdID=220) BUY – **12 Quantity**[*] – 1345 PRICE – Day
   [ClOrdID=240]

( ) Expected messages are received.   ( ) Problem with messages

10. **AU_US_T_995.0_BIM_1K_DDMM** Enter the following order into the series and check that you receive the Execution Report – Order Reject message stating that the order is an order entered in an invalid session.

   AU_US_T_995.0_BIM_1K_DDMM – SELL – 14 Quantity – 1350 PRICE – Day
   [ClOrdID=250]

( ) Expected messages are received.   ( ) Problem with messages

SINGLE PRICE SESSION

11. **AU_US_S_995.0_BIM_1K_DDMM** Before starting a single price session in the series, enter the order below and check that the Execution Report message is received. This order will not appear during the single PRICE session (14:00-14:15), and will be included in the order book again after the single price session.

   i.   AU_US_S_995.0_BIM_1K_DDMM – SELL – 8 Quantity – 1336 PRICE – Day
   [ClOrdID=260]

( ) Expected messages are received.   ( ) Problem with messages

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[*] Your order, whose original quantity was 16 Quantity, was partially traded and was listed as 4 Quantity in the order book. When you change the Order Quantity to 12 Quantity, your order will be completely eliminated because your order was previously traded with 12 Quantity. In the Execution Report message, check that there is 0 Quantity in the LeavesQty field (151=0) and that this Quantity is processed correctly in your system. (Members who cannot make this order change must cancel the order.)

12. AU_US_T_995.0_BIM_1K_DDMM enter the following orders and check the Execution Report messages.

    i.   AU_US_T_995.0_BIM_1K_DDMM – SELL – 8 Quantity – 1340 PRICE – Day
[ClOrdID=270]

(   ) Expected messages are received.   (   ) Problem with messages

Change the order entered above in the series and see that the price and Quantity of the order can be updated within a single price session.

ii. (ClOrdID=260) AU_US_T_995.0_BIM_1K_DDMM – SELL – **10 Quantity** – **1338 PRICE** – Day
[ClOrdID=280]

(   ) Expected messages are received.   (   ) Problem with messages

Cancel the order updated above and see that the order can be canceled within a single price session.

iii. (ClOrdID=270) AU_US_T_995.0_BIM_1K_DDMM – SELL – 10 Quantity – 1338 PRICE – Day
[ClOrdID=290]

(   ) Expected messages are received.   (   ) Problem with messages

FIXING SERIES

13. AU_US_F_995.0_MIM_20.0G_DDMM Enter the following order into the series and check that the Execution Report message is received.

    i.   AU_US_F_995.0_MIM_20.0G_DDMM – BUY – 50 Quantity – (-16,85) PRICE – Day

[ClOrdID=300]

(   ) Expected messages are received.   (   ) Problem with messages

14. AU_US_F_995.0_MIM_20.0G_DDMM serisine aşağıdaki emirleri giriniz ve girilen emirlerin PRICE limitleri dışında olduğuna ilişkin Execution Report – Order Reject mesajının alındığını kontrol ediniz.

    i.   AU_US_F_995.0_MIM_20.0G_DDMM – BUY – 50 Quantity – (-21) PRICE – Day**[ClOrdID=310]**

ii.   AU_US_F_995.0_MIM_20.0G_DDMM – BUY – 50 Quantity – 21 PRICE – Day
[ClOrdID=320]

( ) Expected messages are received.   ( ) Problem with messages

SECTION 3: CLOSING THE SYSTEM

İLERİ VALÖR(T+1) SESSION

KMP_SPOT (TRY) market is transferred to T+1 KMP_SUREKLI_ISLEM session. Please check that orders not entered as T+1 are not accepted during this transition.

15. AU_TL_S_995.0_BIM_1K_DDMM+1 (T+1) Enter the following orders into the series and check that Execution Report messages are received.

i. AU_TL_S_995.0_BIM_1K_DDMM+1 – BUY – 9 Quantity –176.850,5 PRICE – GTC

   [ClOrdID=340]

ii. AU_TL_S_995.0_BIM_1K_DDMM+1 – SELL – 4 Quantity – 176.850,5 PRICE – Day

   [ClOrdID=350]

Check the upcoming Execution Report and Trade Capture Report messages for the trade below.

i. Trade 1: 4 Quantity 176.850,5 PRICE

( ) Expected messages are received.   ( ) Problem with messages

16. Logout Message

➢ A logout message is sent and a logout message is received from the system with the description "Logout Complete".

( ) Expected messages are received.   ( ) Problem with messages

FAILOVER TO SECONDARY GATEWAY (ORDER ENTRY)

➢ *The connection is terminated from the Primary Gateway IP and Ports and a connection is established to the given Secondary Gateway IP and Ports.*

➢ The Logon message is sent and the Logon message is received from the system without resetting the sequence number..

( ) Expected messages are received.   ( ) Problem with messages

➢ The following orders are entered in the Backup Gateway and Execution Report messages are received:

   o **AU_US_S_995.0_BIM_1K_DDMM+1** BUY PRICE: 1345 Quantity: 5

   [ClOrdID=2000]

( ) Expected messages are received.   ( ) Problem with messages

FAILOVER TO SECONDARY GATEWAY (DROP COPY)

The connection from the primary DC Gateway IPs is terminated. While the user is in the Logout state, orders that match the user orders are entered into the system. User orders are executed and execution reports (Execution Report - Trade) are written to the user's message queue.

Drop copy connections are established in all partitions with the given Secondary Gateway IPs. The ports used in the primary gateway connection will be used.

> ➢ A Logon message is sent and a Logon message is received from the system without resetting the sequence number.

( ) Expected messages are received.   (   ) Problem with messages

> ➢ Since the Sequence number of the message coming from the server is higher than expected, a Resend Request message is sent to the system. It is seen that the missed messages are received from the system in response to the Resend Request message:
> - **AU_US_S_995.0_BIM_1K_DDMM+1** PRICE: 1345 Quantity: 5 fully traded.

( ) Expected messages are received.   (   ) Problem with messages

> ➢ The following order entries are made through the OE channel and it is checked that Execution Report messages are received in the secondary Drop Copy connections.
> - **AU_US_S_995.0_BIM_1K_DDMM+1** BUY PRICE: 1345 Quantity: 5

( ) Expected messages are received.   (   ) Problem with messages

NEXT DAY CONNECTION

Confirmation messages (Execution Report - Restatement) for these orders will be sent at the beginning of the day in order to notify that the orders (T+1) that are still valid are open in the system. In order to receive these messages, the system must be logged in without resetting the sequence number:

- Logon message, Sequence Number =1, ResetSeqNumFlag=N (34=1, 141=N or 'ResetSeqNumFlag-141' should not be sent at all).
- Logon message will be received successfully.

( ) Expected messages are received.   (   ) Problem with messages

- The Logon message coming from the system will be sent with a Sequence number beyond 1. In this case, the member system must send Resend messages and request these messages from the system. Check that messages are received in response to the Resend Request message.

(   ) Expected messages are received.   (   ) Problem with messages

Test Evaluation

Title of the Brokerage House	
Technical Staff Participated in the Test	
Exchange Official Participated in the Test	
General Evaluation (to be filled by BIST officials)	

Please contact with bistechsupport_autoticket@borsaistanbul.com for your questions.

Test Evaluation