



**CIRCULAR**

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To  
All Stock Exchanges

Sir / Ma'am,

**Sub: Broad Guidelines on Algorithmic Trading**

1. It has been observed that adoption of technology for the purpose of trading in financial instruments has been on a rise over the past few years. Stock brokers as well as their clients are now making increased usage of trading algorithm (hereinafter referred to as "algo").
2. Based on recommendations of Technical Advisory Committee (TAC) and Secondary Market Advisory Committee (SMAC), it has been decided to put in place the following broad guidelines for algorithmic trading in the securities market.

**Definition**

3. Algorithmic Trading – Any order that is generated using automated execution logic shall be known as algorithmic trading.

**Guidelines to the stock exchanges and the stock brokers**

4. Stock exchanges shall ensure the following while permitting algorithmic trading:
  - (i) The stock exchange shall have arrangements, procedures and system capability to manage the load on their systems in such a manner so as to achieve consistent response time to all stock brokers. The stock exchange shall continuously study the performance of its systems and, if necessary, undertake system upgradation, including periodic upgradation of its surveillance system, in order to keep pace with the speed of trade and volume of data that may arise through algorithmic trading.
  - (ii) In order to ensure maintenance of orderly trading in the market, stock exchange shall put in place effective economic disincentives with regard to high daily order-to-trade ratio of algo orders of the stock broker. Further, the stock exchange shall put in place monitoring systems to identify and initiate measures to impede any possible instances of order flooding by algos.
  - (iii) The stock exchange shall ensure that all algorithmic orders are necessarily routed through broker servers located in India and the stock exchange has appropriate risk controls mechanism to address the risk emanating from



algorithmic orders and trades. The minimum order-level risk controls shall include the following:

- a. Price check - The price quoted by the order shall not violate the price bands defined by the exchange for the security. For securities that do not have price bands, *dummy filters* shall be brought into effective use to serve as an early warning system to detect sudden surge in prices.
  - b. Quantity Limit check - The quantity quoted in the order shall not violate the maximum permissible quantity per order as defined by the exchange for the security.
- (iv) In the interest of orderly trading and market integrity, the stock exchange shall put in place a system to identify dysfunctional algos (i.e. algos leading to loop or runaway situation) and take suitable measures, including advising the member, to shut down such algos and remove any outstanding orders in the system that have emanated from such dysfunctional algos. Further, in exigency, the stock exchange should be in a position to shut down the broker's terminal.
  - (v) Terminals of the stock broker that are disabled upon exhaustion of collaterals shall be enabled manually by the stock exchange in accordance with its risk management procedures.
  - (vi) The stock exchange may seek details of trading strategies used by the algo for such purposes viz. inquiry, surveillance, investigation, etc.
  - (vii) The stock exchange shall include a report on algorithmic trading on the stock exchange in the Monthly Development Report (MDR) submitted to SEBI inter-alia incorporating turnover details of algorithmic trading, algorithmic trading as percentage of total trading, number of stock brokers / clients using algorithmic trading, action taken in respect of dysfunctional algos, status of grievances, if any, received and processed, etc.
  - (viii) The stock exchange shall synchronize its system clock with the atomic clock before the start of market such that its clock has precision of atleast one microsecond and accuracy of atleast +/- one millisecond.
5. Stock exchange shall ensure that the stock broker shall provide the facility of algorithmic trading only upon the prior permission of the stock exchange. Stock exchange shall subject the systems of the stock broker to initial conformance tests to ensure that the checks mentioned below are in place and that the stock broker's system facilitate orderly trading and integrity of the securities market. Further, the stock exchange shall suitably schedule such conformance tests and thereafter, convey the outcome of the test to the stock broker.

For stock brokers already providing algo trading, the stock exchange shall ensure that the risk controls specified in this circular are implemented by the stock broker.



Additionally, the annual system audit report for a stock broker, as submitted to the stock exchange, shall include a specific report ensuring that the checks are in place. Such system audit shall be conducted by Certified Information System Auditors (CISA) empanelled by stock exchanges. Further, the stock exchange shall subject the stock broker systems to more frequent system audits, if required.

6. The stock broker, desirous of placing orders generated using algos, shall satisfy the stock exchange with regard to the implementation of the following minimum levels of risk controls at its end -
  - (i) Price check – Algo orders shall not be released in breach of the price bands defined by the exchange for the security.
  - (ii) Quantity check – Algo orders shall not be released in breach of the quantity limit as defined by the exchange for the security.
  - (iii) Order Value check - Algo orders shall not be released in breach of the ‘value per order’ as defined by the stock exchanges.
  - (iv) Cumulative Open Order Value check – The individual client level cumulative open order value check, may be prescribed by the broker for the clients. Cumulative Open Order Value for a client is the total value of its unexecuted orders released from the stock broker system.
  - (v) Automated Execution check – An algo shall account for all executed, un-executed and unconfirmed orders, placed by it before releasing further order(s). Further, the algo system shall have pre-defined parameters for an automatic stoppage in the event of algo execution leading to a loop or a runaway situation.
  - (vi) All algorithmic orders are tagged with a unique identifier provided by the stock exchange in order to establish audit trail.
7. The other risk management checks already put in place by the exchange shall continue and the exchange may re-evaluate such checks if deemed necessary in view of algo trading.
8. The stock broker, desirous of placing orders generated using algos, shall submit to the respective stock exchange an undertaking that -
  - (i) The stock broker has proper procedures, systems and technical capability to carry out trading through the use of algorithms.
  - (ii) The stock broker has procedures and arrangements to safeguard algorithms from misuse or unauthorized access.



- (iii) The stock broker has real-time monitoring systems to identify algorithms that may not behave as expected. Stock broker shall keep stock exchange informed of such incidents immediately.
  - (iv) The stock broker shall maintain logs of all trading activities to facilitate audit trail. The stock broker shall maintain record of control parameters, orders, trades and data points emanating from trades executed through algorithm trading.
  - (v) The stock broker shall inform the stock exchange on any modification or change to the approved algos or systems used for algos.
9. The stock exchange, if required, shall seek conformance of such modified algo or systems to the requirements specified in the circular.
10. Stock exchanges are directed to:
- (i) take necessary steps and put in place necessary systems for implementation of the above within a period of one month from the date of this circular.
  - (ii) make necessary amendments to the relevant bye-laws, rules and regulations for the implementation of the above decision.
  - (iii) bring the provisions of this circular to the notice of the stock brokers of the stock exchange and also to disseminate the same on the website.
  - (iv) For stock brokers that are currently executing orders through algos, a period of three months is provided to the stock exchanges within which the approval process shall be completed and minimum risk controls shall be established, if not already done.
  - (v) communicate to SEBI, the status of implementation of the provisions of this circular in the Monthly Development Report.
11. This circular is being issued in exercise of powers conferred under Section 11 (1) of the Securities and Exchange Board of India Act, 1992 to protect the interests of investors in securities and to promote the development of, and to regulate the securities market.

Yours faithfully,

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