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SUMMARY

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CHANGE LOG

Version	Date	Description
1.0	September 1, 2017	First version
1.0.1	October 15, 2017	Update of the responsibility matrix – LiNe 5.0 (subsection 6.2.1 – User profiles)
1.0.2	November 30, 2017	1. Update of blocked profile (subsection 3.4.2 – Blocked profile) 2. Update of position transfers during the day (chapter 4.1.7 Measure Risk) 3. Update of creation of accounts and links in SINCAD (section 3.3 – Features and enhancements)
1.0.3	December 19, 2017	Creation of chapter 9 – Error code generated by the system
1.0.4	January 8, 2018	Creation of chapter 10 – Elements not supported by LiNe
1.0.5	March 16, 2018	1. Example of risk measure, subsection 4.1.7 2. Creation of subsection 4.1.10 – Risk measure in protected mode
1.0.6	May 15, 2018	1. Modification of system name, from LINE 5.0 to LiNe Trading 2. Removal of chapter on central custody (subsection 3.5.4) 3. Removal of chapter on allocation (subsection 3.5.5) 4. Removal of chapter on real time clearing (subsection 3.5.6) 5. Removal of chapter on corporate actions (Radar system) (subsection 3.5.7) 6. Update of infrastructure as a service (section 3.6) 7. Update of SPCI/SPVI measure concept (subsection 4.1.2) 8. Update of SDP measure concept and examples (subsection 4.1.4) 9. Update of risk measure concept and examples (subsection 4.1.6) 10. Update of protected mode concept (subsection 4.1.7) 11. Update of risk measure in protected mode concept (subsection 4.1.9) 12. Update of LiNe Trading user profiles (subsection 6.2.1) 13. Inclusion of topic on service users (subsection 6.2.2)
1.0.7	September 10, 2018	Update of file upload concept (chapter 10)
1.0.8	November 6, 2018	1. Update of file layout examples (subsection 11.10.7) 2. Update of investors in default profile (subsection 3.4.1)
1.0.9	December 6, 2018	1. Secure Client – Update of types of investors (chapter 11) 2. Secure Client – Update of risk measures (chapter 11)
1.0.10	March 20, 2019	1. Modifications to ARQ.LINE.005.01 and ARQ.LINE.006.01 files 2. Behavior expected by Secure Client (chapter 11.10) 3. Behavior of authorized markets for investors and accounts transactions originating from a trading desk (subsection 4.1.1)
1.1.0	July 23, 2019	1. Details on aggregate measures and measures by instrument (chapter 5) 2. Update of authorized markets (chapter 4) 3. Update of give-up origin accounts (subsection 2.8.2) 4. Creation of synchronous mode (subsection 5.1.8) 5. Update of SPCI/SPVI measure for financial calculations (subsection 5.1.1)
1.1.1	June 9, 2020	1. Behavior for MC substitution (section 2.1) 2. Behavior for replacement of account links (section 2.1)
2.0	September 28, 2021	1. Update of SDP measure (subsection 5.1.3) 2. Inclusion of SPVD measure (subsection 5.1.4) 3. Update of SFD measure (subsection 5.1.5) 4. Update of risk measure (subsection 5.1.7) 5. Update of protected mode (subsection 5.1.8)

2.1	December 13, 2021	1. Update of LiNe version modifications (chapters 1 e 2) 2. Update of TMOC/TMOV measure (subsection 5.1.2): B3 limit and CAP 3. Update of SDP measure (subsection 5.1.3): Segregation 4. Update of SFD measure (subsection 5.1.5): Segregation 5. Update of STD measure (subsection 5.1.6): Segregation 6. Update of RMKT measure (subsection 5.1.7): Segregation 7. Update of protected mode (subsection 5.1.8): Segregation 8. Update of SPI measure (subsection 5.1.10): Sign inversion 9. Update of tables of limits vs. entities vs. mandates (section 5.3): B3 limit and CAP
2.2	January 31, 2022	1. Update of RMKT in protected mode (section 2 5.1.8) 2. Update of tables of limits vs. entities vs. mandates (section 5.3)
2.3	March 22, 2022	Update of TMOC/TMOV measure for cross order traders or RLP (subsection 5.1.2)
2.4	May 30, 2022	1. Update of SPCI/SPVI measure (subsection 5.1.1): EDS assessment 2. Update of TMOC/TMOV measure (subsection 5.1.2): EDS assessment 3. Update of SDP measure (subsection 5.1.3): UDS assessment 4. Update of of SPVD measure (subsection 5.1.4): UDS assessment 5. Update of SFD measure (subsection 5.1.5): UDS and EDS assessments 6. Update of RMKT measure (subsection 5.1.7): UDS and EDS assessments 7. Update of limit assessment for UDS and EDS (subsection 5.4.7): UDS and EDS assessments
2.5	September 19, 2022	1. Inclusion of cross order assessment (chapter 1) 2. Corrections and inclusion of cross order assessment (subsection 2.8.2) 3. Correction to the number of risk scenarios used by LiNe (subsection 5.1.7) 4. Corrections and inclusion of cross order assessment (subsection 5.1.8) 5. Update of synchronous mode definition (subsection 5.1.9) 6. Corrections and inclusion of cross order assessment (subsection 5.1.10) 7. Correction to the number of risk scenarios used by LiNe (subsection 5.1.11)
2.6	December 12, 2022	1. Update of features and enhancements (section 3.3): Opening portfolio 2. Inclusion of start of day positions (opening portfolio) (subsection 3.5.4) 3. Update of authorized markets (chapter 4) 4. Update of SPCI/SPVI measure (subsection 5.1.1): DI1 TAS 5. Update of SDP measure (subsection 5.1.3): Opening portfolio 6. Update of of SPVD measure (subsection 5.1.4): Opening portfolio 7. Update of SFD measure (subsection 5.1.5): DI1 TAS 8. Update of RMKT measure (subsection 5.1.7): DI1 TAS/Opening portfolio 9. Update of SPI measure (subsection 5.1.10): DI1 TAS/Opening portfolio 10. Update of IRMKT measure (subsection 5.1.11): Opening portfolio
2.7	March 29, 2023	1. Configuration of limits definition for Option Exercise Authorized Markets excluded.
2.8	July 17, 2023	1. Update of SPCI/SPVI measure (subsection 5.1.1): update of the EDS assessment in order to contemplate Structured U.S. Dollar Rollover and Structure Ibovespa Rollover Transactions. Moreover, the calculation for the BM&F segment options was also update. 2. Update of TMOC/TMOV measure (subsection 5.1.2): update of the EDS assessment in order to contemplate Structured U.S. Dollar Rollover and Structure Ibovespa Rollover Transactions

		3. Update of SFD measure (subsection 5.1.5): update of the EDS assessment in order to contemplate Structured U.S. Dollar Rollover and Structure Ibovespa Rollover Transactions 4. Update of SPI measure (subsection 5.1.10): update of the EDS assessment in order to contemplate Structured U.S. Dollar Rollover and Structure Ibovespa Rollover Transactions
2.9	October 16, 2023	1. Update of SPCI/SPVI measure (subsection 5.1.1): update of the EDS assessment in order to contemplate Structured Commodities Rollover Transactions. 2. Update of TMOC/TMOV measure (subsection 5.1.2): update of the EDS assessment in order to contemplate Structured Commodities Rollover Transactions. 3. Update of SFD measure (subsection 5.1.5): update of the EDS assessment in order to contemplate Structured Commodities Rollover Transactions. 4. Update of SPI measure (subsection 5.1.10): update of the EDS assessment in order to contemplate Structured Commodities Rollover Transactions.
3.0	December 18, 2023	1. Update of LiNe architecture (subsection 3.6). 2. Removal of dedicated risk engine section (section 13). 3. Update of SPCI/SPVI measure (subsection 5.1.1): Inclusion of treatment for block trading solutions for equities and securities representing equities. 4. Update of SDP measure (subsection 5.1.3): Inclusion of treatment for block trading solutions for equities and securities representing equities. 5. Update of SFD measure (subsection 5.1.5): Inclusion of treatment for block trading solutions for equities and securities representing equities. 6. Update of RMKT measure (subsection 5.1.7): Mention of no impact of block trading solutions for equities and securities representing equities. 7. Update of SPI measure (subsection 5.1.10): Inclusion of treatment for block trading solutions for equities and securities representing equities. 8. Addition of a subsection (subsection 5.4.9) related to block trading solutions for equities and securities representing equities.
3.1	August 05, 2024	1. Update of authorized markets (section 4): update of Small Cap Index (SML) and Structured Small Cap Rollover Transaction. 2. Update of SPCI/SPVI measure (subsection 5.1.1): update of the EDS assessment in order to contemplate Structured Small Cap Rollover Transactions. 3. Update of TMOC/TMOV measure (subsection 5.1.2): update of the EDS assessment in order to contemplate Structured Small Cap Rollover Transactions. 4. Update of SFD measure (subsection 5.1.5): update of the EDS assessment in order to contemplate Structured Small Cap Rollover Transactions. 5. Update of SPI measure (subsection 5.1.10): update of the EDS assessment in order to contemplate Structured Small Cap Rollover Transactions.
3.2	December 09, 2024	1. Inclusion of RMKTN measure (subsection 5.1.8)

1 INTRODUCTION

The LiNe tool, which is integrated into the PUMA Trading Platform, makes it possible for trading participants to set pre-trade limits for investors and monitor their trading activity in the markets managed by B3, regardless of the type of access they adopt (direct market access, trading desk, or order conveyor).

The current tool version allows users to manage it both via a web portal and an application programming interface (API), thus making the system usability simpler and more adaptable to participant operations. Moreover, the measurement evaluation system consists of two types of risk engines: Trading and Clearing. In the first risk engine, orders are assessed before they are received by the matching engine, while in the second orders are assessed after they are received by the matching engine. Due to this differentiation in the evaluation of LiNe engines' risk measures, the system response time is optimized, resulting in greater efficiency and safety.

It should be noted that, despite the fact that LiNe has a centralized view of investor limits, it doesn't replace all the risk management tools available in the market. Therefore, and although LiNe use is mandatory, participants are free to evaluate the use of other existing tools.

Furthermore, in order to reduce trade execution risks, the limits defined by measures TMOC/TMOV (maximum buy/sell order size), SPVI/SPCI (potential short/long balance per instrument) and STD (balance of forward trades per investor) are assessed by LiNe (Trading risk engine) before orders are received by the matching engine, rejecting those that violate one or more thresholds defined by the risk metrics. The other aggregate metrics, SPVD (potential short sale balance), SDP (potential debt balance), SFD (day trade financial balance), RMKT (risk measure) and RMKTN (risk measure for trades), are assessed by LiNe (Clearing risk engine) after orders are received by the matching engine. Cross orders are evaluated in real time by all the measures offered by LiNe Trading and Clearing, meaning that cross orders will only be accepted that meet all the limits defined by the LiNe measures.

By definition, the SFD and RMKTN measures are only evaluated after trades are executed.

2   DEFINITIONS

The definitions presented below contemplate a few concepts needed to understand how to use the LiNe tool.

2.1 Clearing member (MC)

Clearing Member is the participant that holds an access authorization for settlement with the clearinghouse, under B3's specific access rules and procedures.

In case the Clearing Member of a Full Trading Participant (PNP) or Settlement Participant (PL) is substituted, all the entities included in the MC settlement chain will be affected, considering that, for LiNe purposes, investors, accounts and professional traders are removed from the former MC chain and created again under the new MC. Given this behavior, investors are placed in the default profile of the participant, requiring their transfer to the defined profiles before the actual MC substitution.

2.2 Full Trading Participant (PNP)

Full Trading Participant is the participant that holds an access authorization for trading, under B3's specific access rules and procedures.

2.3 Trading Participant (PN)

Trading Participant is the participant that holds an access authorization to intermediate the execution of investor and proprietary transactions, having access to the trading environment through an PNP and settling its obligations through and under the responsibility of both an PNP and a MC.

2.4 Settlement Participant (PL)

Settlement Participant is the participant that holds an access authorization to act in the clearing and settlement process, having no direct access to the trading

environments managed by B3 but taking responsibility for both the positions and the settlement of proprietary or investor transactions through give-ups.

2.5 Professional traders

Traders and order conveyors are entities who are assigned limits in the LiNe tool, under the professional traders group.

2.5.1 Trader

An individual who has an employment link or a link as an independent investment agent with an PNP, a PN, or an institution belonging to the same economic group as such participants. Traders are in charge of entering orders via a connection available at the trading desk of the relevant PNP or PN, physically working there.

2.5.2 Order conveyor

An individual who has an employment link or a link as an independent investment agent with an PNP, a PN, or an institution belonging to the economic group as such participants. Order conveyors are in charge of entering orders via an order conveyor connection available to the relevant PNP or PN, but they don't work physically at the participant's trading desk, and neither does the senior bank order conveyor. As order conveyors don't have access to LiNe, PNs must grant permission to the corresponding order conveyors and assign them limits.

2.6 Investors

Investors or clients are entities who will have limits set up for them in the LiNe tool and will be identified by their Individual (CPF) or Corporate Taxpayer (CNPJ) numbers, code 99 (nonresident investor based on a CVM number), or code 88 (nonresident investor without a CVM number), where CVM is the Brazilian Securities and Exchange Commission.

2.7 Accounts

Accounts make it possible to identify participant's assets, transactions and positions for trading purposes and at the B3 Clearinghouse and Central Depository, as well as at other clearinghouses and central depositories, according to their features and statuses. Accounts are divided into definitive accounts (regular, error and operational error) and transitory accounts (brokerage, capture, master, admincon, fintermo, intermediary and market maker), and they may consume different limits, depending on the transaction.

2.8 Links

In order to enable operational processes and the recognition of relationships between participants and their clients, links are available that can be assigned to their accounts. LiNe will recognize the links listed below.

2.8.1 Trading-on-behalf link

A trading on-behalf link, also referred to in this guide as PCO, connects two accounts held by the same investor under different participants without the identification of the intermediary participant's (PNP, PN or PL) client to the executing participant (PNP) of the PCO trade. For settlement and risk management purposes, this link does NOT imply a transfer of liability between the participants involved.

The PN executing the trade must access the LiNe system and grant a CAP to the intermediary PN to manage the limits of its clients and professional traders.

Information on the intermediary PN's clients and professional traders will be hidden from the executing PNP.

The screens used in the management of limits for the accounts with different links are segregated.

2.8.2 Give-up link

A give-up link is created by an origin account in the participant responsible for trade execution (executing participant) and a destination account in the participant that carries the investor positions (carrying participant).

Regardless of the number of PNPs (executing participants) an investor uses, they can grant him or her no more than the same limit as the carrying participant.

For give-ups, two limit validations apply. The first one is carried out in real time by the LiNe Trading risk engine measures at the executing PNP, that is, upon order entry. The second validation is performed in near time by further risk measures at the executing PNP and by all the risk measures at the carrying participant after the order is received by the matching engine.

Exceptions exist in case LiNe validates all the executing and carrying participants' limits before an order is sent to the matching engine, even if the investor\account is not in protected mode. TMOC/TMOV and SPCI/SPVI assessments are performed in real time when the entity is in synchronous mode. Cross orders will always be evaluated in real time by all of the LiNe Trading and Clearing measures.

Should the limit granted to an investor by the carrying participant be violated, such investor will enter into protected mode at both the executing participant responsible for the limit violation and the carrying participant. If the investor uses more than one executing participant with the same give-up destination and the limit violation occurs in the participant of destination, only the investor at the participant of destination will enter into protected mode. In this case, limit evaluations will be carried out in real time for all orders, at both the carrying and all the executing participants, with the trade being given up to said participant of destination. New orders will only be entered to reduce the balances per instrument (SPI) at the participant of destination in protected mode.

All origin accounts (executing participant) have the same features as the destination account, meaning that, if the latter is a definitive account, thus being subject to netting, the origin account will behave in like manner.

2.8.3   Options exercise link

Similar to the give-up link, the options exercise link is necessary to make it possible for options registered by one participant, whose exercise implies the execution of a new transaction, to be exercised by another participant.

3   THE SYSTEM

3.1 Target participants

LiNe is intended for PNPs, PNs and PLs that need to set pre-trade limits for their clients. They are the agents who define such limits.

In addition, all the clients who send or have their orders sent to the trading system are LiNe users, since their limits are validated in both real time (before orders are received by the matching engine) and near time (after orders are received by the matching engine).

3.2 Scope

The LiNe tool include the markets managed by B3 in the BM&F, BOVESPA and corporate debt market segments. Exception is made to the electronic spot foreign exchange market, which is not part of the project scope at this stage.

3.3 Features and enhancements

A key feature of LiNe's architecture is the existence of 2 types of risk engines: Trading risk Engine, which is in the critical way of the order and works in affinity per matching engine, and Clearing risk Engine, where brokers are grouped, and trades and orders are evaluated near time. Both risk engines are able to make converge the order flow associated with an investor under an PNP. This provides LiNe with some operational edge over the former system, such as nonexistence of participants' default gateways and possibility that investors and accounts trade through any trading gateway. This facilitates the distribution of participant trading flows among different gateways, thus considerably mitigating operational risks.

Other LiNe features include: Investor identification (CPF, CNPJ, code 99, or code 88); grouping of accounts associated with the same investor; and possibility of managing limits for investors in a centralized and consolidated way. Optionally, participants are also allowed to set limits for the accounts in case they wish to enhance control at a granular level.

In order to meet the order flow carried out through a give-up link, the LiNe tool allows both executing and carrying participants to set limits for each investor.

The PNP/PN and PNP/PNP relationships for PCO trades are also contemplated, with the executing participant (PNP) setting an upper limit for each client and an upper limit (CAP) to be distributed by the intermediary participant (PNP/PN) to clients. Although such relationships are included in the tool, the confidentiality of the intermediary participant's customer is preserved.

Connection with the B3 Integrated Participant Registration System (SINCAD) ensures that only orders from registered customers enter into the trading system. This means that participants who open client accounts for same day trading will need to make sure that any such account is registered in SINCAD for LiNe to recognize it. In spite of this feature, transactions originating from a trading desk without specifying an account are still permitted but, in this case, the limit of the PNP capture account will be used.

Accounts and links created in SINCAD for same day trading will automatically be reflected in LiNe. However, mismatches may occur between the investor positions under the PNP and the carrying participant. This feature is enabled when the link is created after orders or trades are registered for an account with no links. In such situations, B3 recommends that participants generate accounts and links before conducting any transactions.

Professional traders' limits will also be considered by the new tool, and they will be, upon implementation, a natural replacement for the ePUMA order control.

Profile-based management makes it possible for scalable limits to be set up, thus allowing users to group their clients by affinity (for example, home broker, high-

frequency trader, institutional investor). Therefore, all the features applied to a profile will automatically be inherited by the entities existing below such profile. It is also possible to create exceptions for entities belonging to a profile. In this case, the exception will prevail at the expense of profile values.

A monitoring web portal has been designed for entities to monitor the consumption of limits and allow participants to track investors' trades while proactively managing limits.

In order to facilitate LiNe management capabilities, an API that conforms to the representational state transfer (REST) protocol was created for integration between user systems and LiNe. This web-based technology is widely used commercially because it makes it simpler for users to develop messages. Through this interface it is possible to extract reports, receive alert messages on pre-trade risk limit consumption, and manage alert messages and limits.

Seeking to provide greater accuracy to risk calculation, the LiNe Clearing system will be integrated into the post-trade platform. Thus, in the calculation of aggregate metrics it will consider investor positions at the start of day (start of day positions), in addition to the transactions executed during the day. These changes are intended to streamline user experience, since any and all access to the B3 trading system will only be made through trading sessions controlled by the new LiNe.

3.4 Profiles

Aiming to improve the tool's management and agility, limits may be set up grouped by profiles.

The profiles tab allows all rules (limits and permissions) applied to a set of entities associated with a certain profile to be inherited quickly and in a unified manner, with no need to enter settings more than once.

The profiles tab is enabled by entities in the tool, so that a profile can only be associated with entities of the same type (investors, accounts and professional

traders). Profile segmentation by entity was a requirement to reduce complexity when defining and assessing limits.

Investors must necessarily be associated with a profile, and it is not possible to associate a client/account with more than one profile. Professional traders are not required to be associated with any profile.

Exceptions are allowed to the original profile setup, applicable under specific market conditions or when different thresholds are assigned to a particular entity. An exception thus created doesn't change the value set in a profile, so that when the exception is deleted the originally set value is automatically restored.

Setting limits by instrument or group of instruments is also possible in the profiles tab and, likewise, it can be replicated to all the entities associated with a profile.

3.4.1   Default profile

Given the obligation to set limits in the tool, the investors who don't have a profile will automatically be associated with the default profile.

The default profile structure is similar to that of other profiles. However, limits and permissions are preset to zero in the default profile. When deemed necessary, it is up to the participant to set limits and permissions to the default profile.

The default profile is mostly useful to automatically meet the demand of new participants' clients, with no need to manage limits before order entry.

Therefore, it is up to the participant to choose between the zeroed default profile, so that new entities have their trades rejected before client limits are set up, or configure the default profile's risk measures, so that new entities can start trading as soon as they are included in investor registration.

It is noteworthy that there is no default profile for accounts, since the duty of setting up measures in the pre-trade risk tool lies with the investor. Likewise, there is no default profile for professional traders, who require greater control and lower maintenance, when compared to investors.

3.4.2   Blocked profile

Blocked profiles do neither allow limits to be managed nor can they be deleted by the participant. The only function of a blocked profile is to prevent investors from trading.

3.5 Integrations

The pre-trade risk tool will use information from other B3 systems, making the environmental control experience fuller and more integrated for users. It is important to note that changes to the information provided by LiNe's external systems must necessarily be made in the source systems. Access to LiNe doesn't enable or grant access to other systems.

The following is a description of key integrations and their applications.

3.5.1   Participant registration

Integration with the participant registration system will make it possible for LiNe to retrieve all PNPs, PNs, PLs and MCs registered with B3, as well as their links and segments in which they are authorized to trade.

It is also worth noting that updates to registration data in the source system will only be replicated in LiNe on the day after the change.

3.5.2   Investor registration

Integration with the investor registration system make it possible for LiNe to retrieve all clients, accounts and links between them.

Registration of new accounts and investors in source systems will be replicated in LiNe on the same day, within no more than two minutes after source system maintenance. Maintenances that interfere with limit setting dynamics (creation of give-up link, of trading-on-behalf link, etc.) will also be replicated within no more than two minutes, as long as there are no trades in the origin account. Otherwise, the link will be created on T+1.

3.5.3   Instrument registration

The instruments available for trading will be updated as they are created (also online) and associated with authorized markets, thus eliminating the need for additional configurations, in case the participant only uses grouped limits. The same is true for initial public offerings or special auctions.

3.5.4   Opening portfolio (start of day positions)

The LiNe Clearing system will be integrated into the post-trade platform. As a result, it will include the risk of investors' start of day positions in the calculation of aggregated metrics, reflecting position increase and decrease and the risk of trades executed on the day in relation to opening positions.

3.6 Architecture

The new system architecture was required to solve critical situations for participants:

- Access to the trading system by all the investors through more than one gateway, without restriction to account allocation; and

- Centralization of limit management.

- Assurance of FIFO (first in, first out) for the orders sent.

In order to make this possible, a component called risk engine has been created outside the order entry gateway. This component centralizes the entire client flow allocated to the participant and is broken down as Trading risk engine and Clearing risk engine. The risk engine assesses limits in real time and then authorize orders to be sent to the matching engine. The Clearing risk engine assesses limits after orders are received by the matching engine. The illustration below shows the new architecture of LiNe:

Line 5.0 – Arquitetura
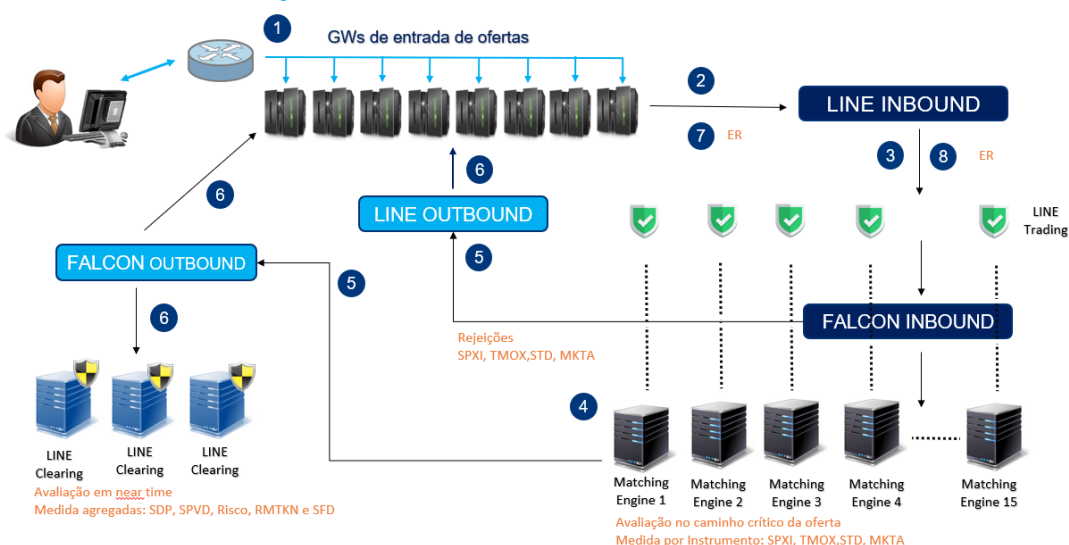
In this architecture, each trading engine has a single Trading Risk Center to control risk (affinity per engine). In it, the FIFO is guaranteed from LiNe. Additionally, the trading gateways, which currently make the routing of the offers to trading centers, will no longer do this, so that, as from the implementation of this project, the risk centers of the LiNe trading will start to route the offers to the trading centers.

The web services provided (REST protocol) will receive the requests sent by users and will update the risk engines, thus keeping the new settings stored in the database.

For technical issues, please contact the B3 Trading Support (SSN) at tradingsupport@b3.com.br, or on +55 11 2565-5000, option 2.

For further information or certification schedules, please contact Trading Certification at tradingcertification@b3.com.br, or on +55 11 2565-5000, options 4 and 1.

4   AUTHORIZED MARKETS

Authorization to trade in markets applies to accounts, investors and professional traders. Although accounts require a link between the PNP and its client for trading purposes, the settlement performed by the clearinghouse is carried out by the MC responsible for the PNP. When the PNP has two different MCs, one for each segment, and even though the relationship between the PNP and its MCs is unique, there will be two distinct settlement chains, depending on the segment in which the MC operates, with each set being segregated in the assignment and evaluation of LiNe limits, as follows:

- BOVESPA MC – PNP/PN – Investor – Account; and

- BM&F MC – PNP/PN – Investor – Account.

The authorized markets allow participants to define trading permissions for clients or other participants down their execution chain. Moreover, they may serve as grouping for TMOC/TMOV and SPCI/SPVI limit setting. Whatever is defined for an authorized market will be valid for all the instruments belonging to it.

The authorized markets will not be validated for investors or accounts when orders are entered by a trading desk (trader or conveyor).

The authorized markets are broken down as follows:

Authorized market	Description
Testing instruments	Instruments made available by B3 to ensure infrastructure integrity for both brokerage houses and B3
IBRX-100 index	All instruments belonging to IBRX-100, the contracts listed under this group and their technical features can be consulted at: **Stocks belonging to IBRX-100 index**
Non IBRX-100 index	All instruments not belonging to IBRX-100
IBRX-100 options	All options instruments belonging to IBRX-100 portfolio can be consulted at: **Stocks belonging to IBRX-100 index**
Non IBRX-100 options	All options instruments not belonging to IBRX-100 portfolio

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Corporate debt market	All corporate debt market instruments, the contracts listed under this group and their technical features can be consulted at: **Corporate debt market**
ETFs/Inv. funds	All exchange-traded funds available at B3, the stocks listed under this group and their technical features can be consulted at: **Exchange-traded and investment funds**
BDRs	All Brazilian Depositary Receipts representing securities issued and held in custody abroad and traded at B3, the contracts listed under this group and their technical features can be consulted at: **BDRs**
Forwards	All forward instruments, the contracts listed under this group and their technical features can be consulted at: **Forward instruments**
Auctions	All instruments having special auction features, as well as special auction schedules and notices can be consulted at: **Special auction schedules and notices**
Other BOVESPA instruments	All equities instruments not listed under any of the previous groups
Gold	All gold instruments, the contracts listed under this group and their technical features can be consulted at: **Gold contract**
Other equities indices	All equities index (IND), rollover (IR1), illiquid minicontract (WIN), real estate investment fund (IFIX) instruments, Small Cap Index (SML) and Structured Small Cap Rollover Transaction
Equities index options	All options derived from equities index options
Agribusiness futures	All agricultural and agricultural rollover instruments, the contracts listed under this group and their technical features can be consulted at: **Agricultural contracts**
Agribusiness options	All agricultural options instruments, the contracts listed under this group and their technical features can be consulted at: **Agribusiness options on futures contracts**
Other currencies	All currency instruments, except for the first two USD months (DOL and DR1) and the USD minicontract (WD1). The contracts listed under this group and their technical features can be consulted at: **Currency contracts**
Other financial futures	All financial futures not included in other authorized markets
Options on other financial futures	All options on financial futures not included in other authorized markets
Other BM&F instruments	All derivatives instruments not listed under any of the previous groups
Liquid index futures contract	First two index futures (IND) months and related rollover transactions (IR1)

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Liquid index futures minicontracts	The contracts listed under this group and their technical features can be consulted at: **Financial futures contracts**
Liquid USD futures contract	First two USD futures (DOL) months and related rollover transactions (DR1)
Liquid USD futures minicontracts	First two USD futures (DOL) months and related rollover transactions (WD1)
DI1 futures contract – D1 group	All DI1 and DI1 TAS instruments maturing in D1 group
DI1 futures contract – D2 group	All DI1 and DI1 TAS instruments maturing in D2 group
DI1 futures contract – D3 group	All DI1 and DI1 TAS instruments maturing in D3 group
FRA on DI x USD spread	All FRC instruments
DI x USD spread	All DDI instruments
DI x IPCA spread	All DAP instruments
Repo	All OC1 instruments
USD *casado*	USD *casado* strategy (CDS2)
Cryptocurrencies	Cryptocurrency futures
Cryptocurrency ETFs	Cryptocurrency ETFs

5 LIMITS

LiNe has two types of limits: limits by instrument (SPCI\SPVI, TMOC\TMOV and STD) and aggregate limits (SDP, RMKT, RMKTN and SFD). The purpose of limits by instrument is to restrict an entity's trading in one or more instruments. The purpose of aggregate limits is to consolidate the individual consumption (orders and trades) of each instrument traded by an entity (investor\account and professional trader).

5.1 Risk measures

This section details the risk measures utilized by LiNe and the calculation models supporting them, providing each measure with practical examples.

5.1.1 Potential short or long balance per instrument (SPVI/SPCI)

The SPCI/SPVI measure guarantees the balance of a participant's daily transactions by instrument.

- Purpose

The SPVI/SPCI measure aims to establish maximum daily balances in number of contracts (derivatives segment) or financial terms (equities and corporate debt segments) for long and short positions held by each entity per instrument.

- Features

B3 will provide a maximum limit per instrument to all participants, who may modify the relevant value as long as it doesn't violate the B3 threshold. In the absence of such limit management (SPCI or SPVI), the value defined by B3 will be managed.

- Segments

For the BM&F segment, SPCI/SPVI provides a quantitative assessment obtained directly from the number of contracts defined upon order entry. For the BOVESPA segment, cash market, the evaluation is based on financial terms, and the information obtained for the relevant calculation is order\trade price and quantity.

The financial calculation for the BOVESPA segment options is based on order, underlying asset price and delta of option. Yet, the financial calculation for the BM&F segment options is based on the order and delta of option.

Odd-lot instruments (equities) are aggregated within the corresponding underlying asset.

Block trading solutions for equities and securities representing equities are aggregated within the corresponding underlying asset.

Options exercises are aggregated within the underlying asset.

Strategies will be assessed according to their types and features, either by strategy or by each individual leg. User-defined strategies (UDS) and B3-defined strategies (EDS) with neutral unit price (PU) or neutral DV01 in one-day interbank deposit futures (DI1 EDS), DI x IPCA spread futures (DAP EDS), FRA on DI x USD spread (FRC EDS), structure U.S. dollar rollover transactions (DOL/WDO EDS), structure Ibovespa rollover transactions (IND/WIN EDS), structure Small Cap rollover transactions (SML EDS) and structured commodities rollover transactions (BGI/ICF/ETH/CCM/SJC/SOY/CNL EDS) are evaluated on each of the legs belonging to the relevant strategy, according to the side and ratio of each leg. For further EDS strategies, assessment will be made by strategy, without breaking down by leg.

Instruments traded at their closing price plus a spread will be subject to a specific procedure. The trade at settlement in DI1 futures (DI1 TAS) will be evaluated as if it were a DI1 futures with a corresponding maturity.

It must be noted that forward instruments will not be considered in this measure's enhancement.

The SPCI/SPVI behavior will be based on entity type (investor/professional trader) and account type (definitive/transitory).

For investors, SPCI/SPVI calculation is a function of their positions in definitive and transitory accounts.

For definitive accounts, SPCI/SPVI calculation considers the net balances of trades executed during the day and buy/sell orders open in the order book for each such account.

For transitory accounts, SPCI/SPVI calculation considers the segregate long/short balance of trades executed during the day and buy/sell orders open in the book for each such account.

For traders, SPCI/SPVI calculation uses the same rule that applies to transitory accounts.

Testing instruments in the derivatives and equities segments are contemplated by the measure's assessment, in order to allow participants to conduct morning tests.

The SPCI/SPVI measure may present negative values (negative values indicate positions to be offset, therefore "increasing" the corresponding limit).

The participants that act as carrying participants will not see their SPCI/SPVI consumption when it falls below 70%.

- Calculation metrics for SPCI/SPVI

Definitive account

$$SPCI_{DfAcct}(i) = + \text{S(i)} + \sum_{j}^{N\ orders} OFC(i) + \text{ofc}$$

$$SPVI_{DfAcct}(i) = - \text{S(i)} + \sum_{j}^{N\ orders} OFV(i) + \text{ofv}$$

Where:

$SPCI_{DfAcct}(i)$ is the instrument's potential long balance in a definitive account;

$SPVI_{DfAcct}(i)$ is the instrument's potential short balance in a definitive account;

S(i) is the instrument's balance of trades executed on the day (netting);

$\Sigma OFC(i)$ is the sum of all open buy orders;

$\Sigma OFV(i)$ is the sum of all open sell orders;

ofc is the new buy order; and

ofv is the new sell order.

<u>Transitory account</u> (e.g., capture and master)

$$SPCI_{TrAcct}(i) = C(i) + \sum_{j}^{N\ orders} OFC(i) + ofc$$

$$SPVI_{TrAcct}(i) = V(i) + \sum_{j}^{N\ orders} OFV(i) + ofv$$

Where:

$SPCI_{TrAcct}(i)$ is the instrument's potential long balance in a transitory account;

$SPVI_{TrAcct}(i)$ is the instrument's potential short balance in a transitory account;

$C(i)$ is the instrument's potential long balance; and

$V(i)$ is the instrument's potential short balance.

<u>Investor</u>

$$SPCI_{Inv}(i) = \max\left[\sum_{\forall DfAcct} SPCI_{DfAcct}(i)\,; 0\right] + \sum_{\forall TrAcct} SPCI_{TrAcct}(i)$$

$$SPVI_{Inv}(i) = \max\left[\sum_{\forall DfAcct} SPVI_{DfAcct}(i); 0\right] + \sum_{\forall TrAcct} SPVI_{TrAcct}(i)$$

Where:

$SPCI_{Inv}(i)$ is the instrument's potential long balance for the investor;

$SPVI_{Inv}(i)$ is the instrument's potential short balance for the investor;

$SPCI_{DfAcct}(i)$ is the instrument's potential long balance in a definitive account;

$SPVI_{DfAcct}(i)$ is the instrument's potential short balance in a definitive account;

$SPCI_{TrAcct}(i)$ is the instrument's potential long balance in a transitory account; and

$SPVI_{TrAcct}(i)$ is the instrument's potential short balance in a transitory account.

- Examples

   (A) Definitive account

   Assumptions

   o Permission and limit in the authorized market for stocks belonging to IBRX-100 index.

   o Liquid USD futures.

   o Limit registered for investor.

   o Investor holds only definitive accounts.

   Scenario 1

   ✓ Limits registered for account.

   ✓ SPCI and SPVI set to 400.

   ✓ Account long (positioned) in 100 contracts.

   ✓ Instrument DOLF21.

   ✓ Buy order (bid) in book at 100 contracts.

   ✓ Enters new bid for 100 contracts.

   Result: SPCI will be used at 75% and SPVI at 0%.

   Scenario 2

✓ Limits registered for investor.

✓ SPCI and SPVI set to 1000.

✓ Investor uses one definitive account.

✓ Investor short (positioned) in 100 contracts.

✓ Instrument DOLF21.

✓ Bid order in book at 400 contracts.

✓ Sell order (offer) in book at 100 contracts.

✓ Enters new offer for 700 contracts.

Result: SPCI will be used at 30% and SPVI at 90%.

$$SPCI_{DfAcct}(i) = -100 + 400 + 0$$

$$SPVI_{DfAcct}(i) = +100 + 100 + 700$$

Note: For a better understanding, the calculation utilized in scenario 2 for SPCI and SPVI involving an investor trading with a definitive account was: SPCI = 30%; and SPVI = 90%.

Scenario 3

✓ Limits registered for customer.

✓ SPCI and SPVI set to 1000.

✓ Instrument DI1F29.

✓ Investor uses two definitive accounts.

Limit is set at 8:30 am, as follows:

$$[B]^3$$

Investor A	Values
SPCI	1000
SPVI	1000

At 10:00 am:

- ✓ Investor enters offer for 100 contracts using the first definitive account; order is filled (short position in 100 contracts).

- ✓ Investors enter offer for 100 contracts using the second definitive account; order is filled (short position in 100 contracts).

- ✓ Bid quantity in order book at 200 in first account.

- ✓ Offer quantity in order book at 300 in first account.

- ✓ Bid quantity in order book at 400 in second account.

- ✓ Offer quantity in order book at 300 in second account.

Investor will keep the SPCI and SPVI position split into the two definitive accounts.

Definitive account 1	Values
Bid	200
Offer	300
Long position	0
Short position	100
Balance	-100
SPCI definitive account 1	**100**
SPVI definitive account 1	**400**

Definitive account 2	Values
Bid	400
Offer	300
Long position	0
Short position	100
Balance	-100
SPCI definitive account 2	**300**
SPVI definitive account 2	**400**

Investor position:

Investor	Calculation	Balance
SPCI	SPCI_account 1 (100) + SPCI_account 2 (300)	**400 (40%)**
SPVI	SPVI_account 1 (400) + SPVI_account 2 (400)	**800 (80%)**

New order is entered at 10:05 am:

New Order	Values
Quantity	600
Side	Buy
Definitive account	1

Current investor balance:

Investor	Calculation	Balance
SPCI	SPCI_account 1 (700) + SPCI_account 2 (300)	**1000 (100%)**
SPVI	SPVI_account 1 (400) + SPVI_account 2 (400)	**800 (80%)**

$$SPCI_{Inv}(i) = 1000$$

$$SPVI_{Inv}(i) = 800$$

Result: SPCI will be consumed at 100% and SPVI at 80%.

Note: For a better understanding, the calculation employed in scenario 3 for SPCI and SPVI involves the use of two definitive accounts.

(B) Transitory account

Assumptions

- o Permission and limit in the authorized market for stocks belonging to IBRX-100 index.

- o Permission and limit in the authorized market for stocks not belonging to IBRX-100 index.

- o Liquid USD futures.

- o Other currencies.

- o Limit registered for investor.

- o Investor uses transitory account.

Scenario 1

✓ Limits registered for investor.

✓ SPCI and SPVI set to 1000.

✓ Investor using one transitory account.

✓ Investor long (positioned) in 400 contracts.

✓ Instrument DOLF21.

✓ Bid quantity in order book at 200 contracts.

✓ Offer quantity in order book at 300 contracts.

✓ Enters new bid for 100 contracts.

Result: SPCI will be used at 70% and SPVI at 40%.

5.1.2   Maximum buy or sell order size (TMOC/TMOV)

The TMOC/TMOV measure represents the maximum quantity (execution) of a bid or offer entered for an instrument.

- Purpose

The TMOC/TMOV measure aims to mitigate the operational risks of transactions executed per order at B3 by applying financial limits (equities segment) and limits to the number of contracts (derivatives segment) traded.

- Features

The TMOC/TMOV configuration by participants is mandatory for investors and professional traders and optional for accounts, meaning that the absence of limits for investors or professional traders, through either their direct configuration in the investor or definition of a limit in a limits profile for a given authorized instrument or market, leads to an immediate order rejection.

B3 may assign a CAP per instrument for a specific investor under a given participant (B3 TMOC/TMOV CAP by investor), as an optional B3 configuration. To assess the measure, the lowest value between the limit set by the participant and the CAP set by B3 (if any) is used. The TMOC/TMOV evaluation for trading desks (conveyor or trader) is performed using the professional trader's limit, even if there are settings defined for investor/account. For cross orders or retail liquidity providers (RLPs), when a trader (desk or conveyor) is involved, that person's TMOC/TMOV is authorized by a 10x factor to the existing limit configuration. The limits set for investor/account (by the participant or B3) are not considered when allowing large orders to be sent by professional traders without requiring investor limit modifications, which would also affect direct market access (DMA) transactions.

- Segments

For the equities or the corporate debt segment, orders are assessed in financial terms. For the derivatives segment, evaluation occurs in terms of instrument quantity. Assessments are based on instrument configuration for investor/account or trader.

When order prices are not entered (e.g., market order), the B3-arbitrated reference price is used.

Strategies will be assessed according to their types and features, either by strategy or by each individual leg. User-defined strategies (UDS) and B3-defined strategies (EDS) with neutral unit price (PU) or neutral DV01 in one-day interbank deposit futures (DI1 EDS), DI x IPCA spread futures (DAP EDS), FRA on DI x USD spread (FRC EDS), structure U.S. dollar rollover transactions (DOL/WDO EDS), structure Ibovespa rollover transactions (IND/WIN EDS), structure Small Cap rollover transactions (SML EDS) and structured commodities rollover transactions (BGI/ICF/ETH/CCM/SJC/SOY/CNL EDS) are evaluated on each of the legs belonging to the relevant strategy, according to the side and ratio of each leg. For further EDS strategies, assessment will be made by strategy, without breaking down by leg.

For the purposes of the TMOC/TMOV measure, forward instruments and options exercises are not considered.

Testing instruments must be assessed in both segments (each segment must comply with the rules previously described).

- Calculation metrics for TMOC/TMOV

For the TMOC and TMOV measures, calculation will differ for the authorized corporate debt, equities and derivatives markets.

For the authorized corporate debt and equities markets, three variables are used in calculations:

 ➢ Quantity = number of shares in order;

 ➢ Order price = order price entered or reference price; and

 ➢ PriceDivisor = instrument price multiplication factor used in the equities segment (the relevant value is sent in market data tag 37012).

For the authorized derivatives markets, three variables are used in calculations:

 ➢ Quantity = number of contracts in order;

 ➢ Order price = order price entered or reference price; and

 ➢ ContractMultiplier = instrument price multiplication factor used in the derivatives segment (the relevant value is sent in market data tag 231 in the SecurityList message).

Authorized corporate debt and equities markets:

 ➢ Stocks belonging to IBRX-100 Index.

 ➢ Stocks not belonging to IBRX-100 Index.

 ➢ Options on stocks belonging to IBRX-100 index.

➢ Options on stocks not belonging to IBRX-100 Index.

➢ Corporate debt securities.

➢ Auctions, forwards.

➢ ETFs/Inv. funds.

TMOC and TMOV calculation metrics applied to corporate debt and equities:

(Order quantity (execution) * Order or reference price) / PriceDivisor.

Examples

(A) Order entered into the authorized markets for stocks belonging to IBRX-100 index and stocks not belonging to IBRX-100 index

Assumptions

- o Permission and limit in the authorized market for stocks belonging to IBRX-100 index.

- o Permission and limit in the authorized market for stocks not belonging to IBRX-100 index.

- o TMOC and TMOV set to BRL1,500.

- o Investor 123456 (account 178 linked to this investor).

- o Brokerage house 700.

Scenario 1

- ✓ Brokerage house 700 enters buy order.

- ✓ Instrument PETR4.

- ✓ Price BRL13.00.

- ✓ Quantity 100.

Result: Order will be accepted. Calculation will be 100 (qty) * 13.00 (price) / 1 (PriceDivisor) = BRL1,300.

Scenario 2

- ✓ Brokerage house 700 enters bid.

- ✓ Instrument TOYB3.

- ✓ Price BRL3.00.

- ✓ Quantity 100,000.

Result: Order will be accepted. Calculation will be 100,000 (qty) * 3.00 (price) / 1000 (PriceDivisor) = BRL300.

Scenario 3

- ✓ Brokerage house 700 enters bid.

- ✓ Instrument PETR4.

- ✓ Price BRL13.00.

- ✓ Quantity 2,000.

Result: Order will be rejected. Calculation will be 2,000 (qty) * 13.00 (price) / 1 (PriceDivisor) = 2,600.

Authorized derivatives markets:

- ➢ Gold.

- ➢ Equities index futures.

- ➢ Equities index options.

- ➢ Agribusiness futures.

- ➢ Agribusiness options.

➢ Currencies.

➢ Other financial futures.

➢ Options on financial futures.

➢ Other BM&F instruments.

(B) Order sent to the authorized USD, other financial futures and equities index futures markets

Assumptions

o Permission and limit in the authorized currency, other financial futures and index futures markets.

o TMOC and TMOV set to 50 for account 178 in all authorized markets.

o TMOC and TMOV set to 100 for trader RAF in all authorized markets.

o Investor 123456 (account 178 linked to this investor)

o Brokerage house 700.

Scenario 4

✓ Account 178 enters bid.

✓ Instrument DOLU17.

✓ Price BRL3,151.500.

✓ Quantity 10.

Result: Order will be accepted. Order quantity 10 is less than limit set for investor (50).

Scenario 5

✓ Account 178 enters bid.

- ✓ Instrument DI1F21.

- ✓ Price: 9.300.

- ✓ Quantity 40.

Result: Order will be accepted. Order quantity 40 is less than limit set for investor (50).

Scenario 6

- ✓ Trader RAF enters sell order informing account 178.

- ✓ Instrument INDV17.

- ✓ Price 71,620.

- ✓ Quantity 90.

Result: Order will be accepted. Trader RAF's order specifies 90 contracts. When an order originates from a professional trader, the investor or the account limit validation is not considered for TMOC/TMOV purposes.

(C) TMOC e TMOV evaluation: B3 CAP > Entity limit (authorized market)

Assumptions

- o B3 CAP registered for investor for TMOC/TMOV at 6,000 VALE3.

- o Limit for investor 123456 registered by brokerage house user for TMOC/TMOV at 1,000 VALE3.

Scenario 7

- ✓ Account 4321 enters bid.

- ✓ VALE3; quantity 100; price BRL80.

Result: Order will be rejected because transaction (with a financial evaluation of 100*80 = 8,000) is in excess of limit 1,000 allowed for execution size.

(D) TMOC e TMOV evaluation: B3 CAP < Entity limit (authorized market)

Assumptions

- o B3 CAP registered for investor for TMOC/TMOV at 6,000 ITUB4.

- o Limit for investor 123456 registered by brokerage house user for TMOC/TMOV at 10,000 ITUB4.

Scenario 8

- ✓ Account 4321 enters offer.

- ✓ ITUB4; quantity 1,000; price BRL25.

Result: Order will be rejected because transaction (with a financial evaluation of 1,000*25 = 25,000) is in excess of limit 6,000 allowed for execution size.

(E) TMOC e TMOV evaluation: Entity limit (authorized market) > B3 CAP for investor

Assumptions

- o B3 CAP registered for investor for TMOC/TMOV at 4,000 DOLF22.

- o Limit for investor 123456 registered by brokerage house user for TMOC/TMOV at 10,000 DOLF22.

Scenario 9

- ✓ Account 4321 enters bid.

- ✓ DOLF22; quantity 3,000; price BRL5,500.

Result: Order will be accepted because transaction (with a quantity evaluation of 3,000) is within limit 4,000 allowed for trade size.

5.1.3   Potential debt balance (SDP)

The SDP measure allows PNPs, PNs and PLs to limit an investor's potential financial balance to be settled (cash market transactions and options premiums) in the T+0, T+1 and T+2 settlement windows.

- Purpose

The SDP measure aims to limit the investors' potential financial amounts to be settled on T+0, T+1 and T+2, thus allowing them to be adjusted to the financial capacity of every investor.

- Features

The SDP limit is mandatorily established by PNPs, PLs and PNs for clients, intermediaries (PNP assigning an SDP limit to another PNP or PN) and traders, meaning that the absence of a limit definition, through either its direct configuration in the client or trader or in a limits profile, leads to the protected mode being triggered and order cancellations being submitted. The latter can only cancel the order that violated the limit, as long as it has not been filled yet. For accounts, this configuration is optional, that is, when their limits are not setup by the participant, the investor limit will be inherited.

- Segments

Financial flows are assessed on a consolidated basis for the three segments (equities, corporate debt and derivatives), as shown below.

For equities and corporate debt calculation purposes:

➢ All cash and options market instruments are included;

➢ Odd-lot instruments are included within the underlying securities;

- Block trading solutions for equities and securities representing equities are included within the underlying asset.

- Liquid corporate debt instruments;

- Options exercises are included within the underlying securities; and

- Each leg of user-defined strategies is assessed, according to the side and ratio of each leg.

For derivatives calculation purposes, only options are considered:

- Equities index options on futures;

- Options on other financial futures; and

- Agribusiness options on futures.

SDP assessments don't consider the following instruments:

- Corporate debt instruments with gross settlement;

- Forwards;

- Testing instruments;

- Gold;

- Equities index futures;

- Agribusiness futures;

- Currencies;

- Other financial futures; and

- Other BM&F segment instruments.

- Metrics evaluation

Since SDP assessments are performed on both open orders and executed trades, the price indicated in the order, when available, is used to increase or decrease the potential (open) financial balance or the instrument's reference price for orders with no price information (market, market on auction, market on close).

The following are considered in SDP assessments: Trades to be settled (post-trade) + Trades executed on the day + Bids open in order book.

Assessments are available for investors, their related definitive and transitory accounts, and traders and conveyors.

For definitive accounts, SDP calculation considers the net financial balances, to be settled on T+0, T+1 and T+2, derived from start of day positions (opening portfolio), trades executed on the day and open bids in the order book for the relevant account.

For transitory accounts, SDP calculation contemplates only negative flows (purchases), to be settled on T+0, T+1 and T+2, originated from start of day positions (opening portfolio), trades executed on the day and open bids in the order book for the relevant account.

For investors, SDP calculation is the sum of the SDP values calculated for their definitive accounts (in a consolidated manner) and for each of their transitory accounts.

In the event of an SDP limit violation, the protected mode will be activated for the investor and order cancellation requests will be submitted, which, if possible, are intended to cancel only the order that violated the limit, as long as it has not been filled yet. Therefore, the other orders in the book that were not responsible for the SDP limit violation will not be canceled. For accounts, this configuration is optional, that is, when their limits are not setup by the participant, the investor limit will be inherited. Protected mode activation can also occur if the relevant PNP, PN and PL reduce the limits registered as SDP measure to a lower value than the investor's current balance.

- Calculation metrics for SDP

Definitive account

$$SDP_{DfAcct} = -\sum_t \min(+L_t + S_t + OC_t + oc_t; 0)$$

Where:

SDP_{DfAcct} is the definitive account's potential debt balance;

L_t is the net balance of financial flows (= $-\sum$ long + $\sum$ short) in settlement cycle t associated with start of day positions held in a definitive account (opening portfolio);

S_t is the net financial flows in settlement cycle t associated with transactions executed on the day for a definitive account (positive for inflows and negative for outflows);

OC_t is the sum of negative cash flows associated with buy orders open for a definitive account in the matching engine to be settled on t; and

oc_t is the new bid (negative flow) for a definitive account to be assessed before entering the order book and matching engine.

Transitory account

$$SDP_{TrAcct} = -\sum_t \min(+LC_t + SC_t + OC_t + oc_t; 0)$$

Where:

SDP_{TrAcct} is the transitory account's potential debt balance;

LC_t is the balance of negative financial flows (= $-\sum$ long) in settlement cycle t associated with start of day positions held in a definitive account (opening portfolio);

SC_t is the balance of negative financial flows in settlement cycle t associated with purchase transactions executed on the day for a transitory account. The same rule applies to traders;

OC_t is the sum of negative cash flows associated with buy orders open for a transitory account or trader in the matching engine to be settled on t; and

oc_t is the new bid (negative flow) for a transitory account or trader to be assessed before entering the order book and matching engine.

Investor

The investor's potential debt balance comprises definitive and transitory accounts and is calculated as follows:

$$SDP_{Inv} = -\sum_t \min\left(\sum_{\forall DfAcct}(L_t + S_t + OC_t + oc_t); \, 0\right) + \sum_{\forall TrAcct} SDP_{TrAcct}$$

Where:

SDP_{Inv} is the investor's potential debt balance;

L_t is the net balance of financial flows $(= -\sum \text{long} + \sum \text{short})$ in settlement cycle t associated with start of day positions held in a definitive account (opening portfolio);

S_t is the net financial flows in settlement cycle t associated with transactions executed on the day for a definitive account (positive for inflows and negative for outflows);

OC_t is the sum of negative cash flows associated with buy orders open for a definitive account or trader in the matching engine to be settled on t;

oc_t is the new bid (negative flow) in a definitive account or trader to be assessed before entering the order book and matching engine. Therefore, sell orders are not considered; and

SDP_{TrAcct} is the transitory account's potential debt balance.

- Examples

(A) Definitive account

Assumptions

o The SDP formula for definitive accounts:

$$SDP_{DfAcct} = -\sum_t \min(+L_t + S_t + OC_t + oc_t;\ 0)$$

o Permission and limit in the authorized market for stocks belonging to IBRX-100 index.

o Permission and limit in the authorized market for stocks not belonging to IBRX-100 index.

o SDP set to BRL1,000,000.

o Investor 123456 (account 178 linked to this investor).

o Brokerage house 700.

o Opening portfolio long in 1,000 B3SA3 shares at BRL10.00 to be settled on T+1.

Scenario 1

At 10:15 am (current trading session):

➢ Investor buys (trade) 5,000 B3SA3 shares (T+2) at BRL15,00 (BRL75,000).

SDP risk measure will be at 75,000 (7.5%).

At 10:20 am (current trading session):

➢ Investor enters bid for 20,000 B3SA3 at BRL15.00 (BRL300,000). Order should be open in book.

SDP risk measure will be at 375,000 (37.5%).

➢ Investor enters another bid for 7,500 B3SA3 at BRL15.00 (BRL112,500).

Order is accepted and SDP risk measure will be at 487,500 (48.75%).

Scenario summary:

Settlement cycle	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0	-	-	-	-	-	-	-	-
T+1	BRL10,000	-	-	-	-	-	-	-
T+2	-	-	BRL75,000	-	BRL300,000	-	BRL112,500	-

Settlement cycle	$+L_t + S_t + OC_t + oc_t$	$\min(+L_t + S_t + OC_t + oc_t, 0)$
T+0	BRL0	BRL0
T+1	-BRL10,000	-BRL10,000
T+2	-BRL487,500	-BRL487,500
Cycles' sum		-BRL497,500
-1* sum	SDP:	BRL497,500

Result: Order will be accepted. Hence, the SDP measure will be consumed at 49.75%.

Scenario 2

At 10:15 am (current trading session):

➢ Investor buys (trade) 25,000 B3SA3 options (T+1) at BRL15.00 (BRL375,000).

At 10:16 am (current trading session):

➢ Investor sells (trade) 30,000 B3SA3 shares (T+2) at BRL15.00 (BRL450,000).

At 10:17 am (current trading session):

➢ Investor enters bid for 4,000 B3SA3 options (T+1) at BRL15.00 (BRL60,000). The order should be open in book.

At 10:18 am (current trading session):

➢ Investor enters bid for 4,500 B3SA3 shares (T+2) at BRL15.00 (BRL67,500). Order should be open in book.

➢ Investor enters another bid for 500 B3SA3 shares at BRL15.00 (BRL7,500).

Scenario summary:

Settlement cycle	Opening portfolio		Executed trades		Open order (book)		New order	
	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0	-	-	-	-	-	-	-	-
T+1	BRL10,000	-	BRL375,000	-	BRL60,000	-	-	-
T+2	-	-	-	BRL450,000	BRL67,500	-	BRL7,500	-

Settlement cycle	$+L_t + S_t + OC_t + oc_t$	$\min(+L_t + S_t + OC_t + oc_t, 0)$
T+0	BRL0	BRL0
T+1	-BRL445,000	-BRL445,000
T+2	BRL375,000	BRL0
Cycles' sum		-BRL445,000
-1* sum	SDP:	BRL445,000

Result: Order will be accepted. Thus, the SDP measure will be consumed at 44.5%.

(B) Transitory account

Assumptions

o Permission and limit in the authorized market for stocks belonging to IBRX-100 index.

- o Permission and limit in the authorized market for stocks not belonging to IBRX-100 index.

- o SDP set to BRL1,000,000.

- o Investor 123456 (account 178 linked to this investor).

- o Brokerage house 700.

Scenario 1

At 10:15 am (current trading session):

➢ Investor buys (trade) 5,000 B3SA3 options (T+1) at BRL15.00 (BRL75,000).

➢ Investor sells (trade) 100 B3SA3 options (T+1) at BRL15.00 (BRL1,500).

At 10:16 am (current trading session):

➢ Investor buys (trade) 7,000 B3SA3 shares (T+2) at BRL15.00 (BRL105,000).

At 10:17 am (current trading session):

➢ Investor enters bid for 4,000 B3SA3 options (T+1) at BRL15.00 (BRL60,000). Order should be open in book.

At 10:18 am (current trading session):

➢ Investor enters bid for 4,500 B3SA3 shares (T+2) at BRL15.00 (BRL67,500). Order should be open in book.

➢ Investor enters offer for 100 B3SA3 shares (T+2) at BRL15.00 (BRL1,500).

➢ Investor enters another bid for 1,500 B3SA3 shares at BRL15.00 (BRL22,500).

Scenario summary:

Settlement cycle	Opening portfolio		Executed trades		Open orders (book)		New order	
	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0	-	-	-	-	-	-	-	-
T+1	-	-	BRL75,000	BRL1,500	BRL60,000	-	-	-
T+2	-	-	BRL105,000	-	BRL67,500	BRL1,500	BRL22,500	-

Settlement cycle	$+L_t + S_t + OC_t + oc_t$	$min(+L_t + S_t + OC_t + oc_t, 0)$
T+0	BRL0	BRL0
T+1	-BRL135,000	-BRL135,000
T+2	-BRL195,000	-BRL195,000
Cycles' sum		-BRL330,000
-1* sum	SDP:	BRL330,000

Result: Order will be accepted. Therefore, the SDP measure will be consumed at 33%.

(C) Client trading with two permanent accounts

Assumptions

- o Permission and limit in the authorized market for stocks belonging to IBRX-100 index.

- o Permission and limit in the authorized market for stocks not belonging to IBRX-100 index.

- o SDP set to BRL1,000,000.

- o Investor 123456 (accounts 111 and 222 linked to this investor)

- o Brokerage house 700.

- o Opening portfolio long in 1,000 B3SA3 shares at BRL20.00 to be settled on T+0 in account 222.

o Opening portfolio short in 500 B3SA3 shares at BRL20.00 to be settled on T+0 in account 222.

Scenario 1

At 10:20 am (current trading session); account 111:

➢ Account 111 buys (trade) 5,000 B3SA3 options (T+1) at BRL15.00 (BRL75,000).

At 10:20 am (current trading session):

➢ Account 111 buys (trade) 7,000 B3SA3 shares (T+2) at BRL15.00 (BRL105,000).

At 10:25 (current trading session); account 222:

➢ Account 222 sells (trade) 4,000 B3SA3 options (T+1) at BRL15.00 (BRL60,000).

At 10:30:

➢ Account 222 sells (trade) 40,000 B3SA3 shares (T+2) at BRL15.00 (BRL600,000).

Order book

At 10:35 am; account 111:

➢ Account 111 enters bid for 3,000 B3SA3 options (T+1) at BRL15.00 (BRL45,000) (order available in book).

At 10:40:

➢ Account 111 sells (trade) 2,000 B3SA3 shares (T+2) at BRL15.00 (BRL30,000) (order available in book).

At 10:45; account 222:

➢ Account 222 enters bid for 1,000 B3SA3 options (T+1) at BRL15.00 (BRL15,000) (order available in book).

At 10:50; account 111:

➢ Investor enters another bid for 2,500 B3SA3 shares (T+2) at BRL15.00 (BRL37,500).

Scenario summary (account 111):

Settlement cycle	Opening portfolio		Executed trades		Open orders (book)		New order	
	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0	-	-	-	-	-	-	-	-
T+1	-	-	BRL75,000	-	BRL45,000	-	-	-
T+2	-	-	BRL105,000	BRL30,000	-	-	BRL37,500	-

Scenario summary (account 222):

Settlement cycle	Opening portfolio		Executed trades		Open orders (book)		New order	
	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0	BRL20,000	BRL10,000	-	-	-	-	-	-
T+1	-	-	-	BRL60,000	BRL15,000	-	-	-
T+2	-	-	-	BRL600,000	-	-	-	-

Account 111 summary:

Account	Settlement cycle	$+L_t + S_t + OC_t + oc_t$	$\min(+L_t + S_t + OC_t + oc_t, 0)$
Account 111	T+0	BRL0	BRL0
Account 111	T+1	-BRL120,000	-BRL120,000
Account 111	T+2	-BRL112,500	-BRL112,500
Cycles' sum			-BRL232,500
-1* sum		SDP:	**BRL232,500**

Account 222 summary:

Account	Settlement cycle	$+L_t + S_t + OC_t + oc_t$	$\min(+L_t + S_t + OC_t + oc_t, 0)$
Account 222	T+0	-BRL10,000	-BRL10,000
Account 222	T+1	BRL45,000	BRL0
Account 222	T+2	BRL600,000	R$0
Cycles' sum		-BRL10,000	-BRL10,000
-1* sum		SDP:	BRL10,000

Investor balance:

Investor	Account 111	Account 222	Balance	SDP
123456	BRL232,500	BRL10,000	BRL242,500	24.25%

5.1.4 Potential short sale balance (SPVD)

The SPVD measure is an aggregate metrics that limits the potential financial balance resulting from short sales.

- Purpose

The SPVD measure aims to limit, on aggregate, the potential balance of short sales in the settlement windows of T+0, T+1 and T+2.

- Features

The SPVD limit is mandatorily established by PNPs, PLs and PNs for clients and intermediaries (PNP assigning an SPVD limit to another PNP or PN), meaning that the absence of a limit definition, through either its direct configuration in the client or in a limits profile, leads to the protected mode being triggered and order cancellations being submitted. The latter can only cancel the order that violated the limit, as long as it has not been filled yet. For accounts and professional traders, this configuration is optional, that is, when their limits are not setup by the participant, the investor limit will be inherited.

The measure's validation will always be carried out in entities with a defined limit, regardless of where the investor order comes from — trading desk or DMA.

- Segments

For calculation purposes, the following types of instruments are considered:

- The entire equities segment, except stock options and forwards; and

- Corporate debt ETF instruments.

In turn, testing instruments for either segment are not considered.

According to the type of account, the following are considered for metrics evaluation purposes:

- Definitive accounts: Sell orders, both buy and sell trades, and call or put option exercises; and

- Transitory accounts: Sell orders, sell trades and call or put option exercises.

For calculation purposes, the reference prices of the asset underlying the instrument under evaluation are utilized, as well as their respective settlement dates. This means that no netting applies to purchases and sales of instruments with different settlement dates. On the other hand, on the same day, netting applies to purchases, sell orders and sales in definitive accounts, provided their underlying asset is the same. There is no netting in transitory accounts.

The following instruments are jointly evaluated by their underlying assets:

- Delivery obligations

  - Sales in the cash market (corporate debt and equities)

  - Exercise of long puts

  - Exercise of short calls

- Receipt rights

  - Purchases in the cash market (corporate debt and equities)

- Exercise of short puts

- Exercise of long calls

Each leg of user-defined strategies is assessed, according to the side and ratio of each leg.

Calculations are processed immediately after new orders or order modifications are entered into the book. If the threshold defined by the measure is breached, the protected mode is activated and order cancellation requests are submitted, which, if possible, are intended to cancel only the order that violated the limit, as long as it has not been filled yet. For assessment purposes, when the mandatory limit has not been defined, it will be considered as zero.

The same behavior is observed when the limit given by the carrying PNP/PL is violated due to transactions executed by the executing PNP or PN.

In case of a limit is reduced to an amount below the current balance of an entity, the protected mode is triggered, but the orders in the book are maintained.

The final SPVD value for investors will be the sum of all SPVD values across each of the investor accounts.

- Calculation metrics for SPVD

Definitive account

$$SPVD_{DfAcct} = \sum_{i}^{N\ assets} SPVD_{DfAcct}(i)$$

$$SPVD_{DfAcct}(i) = \left(\sum_{t=1}^{2} VD_{T+t_{DfAcct}}(i) \right) * P_{Ref}(i)$$

$$VD_{T+t_{DfAcct}}(i) = \max(-\ (LC_{T+t}(i) - LV_{T+t}(i))\ -\ (C_{T+t}(i) - V_{T+t}(i)) + OFV_{T+t}(i) + ofv_{T+t}(i); 0)$$

Where:

$SPVD_{DfAcct}$ is the potential short sale balance in definitive account *DfAcct*;

$SPVD_{DfAcct}(i)$ is the potential short sale balance on asset *i* in definitive account *DfAcct*;

$VD_{T+t_{DfAcct}}(i)$ is the total delivery obligations on asset *i* in definitive account *DfAcct*, to be settled on *T+t*;

$LC_{T+t}(i)$ is the total receipt rights on asset *i* on *T+t*, derived from the opening portfolio position (always positive);

$LV_{T+t}(i)$ is the total delivery obligations on asset *i* on *T+t*, derived from the opening portfolio position (always positive). Covered short positions are ignored and don't affect this variable;

$C_{T+t}(i)$ is the total receipt rights on asset *i* on *T+t*, derived from trades carried out on the day (always positive);

$V_{T+t}(i)$ is the total delivery obligations on asset *i* on *T+t*, derived from trades carried out on the day (always positive);

$OFV_{T+t}(i)$ is the number of open orders with an obligation to deliver asset *i* on *T+t*. Always positive; cash market sell orders only;

$ofv_{T+t}(i)$ is the new order quantity with an obligation to deliver asset *i* on *T+t* under analysis. Always positive; cash market sell orders only; and

$P_{Ref}(i)$ is asset *i*'s reference price.

<u>Transitory account</u>

$$SPVD_{TrAcct} = \sum_{i}^{N\ assets} SPVD_{TrAcct}(i)$$

$$SPVD_{TrAcct}(i) = \left(\sum_{t=0}^{2} VD_{D+t_{TrAcct}}(i) \right) * P_{Ref}(i)$$

$$VD_{T+t_{CtTr}}(i) = \max(LV_{T+t}(i) + T(i) + OFV_{T+t}(i) + ofv_{T+t}(i); 0)$$

Where:

$SPVD_{TrAcct}$ is the potential short sale balance in transitory account *TrAcct*;

$SPVD_{TrAcct}(i)$ is the potential short sale balance on asset *i* in transitory account *TrAcct*;

$VD_{T+t_{TrAcct}}(i)$ is the total delivery obligations on asset *i* in transitory account *TrAcct*, to be settled on *T+t*;

$LV_{T+t}(i)$ is the total delivery rights on asset *i* on *T+t*, derived from the opening portfolio position (always positive). Covered short positions are ignored and don't affect this variable;

$V_{T+t}(i)$ is the total delivery obligations on asset *i* on *T+t*, derived from trades carried out on the day (always positive);

$OFV_{T+t}(i)$ is the number of open orders with an obligation to deliver asset *i* on *T+t*. Always positive; only sell orders in the cash market;

$ofv_{T+t}(i)$ is the new order quantity with an obligation to deliver asset *i* on *T+t* under analysis. Always positive; only sell orders in the cash market; and

$P_{Ref}(i)$ is asset *i*'s reference price.

Investor

$$SPVD_{Inv} = \sum_{\forall DfAcct} SPVD_{DefAcct} + \sum_{\forall TrAcct} SPVD_{TrAcct}$$

Where:

$SPVD_{Inv}$ is the potential short sale balance for investor *Inv*;

$SPVD_{DfAcct}$ is the potential short sale balance in definitive account *DfAcct*; and

$SPVD_{TrAcct}$ is the potential short sale balance in transitory account *TrAcct*.

- Examples

  (A) Definitive account

  Assumptions

  - Permission and limit in the authorized market for stocks belonging to IBRX-100 index;

  - Permission and limit in the authorized market for stocks not belonging to IBRX-100 index.

  - Permission and limit in the authorized investment market (ETFs/inv. funds).

  - B3SA3 reference price = BRL15.00.

  - IMAB11 reference price = BRL80.00.

  - SPVD set to BRL1,000,000 for investor.

  - Investor 123456 holds a definitive account (567).

  - Brokerage house 700.

  - Opening portfolio short in 1,000 B3SA3 shares at BRL10.00 to be settled on T+1.

  Scenario 1

  At 10:15 am (current trading session):

  ➢ Investor exercises 20,000 B3SA3 puts (T+1) at BRL16.00.

Definitive account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1	1,000							
T+2			20,000					

The SPVD risk measure will be at 315,000 (31.50%). B3SA3 reference price: BRL15.00.

At 10:20 am (current trading session):

➢ Investor enters bid for 10,000 B3SA3 shares at BRL14.00. Order should be open in book.

Definitive account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1	1,000							
T+2			20,000		10,000			

The SPVD risk measure doesn't change, as it doesn't consider buy orders.

At 10:30 am (current trading session):

➢ The previous order is filled, meaning that a new purchase of 10,000 B3SA3 shares at BRL14.00 has been executed.

Definitive account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1	1,000							
T+2			10,000	20,000				

The SPVD risk measure is updated to 165,000 (16.50%). B3SA3 reference price: BRL15.00.

At 11:50 am (current trading session):

➢ Investor enters offer for 1,000 IMAB11 units (T+1) at BRL85.00. Order should be open in book.

Definitive account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1	1,000							1,000
T+2			10,000	20,000				

The SPVD risk measure is updated to 245,000 (24.50%). IMAB11 reference price: BRL80.00.

Scenario 2

At 2:15 pm (current trading session):

➢ Investor sells (trade) 30,000 B3SA3 shares (T+2) at BRL18.00.

Definitive account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1	1,000							
T+2				30,000				

The SPVD risk measure will be at 465,000 (46.50%). B3SA3 reference price: BRL15.00.

At 2:30 pm (current trading session):

➢ Investor buys (trade) 1,000 IMAB11 units (T+1) at BRL75.00.

Definitive account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1		1,000	1,000					
T+2			30,000					

The SPVD risk measure doesn't change, as there is no netting between different settlement dates and different instruments.

At 2:45 pm (current trading session):

➢ Investor enters offer for 4,000 B3SA3 shares (T+2) at BRL20.00.

▪ Order enters book

Definitive account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1		1,000	1,000					
T+2			30,000					40,000

The SPVD risk measure is updated to 1,065,000 (106.50%). B3SA3 reference price: BRL15.00.

As the measure's value is in excess of the limit, LiNe Clearing will activate the protected mode and try to cancel the order.

If order has not been filled, its cancellation will be successful, the SPVD measure consumption will return to 465,000 (46.50%) and the investor will remain in protected mode.

- After order is canceled

Definitive account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	**Long**	**Short**	**Long**	**Short**	**Bid**	**Offer**	**Bid**	**Offer**
T+0								
T+1		1,000	1,000					
T+2			30,000					40,000

(B) Transitory account

Assumptions

- o Permission and limit in the authorized market for stocks belonging to IBRX-100 index.

- o Permission and limit in the authorized market for stocks not belonging to IBRX-100 Index.

- o Permission and limit in the authorized investment market (ETFs/inv. funds).

- o B3SA3 reference price = BRL15.00.

- o IMAB11 reference price = BRL80.00.

- o SPVD set to BRL1,000,000 for investor.

- o Investor 654321 holds a transitory account (789).

- o Brokerage house 900.

- o Opening portfolio with no positions.

Scenario 1

At 10:15 am (current trading session):

➢ Investor sells (trade) 20,000 B3SA3 shares (T+2) at BRL16.00.

Transitory account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1								
T+2			20,000					

The SPVD risk measure will be at 300,000 (30.00%). B3SA3 reference price: BRL15.00.

At 10:20 am (current trading session):

➢ Investor enters bid for 10,000 B3SA3 shares at BRL14.00. Order should be open in book.

Transitory account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1								
T+2			20,000				10,000	

The SPVD risk measure doesn't change, as there is no netting in transitory accounts.

At 10:30 am (current trading session):

➢ The previous order is filled, meaning that a new purchase of 10,000 shares at BRL14.00 has been executed.

Transitory account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1								
T+2			10,000	20,000				

SPVD risk measure doesn't change, as there is no netting in transitory accounts for either orders or trades.

At 11:50 am (current trading session)

➤ Investor enters offer for 1,000 IMAB11 units (T+1) at BRL85.00. Order should be open in book.

Transitory account	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	**Long**	**Short**	**Long**	**Short**	**Bid**	**Offer**	**Buy**	**Offer**
T+0								
T+1								1,000
T+2			10,000	20,000				

The SPVD risk measure is updated to 380,000 (38.00%). IMAB11 reference price: BRL80.00.

(C) Calculation for investor

Assumptions

- o Permission and limit in the authorized market for stocks belonging to IBRX-100 index.

- o Permission and limit in the authorized market for stocks not belonging to IBRX-100 Index.

- o Permission and limit in the authorized investment market (ETFs/inv. funds).

- o B3SA3 reference price = BRL15.00.

- o IMAB11 reference price = BRL80.00.

- o SPVD measure set to BRL1,000,000 for investor.

- o Investor 2345678 holds one definitive account (222) and one transitory account (333).

- o Brokerage house 999.

- o Opening portfolio short in 1,000 B3SA3 shares at BRL10.00 to be settled on T+1 in definitive account (222) and opening portfolio with no positions in transitory account (333).

Scenario 1

At 10:15 am (current trading session):

➤ Account 222 sells (trade) 10,000 B3SA3 shares (T+2) at BRL20.00.

Investor total	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1		1,000						
T+2				10,000				

The SPVD risk measure for this investor will be at 165,000 (16.50%). B3SA3 reference price: BRL15.00.

At 10:20 am (current trading session):

➤ Account 222 buys (trade) 300 B3SA3 shares (T+2) at BRL19.00.

Investor total	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1		1,000						
T+2			300	10,000				

The SPVD risk measure for this investor is updated to 165,500 (16.05%). B3SA3 reference price: BRL15.00.

At 10:30 am (current trading session):

➢ Account 333 sells (trade) 10,000 B3SA3 shares (T+2) at BRL21.00.

Investor total	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1		1,000						
T+2			300	20,000				

SPVD risk measure for this investor is updated to 310,500 (31.05%). B3SA3 reference price: BRL15.00.

At 11:50 am (current trading session):

➢ Account 333 sells (trade) 8,000 IMAB11 units (T+1) at market (trade price: BRL82.00).

Investor total	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1		1,000		8,000				
T+2			300	20,000				

The SPVD risk measure for this investor is updated to 950,500 (95.05%). IMAB11 reference price: BRL80.00.

At 2:45 pm (current trading session):

➢ Account 333 buys (trade) 8,000 IMAB11 units (T+1) at BRL79.00.

Investor total	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	Long	Short	Long	Short	Bid	Offer	Bid	Offer
T+0								
T+1		1,000	8,000	8,000				
T+2			300	20,000				

The SPVD risk measure for this investor doesn't change, as IMAB11 purchase and sale are made in a transitory account to which netting doesn't apply.

At 3:30 pm (current trading session):

➢ Account 222 enters an aggressor offer for 5,000 B3SA3 shares (T+2) at BRL22.00 (trade is executed).

Investor total	Opening portfolio		Executed trades (T0)		Open orders (book)		New order	
Settlement cycle	**Long**	**Short**	**Long**	**Short**	**Bid**	**Offer**	**Bid**	**Offer**
T+0								
T+1		1,000	8,000	8,000				
T+2			300	25,000				

The SPVD risk measure for this investor is updated to 1,025,500 (102.55%). B3SA3 reference price: BRL15.00.

As the measure's value is in excess of the limit, LiNe Clearing will activate the protected mode and try to cancel the aggressor order.

But the order can no longer be canceled, as it has been matched with a buy order resting on the book, thus executing a trade. Therefore, consumption of the SPVD measure remains at 1,025,500 (102,55%) and the investor will stay in protected mode.

At 4:30 pm (current trading session):

➢ Account 333 enters offer for 500 B3SA3 shares (T+2) at BRL23.00.

The order is rejected, as the investor is in protected mode and the new sell order for B3SA3 doesn't meet the condition for the balance of shares to be reduced (SPI reduction). The SPVD measure consumption remains unchanged at 1,025,500 (102,55%).

5.1.5   Day trade financial balance (SFD)

SFD is a risk measure that limits financial losses on day trades.

- Purpose

The SFD measure aims to limit losses (stop-loss strategy) incurred by day trades and mitigate risks associated with automated trading systems.

- Features

The SFD limit is mandatorily established by the PNPs, PLs and PNs for clients but is optional for accounts. The relevant limit is assessed regardless of where the investor order comes from — trading desk or DMA.

- Segments

Losses are assessed in a consolidated manner for both segments (equities and derivatives).

For calculation purposes:

- o Odd-lot instruments (equities) are included within the underlying securities;

- o Block trading solutions for equities and securities representing equities are included within the underlying asset.

- o Options exercises are not considered;

- o Forward instruments (equities) are not considered;

- o Testing instruments for either segment are not considered; and

- o Instruments traded at their closing price plus a spread will be subject to a specific unit price (PU) calculation, as presented below. Trade at settlement in DI1 futures (DI1 TAS) and the DI1 futures with a corresponding maturity will be evaluated as if they were different instruments, meaning that DI1

futures transactions should not impact SFD's calculation for DI1 TAS transactions.

The financial results of strategies will be calculated according to the type and features of each strategy, and they will be evaluated either individually or by each individual leg. For all user-defined strategies (UDS) and B3-defined strategies (EDS) with neutral unit price (PU) or neutral DV01 in one-day interbank deposit futures (DI1 EDS), DI x IPCA spread futures (DAP EDS), FRA on DI x USD spread (FRC EDS), structure U.S. dollar rollover transactions (DOL/WDO EDS), structure Ibovespa rollover transactions (IND/WIN EDS), structure Small Cap rollover transactions (SML EDS) and structured commodities rollover transactions (BGI/ICF/ETH/CCM/SJC/SOY/CNL EDS), the measure's assessment considers the trades executed across each strategy and the instruments belonging to the relevant strategy (legs). For further EDS strategies, the measure's assessment considers only the trades carried out in the strategy.

- Metrics evaluation

In its calculations, this risk dimension contemplates only trades successfully executed or canceled (Trade and TradeCancel). Therefore, quantity and price will always be specified (adjusted prices are not required).

The relevant assessment is in place for investors, their related definitive and transitory accounts, and for professional traders.

For definitive or transitory accounts, the SFD calculation considers the traded securities features and the quantity and price of each executed trade (by security) in the corresponding account. It should be noted that losses are assessed by consolidating the net balance, either positive or negative, of each instrument traded in the account (instead of considering only instruments with a loss).

For minicontracts, the SFD risk measure will aggregate all the executed trades with their respective "standard" instruments. Thus, this tool will be able to calculate, for instance, arbitrage transactions.

For investors, SFD calculation is the sum of the SFDs of their definitive and transitory accounts.

For professional traders, SFD calculation applies the same rules as those covering transitory accounts.

SFD configuration is mandatory for investors, which means that the lack of a limit definition through either its direct configuration in the investor or in a limits profile leads to the protected mode being triggered and all of the relevant investor orders open on the book being canceled.

The SFD limit setup is optional for accounts and professional traders, but its calculations are always performed and validated against the limit configured directly in the investor or in a limits profile, which is used in SFD's calculations for investors.

When an SFD limit is violated, the protected mode will be activated for the investor or account and all of the orders open on the book and belonging to said investor or account will be canceled.

In case a trader violates an SFD limit, the locked mode will be enabled, but the trader's orders will not be canceled. It should be added that there is no SPI position for professional traders. Hence, the trader will not be allowed to trade until the SFD limit is increased and the protected mode (locked mode) is disabled.

For questions on financial calculations of derivatives, equities or government debt, B3 provides a webpage with all the relevant information and calculations involving the products it trades:

http://www.bmfbovespa.com.br/pt_br/produtos/listados-a-vista-e-derivativos/juros/futuro-de-cupom-cambial-de-depositos-interfinanceiros-de-um-dia.htm#

- Calculation metrics for SFD

    Definitive account

$$SFD_{DfAcct} = -\min\left[\left(\sum_{\forall i}\min(QtyS_i;\ QtyB_i)\times(pmS_i - pmB_i)\times M_1 \times M_2\right);0\right]$$

Where:

SFD_{DfAcct} is the day trade financial balance in the definitive account;

$QtyS_i$ is the sum of the number of shares/contracts sold in instrument i in the account;

$QtyB_i$ is the sum of the number of shares/contracts bought in instrument i in the account;

pmS_i is instrument i's average sell price in the account;

pmB_i is instrument i's average buy price in the account;

M_1 and M_2 are the multipliers (if applicable) associated with instrument i, according to the provisions in each instrument's contract specifications.

Transitory account

Even though netting is not applicable, in the calculation of the SFD measure the conservative approach is that the allocation of all trades will occur in a single investor. Therefore:

$$SFD_{TrAcct} = -\min\left[\left(\sum_{\forall i}\min(QtyS_i;\ QtyB_i)\times(pmS_i - pmB_i)\times M_1 \times M_2\right);0\right]$$

Where:

SFD_{TrAcct} is the day trade financial balance in the transitory account;

$QtyS_i$ is the sum of the number of shares/contracts sold in instrument i in the account;

$QtyB_i$ is the sum of the number of shares/contracts bought in instrument i in the account;

pmS_i is instrument i's average sell price in the account;

pmB_i is instrument i's average buy price in the account;

M_1 and M_2 are the multipliers (if applicable) associated with instrument i, according to the provisions in each instrument's contract specifications.

<u>Investor</u>

An investor's day trade financial balance, comprising definitive and transitory accounts, is calculated by the formula:

$$SFD_{Inv} = \sum_{\forall DfAcct} SFD_{DfAcct} + \sum_{\forall TrAcct} SFD_{TrAcct}$$

Where:

SFD_{Inv} is the investor's day trade financial balance.

<u>DI1 TAS unit price (PU) calculation</u>

To calculate the unit price of DI1 TAS transactions, the following equation applies:

$$PU_{DI1\,TAS} = \frac{100,000}{\left(1 + \frac{i}{100} + \frac{iA_t}{100}\right)^{\frac{n}{252}}}$$

$PU_{DI1\,TAS}$ is the trade price, in PU;

iA_t is the reference price value (the previous business day's closing rate) of the DI1 futures contract with the same maturity as the DI1 TAS;

i is the spread traded; and

n is the number of reserves for the period between the trade date and the business day preceding contract maturity.

- Examples

    (A) Definitive account

Assumptions

o Permission and limit in all authorized markets.

o SFD set to BRL1,000,000.

o Investor 123456 (accounts 178 and 179 linked to this investor).

o Brokerage house 700.

Scenario 1

Trading in VALE5; account 178:

➢ Investor buys (trade) 100 shares at BRL25.00;

➢ Investor buys (trade) 200 shares at BRL24.00;

➢ Investor buys (trade) 300 shares at BRL23.00;

➢ Investor buys (trade) 400 shares at BRL22.00;

➢ Investor sells (trade) 100 shares at BRL20.00;

➢ Investor sells (trade) 200 shares at BRL19.00.

Risk formula for investor assessment:

$$SFD_{DfAcct} = -\min\left[\left(\sum_{\forall i} \min(qtyS_i; \; qtyB_i) \times (pmS_i - pmB_i) \times M_1 \times M_2\right); 0\right]$$

Scenario summary:

Instrument	Buy qty	Buy price	Sell qty	Sell price
VALE5	100	BRL25.00	100	BRL20.00
VALE5	200	BRL24.00	200	BRL19.00
VALE5	300	BRL23.00		
VALE5	400	BRL22.00		
Number of shares traded	1,000		300	

Minimum qty between purchase and sale	300

Description	Values
Financial volume of purchases (Buy qty * Buy price)	BRL23,000.00
Financial volume of sales (Sell qty * Sell price)	BRL5,800.00

pmS_i (BRL5,800/300) Financial volume of sales/Sell qty	BRL19.33
pmB_i (BRL23,000/1,000) Financial volume of purchases/Buy qty	BRL23.00
$pmS_i - pmB_i$	-BRL3.67
M_1	1
M_2	1
Instrument	**-BRL1,101.00**
SFD	**BRL1,101.00**

$$1,100.00 = -\min\left[\left(\sum_{\forall i} \min(300_i;\ 1,000) \times (19.33 - 23.00) \times 1 \times 1\right); 0\right]$$

Result: Sell trades will be accepted. The SFD risk measure calculation will be at 0.11% for account 178.

Scenario 2

Trading in minicontracts (WDO); account 179:

➢ Investor buys (trade) 625 contracts at BRL3,140.000;

➢ Investor buys (trade) 625 contracts at BRL3,141.000;

➢ Investor buys (trade) 625 contracts at BRL3,139.000;

➢ Investor buys (trade) 1,250 contracts at BRL3,138.000.

Trading in USD contract (DOL):

➢ Investor sells (trade) 125 contracts at R$3,130.000;

➢ Investor sells (trade) 125 contracts at R$3,125.000;

➢ Investor sells (trade) 125 contracts at R$3,136.000;

➢ Investor sells (trade) 250 contracts at R$3,138.000.

Scenario summary:

Instrument	M_1	M_2
WDO	10	1
DOL	50	1

Instrument	Buy qty	Buy price	Qty (b/M_1)	Price (b/M_2)
WDO	625	3,140	(625*10) 6,250	3,140
WDO	625	3,141	(625*10) 6,250	3,141
WDO	625	3,141	(625*10) 6,250	3,141
WDO	1,250	3,138	(625*10) 12,500	3,138
Number of contracts traded	*3,125*		31,250	

Instrument	Sell qty	Sell price	Qty (s/M_1)	Price (s/M_2)
DOL	125	3,130	(125*50) 6,250	3,130
DOL	125	3,125	(125*50) 6,250	3,125
DOL	125	3,136	(125*50) 6,250	3,136
DOL	250	3,138	(250*50) 12,500	3,138
Number of contracts traded	*625*		31,250	0.00

Summary	Values
Total contracts bought	31,250
Total contracts sold	31,250
Min (qtyS_i; qtyB_i)	31,250
Average buy price	98,112,500
Average sell price	97,918,750

pmS_i	3,139.60
pmB_i	3,133.40
pmS_i-pmB_i	6.20

Account balance:

Investor balance

Account	Balance	SFD
178	BRL1,100	0.11%
179	BRL193,750	19.37%
Investor 123456	**BRL194,850**	**19.48%**

5.1.6   Forward trade balance by investor (STD)

The STD risk measure limits the quantity traded in the equities forward market.

- Purpose

The STD measure aims to limit the total quantity bought and sold in equities forward transactions per investor and instrument.

- Features

B3 will provide a maximum limit per instrument to all participants, who may modify the relevant value as long as it doesn't violate the B3 threshold. In the absence of such limit management (STD), the value defined by B3 will be managed.

- Segments

The STD measure assessment is only available for the equities segment.

- Metrics evaluation

The STD limit is assessed regardless of where the investor order comes from — trading desk or DMA.

The relevant assessment is available for investors, accounts and traders (by instrument). However, PNPs and PNs must be alert because, for the sake of a trading rule in place at both registration and the clearinghouse, not all account types are authorized to trade forwards. In this case, PNPs and PNs are required to assess whether a particular forward market order is being submitted from an authorized account, even if the limit has been defined and falls in with a client's acceptable volumes.

Accounts that are apt to trade forwards: definitive account and master account (transitory).

PNP and PN managed limits in excess of the B3 defined limit will not be permitted for forward instruments.

Forward market orders will not be allowed for investors or accounts in protected mode.

For calculation purposes:

- o Forward trades for each maturity or mode must be included within the underlying asset (securities); and

- o The STD measure uses the net balance (in quantity) of trades executed on the day plus the individual assessment of each new order to be sent to the matching engine.

- Calculation metrics for STD

$$STD_i = |+(B_i - S_i) + o_i|$$

Where:

B_i is the balance of forward purchases in instrument i executed on the day by the investor;

S_i is the balance of forward sales in instrument i executed on the day by the investor; and

o_i is the new forward market order in an account to be evaluated, positive for buys and negative for sells.

5.1.7   Risk measure (RMKT)

For both segments (equities and derivatives), the RMKT assessment considers the financial value traded (conceptually speaking), but this value is obtained directly from the quantity stated in the order entered or in the trades executed.

- Purpose

The RMKT measure aims to limit the increment of risk generated by the set of trades in the opening portfolio and by the transactions executed and orders submitted throughout the day, compared with the risk at market opening, considering only the trades in the opening portfolio.

- Features

The RMKT limit is mandatorily set by PNPs and PNs for investors and is optional for accounts. It will not be assessed for professional traders but only for the accounts linked to their transactions.

- Segments

For calculation purposes:

o Cash market securities in the equities or corporate debt segments (stocks, odd lots, block trading solutions for equities and securities representing equities, BDRs, ETFs, real estate funds, stock investment funds, private equity funds), which are covered by the SDP measure, are not considered but their options are;

o Equities forward instruments¸ which are covered by the STD measure, are also not considered;

o All contracts in the derivatives segment are considered;

o Over-the-counter derivatives contracts (swaps, forwards and flexible options) are also considered as trades in the opening portfolio and are duly considered for opening risk purposes;

o Options exercises are included within the underlying asset (securities) but only if the underlying asset market is also considered;

o User-defined strategies and B3-defined strategies are assessed by considering the relevant strategy as a single instrument;

o Instruments traded at their closing price plus a spread will be subject to a specific procedure. Trade at settlement in DI1 futures (DI1 TAS) will be evaluated as if it were a DI1 futures with a corresponding maturity; and

o Testing instruments in both segments (equities and derivatives) are not considered.

- Metrics evaluation

In its calculations, the RMKT measure makes use of:

o Unit risk constants per instrument (market value fluctuation) under each stress scenario. Note that the stress scenarios are the same as those used by the B3 Clearinghouse CORE methodology for margin calculation purposes;

o Trades executed on the day and orders open in (or to be sent to) the matching engine; and

o Trades at the start of day included in the opening portfolio.

The RMKT assessment is available for investors and their definitive and transitory accounts.

For definitive accounts, RMKT calculation contemplates the following:

- All trades executed on the day, trades in the opening portfolio and orders open in the book, evaluated under the same stress scenarios;

- The risk of trades executed on the day and of trades in the opening portfolio under each scenario — resulting from the sum of the risks, whether of profit or loss, of trades (net balance in number of contracts or quantity) in each instrument under the relevant scenario; and

- Orders open in the book under each scenario — resulting solely from the sum of the risk of loss of the unfilled portion of each order in each instrument under the relevant scenario.

For transitory accounts, RMKT calculation considers:

- All trades executed on the day, trades in the opening portfolio and orders open in the book, evaluated under the same stress scenarios;

- The risk of trades executed on the day and of trades in the opening portfolio under each scenario — resulting solely from the sum of the risk of trades with a loss in each instrument under the relevant scenario; and

- Orders open in the book under each scenario — resulting solely from the sum of the risk of loss of the unfilled portion of each order in each instrument under the relevant scenario.

For investors, RMKT calculation follows the same aggregation defined for their definitive and transitory accounts.

Unlike other risk measures, RMKT has the following peculiarities:

- Risk assessment must be defined for each investor or for each investor account, but it cannot be defined for both entities;

- The relevant choice is mutually exclusive and cannot be altered on an intraday basis (changes to this feature take effect only on T+1 or with the full reload of the LiNe platform);

o This feature results from the high processing cost of RMKT's assessments, thus preventing it from being jointly done for both entities (investor and account) without compromising the system performance;

o RMKT configuration is mandatory for investors, meaning that the absence of a limit definition, through either its direct configuration in the investor or in a limits profile, leads to the protected mode being triggered and order cancellations being submitted. The latter can only cancel the order that violated the limit, as long as it has not been filled yet;

o The RMKT limit is optional for accounts, which means that, in the absence of its configuration for accounts, the investor setup will be used as a reference; and

o When the risk limit is violated, the protected mode is triggered for the investor and order cancellations are submitted. The latter only cancel the order that violated the limit, as long as it has not been filled yet. Therefore, the other orders in the book that were not responsible for the RMKT limit violation will not be canceled.

BCB's Monetary Policy Committee (COPOM) option instruments have their risks measured independently of the stress scenario, at a value equivalent to the worst possible payoff by option expiration, considering all the trades executed on the day and open sell orders, with the following definitions.

Let the number of short (written) contracts in COPOM options be such that:

For definitive accounts, the short quantity is given by:

$$Q_{S_N,v}^{DfAcct} = C0_{S_N,v} + V_{S_N,v} - C_{S_N,v} + OV_{S_N,v} + ofv_{S_N,v}$$

For transitory accounts, the short quantity is given by:

$$Q_{S_N,v}^{TrAcct} = C0_{S_N,v} + V_{S_N,v} + OV_{S_N,v} + ofv_{S_N,v}$$

For investors, the short quantity is given by:

$$Q_{S_N,v}^{Inv} = \max\left(\sum_{DfAcct} Q_{S_N,v}^{DfAcct}, 0\right) + \sum_{TrAcct} Q_{S_N,v}^{TrAcct}$$

Where:

$C0_{S_N,v}$ is the balance (in number of contracts) of sell trades in the opening portfolio of COPOM options expiring in v with strike price S_N;

$V_{S_N,v}$ is the balance (in number of contracts) of sell trades in COPOM options expiring in v with strike price S_N;

$C_{S_N,v}$ is the balance (in number of contracts) of buy trades in COPOM options expiring in v with strike price S_N;

$OV_{S_N,v}$ is the balance (in number of contracts) of sell orders for COPOM options expiring in v with strike price S_N; and

$ofv_{S_N,v}$ is the sell order (in number of contracts) for COPOM options expiring in v with strike price S_N under assessment.

Let $Q_{S_1,v}, Q_{S_2,v}, \ldots, Q_{S_N,v}$ be the number of short (written) contracts in options positions with the same expiration date v and strike prices $S_1, S_2, \ldots, S_N$, as defined above, belonging to the account or investor under analysis.

The risk is null for all such positions, except for the position with the largest number of contracts, whose risk (negative) is equal to the option payoff, that is:

$$RMKT_{i_{CPM}} = \begin{cases} -abs(Q_{S^*,v}) \times C \times N & \text{if } S = S^* \\ 0 & \text{otherwise} \end{cases}$$

With:

$$Q_{S^*,v} = \max\left(Q_{S_1,v}, Q_{S_2,v}, \ldots, Q_{S_N,v}, 0\right)$$

Where:

i_{CPM} is the COPOM option expiring on v with strike price S_N;

S^* is the strike price of the COPOM option expiring on v with the largest number of short contracts, that is, S^* is such that $Q_{S^*,v} = \max(Q_{S_1,v}, Q_{S_2,v}, \ldots, Q_{S_N,v}, 0)$. When there is a tie (two or more instruments whose number of short contracts is equal to the maximum number of short contracts, only a single instrument will be chosen per expiration;

C is the contract size, in points; and

N is the point value, in Brazilian reals.

- Calculation metrics for RMKT

Calculation details for definitive account:

$$
RMKT_{DfAcct} = -\min\left\{ \min\left[\min_{\forall c} \left(C0_{(1,c)} + \sum_{\forall i} \begin{bmatrix} (C_i - V_i) \times RU_{(i,c)} \\ + \\ \min(OC_i \times RU_{(i,c)}; 0) \\ + \\ \min(-OV_i \times RU_{(i,c)}; 0) \\ + \\ \min(of_i \times RU_{(i,c)}; 0) \end{bmatrix} \right) \right. \right.
$$

$$
\left. \left. + \sum_{i_{CPM}} RMKT_{i_{CPM}}, 0 \right] - \min\left[\min_{\forall c}(C0_{(1,c)}), 0 \right], 0 \right\}
$$

Calculation details for transitory account:

$$
RMKT_{TrAcct} = -\min\left\{\min\left[\min_{\forall c}\left|C0_{(1,c)} + \sum_{\forall i}\left[\begin{array}{c}\min(C_i \times RU_{(i,c)};0) \\ + \\ \min(-V_i \times RU_{(i,c)};0) \\ + \\ \min(OC_i \times RU_{(i,c)};0) \\ + \\ \min(-OV_i \times RU_{(i,c)};0) \\ + \\ \min(of_i \times RU_{(i,c)};0)\end{array}\right]\right.\right.\right.
$$

$$
\left.\left.\left. + \sum_{i_{CPM}} RMKT_{i_{CPM}}, 0\right] - \min\left[\min_{\forall c}(C0_{(1,c)}), 0\right], 0\right\}
$$

Calculation details for investor:

$$RMKT_{Inv} = -\min\left\{ \min\left[\min_{\forall c} \left(\sum_{\forall DfAcct} C0_{(1,c)} + \sum_{\forall i} \left[\begin{array}{c} \sum_{\forall DfAcct} (C_i - V_i) \times RU_{(i,c)} \\ + \\ \sum_{\forall TrAcct} \left[\begin{array}{c} \min(C_i \times RU_{(i,c)}; 0) \\ + \\ \min(-V_i \times RU_{(i,c)}; 0) \end{array} \right] \\ + \\ \sum_{\forall DfAcct, \forall TrAcct} \left[\begin{array}{c} \min\left(OC_i \times RU_{(i,c)}; 0\right) \\ + \\ \min\left(-OV_i \times RU_{(i,c)}; 0\right) \end{array} \right] \\ + \\ \min\left(of_i \times RU_{(i,c)}; 0\right) \end{array} \right] \right) \right. \right.$$

$$\left. \left. + \sum_{i_{CPM}} RMKT_{i_{CPM}}, 0 \right] - \min\left[\min_{\forall c}\left(\sum_{\forall DfAcct} C0_{(1,c)} \right) + \sum_{i_{CPM_0}} RMKT_{i_{CPM_0}}, 0 \right], 0 \right\}$$

Where:

$RMKT_{DfAcct}$ is the risk measure for the definitive account;

$RMKT_{TrAcct}$ is the risk measure for the transitory account;

$RMKT_{Inv}$ is the risk measure for the investor;

$RMKT_{i_{CPM}}$ is the risk measure of COPOM option i_{CPM} for the account or investor under assessment;

$RMKT_{i_{CPM_0}}$ is the risk measure of COPOM option i_{CPM_0} for the account or investor under assessment;

C is each existing scenario;

i is each instrument traded, except COPOM options;

i_{CPM} is each COPOM option traded, considering the opening portfolio, trades executed on the day and orders open in the book;

i_{CPM_0} is each COPOM option traded, considering only the opening portfolio;

$C0_{(1,c)}$ is the one-dimensional matrix [1 x c] of the opening portfolio risks on the day under each account scenario (remains unchanged throughout the day);

$RU_{(i,c)}$ is the two-dimensional matrix [i x c] of the unit risk constants for each instrument (row) under each scenario (column);

C_i is the balance (in number of contracts) of buy trades executed for the account in instrument i;

V_i is the balance (in number of contracts) of sell trades executed for the account in instrument i;

OC_i is the balance (in number of contracts) of open buy orders for the account in instrument i;

OV_i is the balance (in number of contracts) of open sell orders for the account in instrument i; and

of_i is the order (number of contracts) under analysis for the account in instrument i. For buy orders, this value is positive; for sell orders, it is negative.

- Examples

  (1) Scenario where definitive account has only one instrument.

  Assumptions

  - Permission and limits for the authorized currency and index futures markets.

  - Investor 123456 has only one definitive account (ACC10).

o RMKT set to BRL3,000,000.

Opening portfolio balance (C0) long in 1,000 DOLN18 contracts.

Balance of trades (S) = 0

Buy orders (OC) = 0

Sell orders (OV) = 0

(A) **New order**

At 10:00 am:

➢ Investor enters bid for 100 DOLN18 contracts.

Definitive account	Instrument	C0	C	V	S = C -V	OC	OV	of
1000	DOLN18	1,000	0	0	0	100	0	

In this example, 5 scenarios will be used, instead of 3,990, for easy visualization.

The 5 scenarios calculated by CORE (post-trade) and sent to LiNe Trading for instrument DOLN18 are:

CORE scenarios					
Instrument	Scen1	Scen2	Scen3	Scen4	Scen5
DOLN18	700	20,000	-300	-800	-20,200

Instrument DOLN18 under scenario 1 posts a gain of BRL700; under scenario 2 it posts a gain of BRL20,000; and under scenario 3 it posts a loss of BRL300, and so on.

Risk of the DOLN18 order:

As used in the examples, index 1 refers to instrument 1; eventually, two instruments will be used.

$$R\left(of_1\right)_c = \min\left(of_1 \times RU_{(1,c)}; 0\right)$$

In the case of incoming orders, the purpose of the minimum function is to not consider gains.

R (of) = (Order quantity) * (Value in scenario)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(of_1)_c$	0	0	-30,000	-80,000	-2,020,000

As there would be gains of BRL70,000 and BRL2,000,000 under scenarios 1 and 2, they will be discarded.

Risk of the investor buy orders in the book (client doesn't hold open orders):

$$R\ (OC_1)_c = \min\left(OC_1 \times RU_{(1,c)}; 0\right)$$

R (OC) = (Bid qty in book) * (Value in scenario)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(OC_1)_c$	0	0	0	0	0

Risk of the investor sell orders in the book (client doesn't hold open orders):

$$R\ (OV_1)_c = \min\left(-OV_1 \times RU_{(1,c)}; 0\right)$$

R (OV) = (Offer qty in book) * (Value in scenario)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(OV_1)_c$	0	0	0	0	0

Risk of trades executed in DOLN18:

$$R(S_1)_c = (C_i - V_i) \times RU_{(i,c)}$$

R (S) = (Balance of trades) * (Value in scenario)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(S_1)_c$	0	0	0	0	0

In this case, the positive scenarios are taken into account (gains are considered); therefore, long and short positions are offset against each other.

Risk of trades in the opening portfolio:

$$R(C0)_{(1,c)} = Q \times RU_{(i,c)}$$

Where **Q** is a column matrix **[i, 1]** with the sum of quantities for each instrument i in the opening portfolio. If the position is sold, the quantity must be multiplied by (-1).

R (C0) = (Opening portfolio balance of trades) * (Value in scenario)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0)_{(1,c)}$	700,000	20,000,000	-300,000	-800,000	-20,200,000

The table below represents the summary of the results calculated by the system, called $R(C0, S, OF, of)$. The portfolio risk comprises the balance of trades in opening portfolio $C0$, executed trades S, orders in the book OF and incoming orders of.

Building R (S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(of_1)_c$	0	0	-30,000	-80,000	-2,020,000
$R(OC_1)_c$	0	0	0	0	0
$R(OV_1)_c$	0	0	0	0	0
$R(S_1)_c$	0	0	0	0	0
$R(S, OF, of)_c$	**0**	**0**	**-30,000**	**-80,000**	**-2,020,000**

$$R(S_1, OF_1, of_1)_c = R(S_1)_c + R(OC_1)_c + R(OV_1)_c + R(of_1)_c$$

RMKT is given by:

$$
RMKT_{DfAcct} = -\min\left\{\min\left[\underset{\forall c}{\min}\left(C0_{(1,c)} + \sum_{\forall i}\begin{bmatrix}(C_i - V_i)\times RU_{(i,c)}\\+\\\min(OC_i\times RU_{(i,c)};0)\\+\\\min(-OV_i\times RU_{(i,c)};0)\\+\\\min(of_i\times RU_{(i,c)};0)\end{bmatrix}\right)\right.\right.
$$

$$
\left.\left. + \sum_{i_{CPM}} RMKT_{i_{CPM}},0\right] - \min\left[\underset{\forall c}{\min}(C0_{(1,c)}) + \sum_{i_{CPM_0}} RMKT_{i_{CPM_0}},0\right],0\right\}
$$

Since there is only 1 instrument, summation in *i* is not necessary.

$RMKT_{DfAcct}$

$= -\min\left\{\min\left\{\underset{\forall c}{\min}\{[700{,}000, 20{,}000{,}000, -300{,}000, -800{,}000, -20{,}200{,}000]\right.\right.$

$+ [0, 0, -30{,}000, -80{,}000, -2{,}020{,}000]\}, 0\right\}$

$- \min\left\{\underset{\forall c}{\min}([700{,}000, 20{,}000{,}000, -300{,}000, -800{,}000, -20{,}200{,}000]), 0\right\}, 0\right\}$

$RMKT_{DfAcct}$

$= -\min\left\{\min\left\{\underset{\forall c}{\min}\{700{,}000, 20{,}000{,}000, -330{,}000, -88{,}000, -22{,}220{,}000\}, 0\right\}\right.$

$- \min\left\{\underset{\forall c}{\min}([700{,}000, 20{,}000{,}000, -300{,}000, -800{,}000, -20{,}200{,}000]), 0\right\}, 0\right\}$

$$RMKT_{DfAcct} = -\min\{-22{,}220{,}000 + 20{,}200{,}000, 0\}$$

$$RMKT_{DfAcct} = -\min\{-2{,}020{,}000, 0\}$$

$$RMKT_{DfAcct} = \mathbf{2{,}020{,}000}$$

Limit assigned to $RMKT = 3{,}000{,}000$

Therefore, the order will be accepted.

(B) **The order in (A) has been accepted and is open in the book**.

Opening portfolio balance (C0) long in 1,000 DOLN18 contracts.

Balance of trades (S) = 0

Buy orders (OC) = 100

Sell orders (OV) = 0

Incoming order = 0

RMKT limit = BRL3,000,000

Building R (S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(of_1)_c$	0	0	0	0	0
$R(OC_1)_c$	0	-0	-30,000	-80,0000	-2,020,0000
$R(OV_1)_c$	0	0	0	0	0
$R(S_1)_c$	0	0	0	0	0
$\mathbf{R(S, OF, of)_c}$	**0**	**0**	**-30,000**	**-80,000**	**-2,020,000**

$$
RMKT_{DfAcct} = -\min\left\{\min\left[\min_{\forall c}\left(C0_{(1,c)} + \sum_{\forall i}\begin{bmatrix}(C_i - V_i) \times RU_{(i,c)} \\ + \\ \min(OC_i \times RU_{(i,c)}; 0) \\ + \\ \min(-OV_i \times RU_{(i,c)}; 0) \\ + \\ \min(of_i \times RU_{(i,c)}; 0)\end{bmatrix}\right)\right.\right.
$$

$$
\left.\left. + \sum_{i_{CPM}} RMKT_{i_{CPM}}, 0\right] - \min\left[\min_{\forall c}(C0_{(1,c)}) + \sum_{i_{CPM_0}} RMKT_{i_{CPM_0}}, 0\right], 0\right\}
$$

$RMKT_{DfAcct}$

$$= -\min\left\{\min\left\{\begin{matrix}\min\\\forall c\end{matrix}\{[700{,}000, 20{,}000{,}000, -300{,}000, -800{,}000, -20{,}200{,}000]\right.\right.$$

$$+ [70{,}000, 2{,}000{,}000, -30{,}000, -80{,}000, -2{,}020{,}000]\}, 0\right\}$$

$$- \min\left\{\begin{matrix}\min\\\forall c\end{matrix}([700{,}000, 20{,}000{,}000, -300{,}000, -800{,}000, -20{,}200{,}000]), 0\right\}, 0\right\}$$

$RMKT_{DfAcct}$

$$= -\min\left\{\min\left\{\begin{matrix}\min\\\forall c\end{matrix}\{700{,}000, 20{,}000{,}000, -330{,}000, -88{,}000, -22{,}220{,}000\}, 0\right\}\right.$$

$$\left. - \min\left\{\begin{matrix}\min\\\forall c\end{matrix}([700{,}000, 20{,}000{,}000, -300{,}000, -800{,}000, -20{,}200{,}000]), 0\right\}, 0\right\}$$

$$RMKT_{DfAcct} = -\min\{-22{,}220{,}000 + 20{,}200{,}000\,, 0\}$$

$$RMKT_{DfAcct} = -\min\{-2{,}020{,}000\,, 0\}$$

$$\mathbf{RMKT_{DfAcct} = 2{,}020{,}000}$$

(C) **The order is matched and becomes a trade**

Building R (S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(of_1)_c$	0	0	0	0	0
$R(OC_1)_c$	0	0	0	0	0
$R(OV_1)_c$	0	0	0	0	0
$R(S_1)_c$	70,000	2,000,000	-30,000	-80,000	-2,020,000
$\mathbf{R(S, OF, of)_c}$	**70,000**	**2,000,000**	**-30,000**	**-80,000**	**-2,020,000**

Important to note is that, after the trade is executed, scenarios 1 and 2 are taken into account, since they are gain scenarios.

$$RMKT_{DfAcct} = -\min\left\{\min\left[\begin{array}{c}\min_{\forall c}\end{array}\left(C0_{(1,c)} + \sum_{\forall i}\begin{bmatrix}(C_i - V_i) \times RU_{(i,c)} \\ + \\ \min(OC_i \times RU_{(i,c)}; 0) \\ + \\ \min(-OV_i \times RU_{(i,c)}; 0) \\ + \\ \min(of_i \times RU_{(i,c)}; 0)\end{bmatrix}\right)\right.\right.$$

$$\left.\left. + \sum_{i_{CPM}} RMKT_{i_{CPM}}, 0\right] - \min\left[\min_{\forall c}(C0_{(1,c)}) + \sum_{i_{CPM_0}} RMKT_{i_{CPM_0}}, 0\right], 0\right\}$$

$RMKT_{DfAcct}$

$$= -\min\left\{\min\left\{\min_{\forall c}\{[700,000, 20,000,000, -300,000, -800,000, -20,200,000]\right.\right.$$

$$+ [70,000, 2,000,000, -30,000, -80,000, -2,020,000]\}, 0\right\}$$

$$- \min\left\{\min_{\forall c}([700,000, 20,000,000, -300,000, -800,000, -20,200,000]), 0\right\}, 0\right\}$$

$RMKT_{DfAcct}$

$$= -\min\left\{\min\left\{\min_{\forall c}\{770,000, 22,000,000, -330,000, -88,000, -22,220,000\}, 0\right\}\right.$$

$$\left. - \min\left\{\min_{\forall c}([700,000, 20,000,000, -300,000, -800,000, -20,200,000]), 0\right\}, 0\right\}$$

$$RMKT_{DfAcct} = -\min\{-22,220,000 + 20,200,000, 0\}$$

$$RMKT_{DfAcct} = -\min\{-2,020,000, 0\}$$

$$\mathbf{RMKT_{DfAcct} = 2,020,000}$$

(2) Definitive account **with two instruments**

Instrument	Value
DOLN18	
Opening portfolio	100
Balance of trades	0
Buy order (OC)	100
Sell order (OV)	0
Incoming orders (of)	0
Risk limit	3,000,000

Instrument	Value
DI1F20	
Opening portfolio	0
Balance of trades	0
Buy order (OC)	0
Sell order (OV)	0
Incoming orders (of)	-50
Risk limit	3,000,000

Considering that the DOLN18 order has been accepted, as shown in example (1), the new sell order sent for 200 DI1F20 contracts will now be analyzed.

Def. account	Instruments	C0	C	V	S	OC	OV	of
1000	DOLN18	100	0	0	0	100	0	0
1000	DI1F20	0	0	0	0	0	0	-50

Scenarios calculated by CORE:

CORE scenarios					
Instruments	Scen1	Scen2	Scen3	Scen4	Scen5
DOLN18	700	20,000	-300	-800	-20,200
DI1F20	500	12,000	200	-800	-20,200

Risk of new order for DI1F20: $R(of_2)_c = \min\left(of_2 \times RU_{(2,c)}; 0\right)$

R (of) = (Order quantity) * (Value in scenario)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(of_2)_c$	-25,000	600,000	-10,000	0	0

Risk of buy orders for DOLN18 and DI1F20 in book:

$$R(OC_1)_c = \min\left(OC_1 \times RU_{(1,c)}; 0\right)$$

$$R(OC_2)_c = \min\left(OC_2 \times RU_{(2,c)}; 0\right)$$

$$R(OC)_c = \sum_i \min\left(OC_i \times RU_{(i,c)}; 0\right)$$

R (OC) = (Buy order qty in book) * (Value in scenario)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen4
$R(OC_1)_c$	0	0	-30,000	-80,000	-2,020,000
$R(OC_2)_c$	0	0	0	0	0
$R(OC)_c$	0	0	-30,000	-80,000	-2,020,000

Risk of sell orders in book:

$$R(OV_1)_c = \min(OV_1 \times RU_{(1,c)}; 0)$$

$$R(OV_2)_c = \min(OV_2 \times RU_{(2,c)}; 0)$$

$$R(OV)_c = \sum_i \min(OV_i \times RU_{(i,c)}; 0)$$

R (OV) = (Buy order qty in book) * (Value in scenario)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(OV_1)_c$	0	0	0	0	0
$R(OV_2)_c$	0	0	0	0	0
$R(OV)_c$	0	0	0	0	0

Risk of executed trades:

$$R(S_1)_c = (C_1 - V_1) \times RU_{(1,c)}$$

$$R(S_2)_c = (C_2 - V_2) \times RU_{(2,c)}$$

R (OV) = (Offer quantity in book) * (Value in scenario)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(S_1)_c$	0	0	0	0	0
$R(S_2)_c$	0	0	0	0	0
$R(S)_c$	0	0	0	0	0

Note: If trades had been executed, long and short positions would have been offset against each other.

Summary:

Building R (S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(of)_c$	-25,000	-600,000	-10,000	-0	0
$R(OC)_c$	0	0	-30,000	-80,000	-2,020,000
$R(OV))_c$	0	0	0	0	0
$R(S)_c$	0	0	0	0	0
$R(S,OF,of)_c$	-25,000	-600,000	-40,000	-80,000	-2,020,000

Risk of trades in opening portfolio:

$$R(C0)_{(1,c)} = Q \times RU_{(i,c)}$$

Where **Q** is a column matrix **[i, 1]** with the sum of quantities for each instrument i in the opening portfolio. If the position is sold, the quantity must be multiplied by (-1).

R (C0) = (Opening portfolio balance of trades) * (Value in scenario)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0)_{(1,c)}$	70,000	2,000,000	-30,000	-80,000	-2,020,000

$$R(S,OF,S)_c = R(S)_c + R(OC)_c + R(OV)_c + R(of)_c$$

$$RMKT_{DfAcct} = -\min\left\{ \min\left[\min_{\forall c}\left(C0_{(1,c)} + \sum_{\forall i} \begin{bmatrix} (C_i - V_i) \times RU_{(i,c)} \\ + \\ \min(OC_i \times RU_{(i,c)};0) \\ + \\ \min(-OV_i \times RU_{(i,c)};0) \\ + \\ \min(of_i \times RU_{(i,c)};0) \end{bmatrix} \right) \right. \right.$$

$$\left. \left. + \sum_{i_{CPM}} RMKT_{i_{CPM}}, 0 \right] - \min\left[\min_{\forall c}(C0_{(1,c)}) + \sum_{i_{CPM_0}} RMKT_{i_{CPM_0}}, 0 \right], 0 \right\}$$

$RMKT_{DfAcct}$

$$= -\min\left\{\min\left\{\begin{matrix}\min\\\forall C\end{matrix}\{[70,000, 2,000,000, -30,000, -80,000, -2,020,000]\right.\right.$$

$$+ [-100,000, -2,400,000, -70,000, -80,000, -2,020,000]\}, 0\right\}$$

$$- \min\left\{\begin{matrix}\min\\\forall C\end{matrix}([70,000, 2,000,000, -30,000, -80,000, -2,020,000]), 0\right\}, 0\right\}$$

$RMKT_{DfAcct}$

$$= -\min\left\{\min\left\{\begin{matrix}\min\\\forall C\end{matrix}\{-30,000, -400,000, -100,000, -160,000, -4,040,000\}, 0\right\}\right.$$

$$- \min\left\{\begin{matrix}\min\\\forall C\end{matrix}([70,000, 2,000,000, -30,000, -80,000, -2,020,000]), 0\right\}, 0\right\}$$

$$RMKT_{DfAcct} = -\min\{-4,040,000 + 2,020,000 , 0\}$$

$$RMKT_{DfAcct} = -\min\{-2,020,000 , 0\}$$

$$\boxed{\mathbf{RMKT_{DfAcct} = 2,020,000}}$$

Limit assigned to $RMKT$ = BRL3,000,000

Hence, the order will be accepted.

(D) **The order is accepted and is open in the book**

Building R (S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(of)_c$	0	0	0	0	0
$R(OC)_c$	0	0	-30,000	-80,000	-2,020,000
$R(OV))_c$	-25,000	-600,000	-10,000	0	0
$R(S)_c$	0	0	0	0	0
$R(S,OF,of)_c$	**-25,000**	**-600,000**	**-40,000**	**-80,000**	**-2,020,000**

$$RMKT_{DfAcct} = -\min\left\{\min\left[\min_{\forall c}\left(C0_{(1,c)} + \sum_{\forall i}\begin{bmatrix}(C_i - V_i) \times RU_{(i,c)}\\+\\\min(OC_i \times RU_{(i,c)};0)\\+\\\min(-OV_i \times RU_{(i,c)};0)\\+\\\min(of_i \times RU_{(i,c)};0)\end{bmatrix}\right)\right.\right.$$

$$\left.\left. + \sum_{i_{CPM}} RMKT_{i_{CPM}},0\right] - \min\left[\min_{\forall c}(C0_{(1,c)}) + \sum_{i_{CPM_0}} RMKT_{i_{CPM_0}},0\right],0\right\}$$

$RMKT_{DfAcct}$

$$= -\min\left\{\min\left\{\min_{\forall c}\{[70{,}000, 2{,}000{,}000, -30{,}000, -80{,}000, -2{,}020{,}000]\right.\right.$$

$$+ [-25{,}000, -600{,}000, -40{,}000, -80{,}000, -2{,}020{,}000]\},0\Big\}$$

$$- \min\left\{\min_{\forall c}([70{,}000, 2{,}000{,}000, -30{,}000, -80{,}000, -2{,}020{,}000]),0\right\},0\right\}$$

$RMKT_{DfAcct}$

$$= -\min\left\{\min\left\{\min_{\forall c}\{-45{,}000, -1{,}400{,}000, -70{,}000, -160{,}000, -4{,}040{,}000\},0\right\}\right.$$

$$- \min\left\{\min_{\forall c}([70{,}000, 2{,}000{,}000, -30{,}000, -80{,}000, -2{,}020{,}000]),0\right\},0\right\}$$

$$RMKT_{DfAcct} = -\min\{-4{,}040{,}000 + 2{,}020{,}000, 0\}$$

$$RMKT_{DfAcct} = -\min\{-2{,}020{,}000, 0\}$$

$$\boxed{RMKT_{DfAcct} = 2{,}020{,}000}$$

(E) **The orders have become trades**

There are no orders open in the book; therefore, all the risks are equal to zero. Next step is to calculate the risk of balance S (trades executed).

R (S) = (Balance of trades) * (Value in scenario)					
Instruments	Scen1	Scen2	Scen3	Scen4	Scen5
DOLN18 $R(S_1)_c$	70,000	2,000,000	-30,000	-80,000	-2,020,000
DI1F20 $R(S_2)_c$	-25,000	600,000	-10,000	40,000	1,010,000
$R(S)_c$	45,000	1.400,000	-40,000	40,000	-1,010,000

It is noteworthy that, as far as the executed trades are concerned, gain scenarios are taken into account. In this case, they will be netted off.

Building R (S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(of)_c$	0	0	0	0	0
$R(OC)_c$	0	0	0	0	0
$R(OV))_c$	0	0	0	0	0
$R(S)_c$	45,000	1,400,000	-40,000	-40,000	-1,010,000
$\boldsymbol{R(S,OF,of)_c}$	**45,000**	**1.400,000**	**-40,000**	**-40,000**	**-1,010,000**

$$RMKT_{DfAcct} = -\min\left\{ \min\left[\min_{\forall c}\left(C0_{(1,c)} + \sum_{\forall i} \begin{bmatrix} (C_i - V_i) \times RU_{(i,c)} \\ + \\ \min(OC_i \times RU_{(i,c)}; 0) \\ + \\ \min(-OV_i \times RU_{(i,c)}; 0) \\ + \\ \min(of_i \times RU_{(i,c)}; 0) \end{bmatrix} \right) \right. \right.$$

$$\left. \left. + \sum_{i_{CPM}} RMKT_{i_{CPM}}, 0 \right] - \min\left[\min_{\forall c}(C0_{(1,c)}) + \sum_{i_{CPM_0}} RMKT_{i_{CPM_0}}, 0 \right], 0 \right\}$$

$RMKT_{DfAcct}$

$$= -\min\left\{ \min\left\{ \min_{\forall c}\{R(C0)_{(1,c)} \right. \right.$$

$$+ \left[R(S_1,OF_1,of_1)_1, R(S_1,OF_1,of_1)_2, R(S_1,OF_1,of_1)_3, R(S_1,OF_1,of_1)_4, R(S_1,OF_1,of_1)_5 \right] \}, 0 \right\}$$

$$- \min\left\{ \min_{\forall c}(R(C0)_{(1,c)}), 0 \right\}, 0 \right\}$$

$RMKT_{DfAcct}$

$$= -\min\left\{\min\left\{\min_{\forall c}\{[70,000, 2,000,000, -30,000, -80,000, -2,020,000]\right.\right.$$

$$+ [45,000, 1,400,000, -40,000, 40,000, -1,010,000]\}, 0\}$$

$$\left.\left.- \min\left\{\min_{\forall c}([70,000, 2,000,000, -30,000, -80,000, -2,020,000]), 0\right\}, 0\right\}\right.$$

$RMKT_{DfAcct}$

$$= -\min\left\{\min\left\{\min_{\forall c}\{115,000, 3,400,000, -70,000, -40,000, -3,030,000\}, 0\right\}\right.$$

$$\left.- \min\left\{\min_{\forall c}([70,000, 2,000,000, -30,000, -80,000, -2,020,000]), 0\right\}, 0\right\}$$

$$RMKT_{DfAcct} = -\min\{-3,030,000 + 2,020,000 , 0\}$$

$$RMKT_{DfAcct} = -\min\{-1,010,000, 0\}$$

$$\mathbf{RMKT_{DfAcct} = 1,010,000}$$

(3) Definitive account with the following COPOM option instruments:

Instrument	Value
CPMQ20C099750	
Opening portfolio (C0)	100
Long balance (C)	100
Short balance (V)	300
Buy order (OC)	100
Sell order (OV)	200
Incoming sell order (ofv)	0
Risk limit	30,000,000

Instrument	Value
CPMQ20C100250	
Opening portfolio (C0)	0
Long balance (C)	200
Short balance (V)	100
Buy order (OC)	0
Sell order (OV)	200
Incoming sell order (ofv)	0
Risk limit	30,000,000

Instrument	Value
CPMU20C099500	
Opening portfolio (C0)	0
Long balance (C)	100
Short balance (V)	300
Buy order (OC)	500
Sell order (OV)	100

Instrument	Value
CPMU20C100500	
Opening portfolio (C0)	100
Long balance (C)	100
Short balance (V)	300
Buy order (OC)	0
Sell order (OV)	0

Incoming sell order (ofv)	0
Risk limit	30,000,000

Incoming sell order (ofv)	200
Risk limit	30,000,000

A sell order sent for 200 CPMU20C10500 contracts will now be analyzed.

Definitive acct	Instrument	Exp.	C0	C	V	OC	OV	ofv
1000	CPMQ20C099750	Q20	100	100	300	100	200	0
1000	CPMQ20C100250	Q20	0	200	100	0	200	0
1000	CPMU20C099500	U20	0	100	300	500	100	0
1000	CPMU20C100500	U20	100	100	300	0	0	200

Long quantity in COPOM option instruments:

$$Q_{S_N,v}^{DfAcct} = V_{S_N,v} - C_{S_N,v} + OV_{S_N,v} + ofv_{S_N,v}$$

Definitive acct	Instrument	Exp.	C0	C	V	OC	OV	ofv	$Q_{S_N,v}^{Dfacct}$
1000	CPMQ20C099750	Q20	100	100	300	100	200	0	500
1000	CPMQ20C100250	Q20	0	200	100	0	200	0	100
1000	CPMU20C099500	U20	0	100	300	500	100	0	300
1000	CPMU20C100500	U20	100	100	300	0	0	200	500

Risk of COPOM option instruments:

For Q20 expiration:

$$Q_{S^*,v} = \max\left(Q_{S_1,v}, Q_{S_2,v}, \ldots, Q_{S_N,v}, 0\right) = \max(500, 100, 0) = 500$$

$$RMKT_{i_{CPM}} = \begin{cases} -abs(Q_{S^*,v}) \times C \times N & \text{if } S = S^* \\ 0 & \text{otherwise} \end{cases}$$

$$RMKT_{CPMQ20C099750} = -abs(500) \times 100 \times 100 = -5,000,000$$

$$RMKT_{CPMQ20C100250} = 0$$

For U20 expiration:

$$Q_{S^*,v} = \max\left(Q_{S_1,v}, Q_{S_2,v}, \ldots, Q_{S_N,v}, 0\right) = \max(300, 500, 0) = 500$$

$$RMKT_{i_{CPM}} = \begin{cases} -abs(Q_{S^*,v}) \times C \times N & \text{if } S = S^* \\ 0 & \text{otherwise} \end{cases}$$

$$RMKT_{CPMU20C099500} = 0$$

$$RMKT_{CPMU20C100500} = -abs(500) \times 100 \times 100 = -5,000,000$$

Summary:

Definitive acct	Instrument	Exp.	$Q_{S_N,v}^{DfAcct}$	$Q_{S^*,v}$	$RMKT_{i_{CPM}}$
1000	CPMQ20C099750	Q20	500		-5,000,000
1000	CPMQ20C100250	Q20	100	500	0
1000	CPMU20C099500	U20	300		0
1000	CPMU20C100500	U20	500	500	-5,000,000

Risk of trades in opening portfolio:

$$R(C0)_{(1,c)} = Q \times RU_{(i,c)}$$

Where **Q** is a column matrix **[i, 1]** with the sum of quantities for each instrument *i* in the opening portfolio. If the position is sold, the quantity must be multiplied by (-1).

R (C0) = (Opening portfolio balance of trades) * (Value in scenario)				
Formula	CPMQ20C099750	CPMQ20C100250	CPMU20C099500	CPMU20C10050
$R(C0)_{(1,c)}$	-1,000,000	0	0	-1,000,000

$$RMKT_{DfAcct} = -\min\left\{ \min\left[\min_{\forall c}\left(C0_{(1,c)} + \sum_{\forall i} \begin{matrix} (C_i - V_i) \times RU_{(i,c)} \\ + \\ \min(OC_i \times RU_{(i,c)};0) \\ + \\ \min(-OV_i \times RU_{(i,c)};0) \\ + \\ \min(of_i \times RU_{(i,c)};0) \end{matrix} \right) \right. \right.$$

$$\left. \left. + \sum_{i_{CPM}} RMKT_{i_{CPM}}, 0 \right] - \min\left[\min_{\forall c}(C0_{(1,c)}) + \sum_{i_{CPM_0}} RMKT_{i_{CPM_0}}, 0 \right], 0 \right\}$$

$$RMKT_{DfAcct} = -\min\{\min[-[0 + (-5,000,000 + 0 + 0 -$$

$$5,000,000)], 0] - \min[(-1,000,000 + 0 + 0 - 1,000,000), 0], 0\}$$

$$RMKT_{DfAcct} = -\min\{\min[-10,000,000, 0] - min[-2,000,0000, 0], 0\}$$

Hence:

$$\boldsymbol{RMKT_{DfAcct} = 8,000,000}$$

Limit assigned to $RMKT$ = BRL30,000,000

Thus, the order is accepted.

5.1.8 Risk measure for trades (RMKTN)

For both segments (equities and derivatives), the RMKTN assessment considers the financial value traded (conceptually speaking), but this value is obtained directly from the quantity stated in the trades executed.

- Purpose

The RMKTN measure aims to limit the increment of risk generated by the set of trades in the opening portfolio and by the transactions executed throughout the day, compared with the risk at market opening, considering only the trades in the opening portfolio.

- Features

The RMKT limit is mandatorily set by PNPs and PNs for investors and is optional for accounts. It will not be assessed for professional traders but only for the accounts linked to their transactions.

- Segments

For calculation purposes:

o Cash market securities in the equities or corporate debt segments (stocks, odd lots, block trading solutions for equities and securities representing equities, BDRs, ETFs, real estate funds, stock investment funds, private equity funds), which are covered by the SDP measure, are not considered but their options are;

o Equities forward instruments¸ which are covered by the STD measure, are also not considered;

o All contracts in the derivatives segment are considered;

o Over-the-counter derivatives contracts (swaps, forwards and flexible options) are also considered as trades in the opening portfolio and are duly considered for opening risk purposes;

o Options exercises are included within the underlying asset (securities) but only if the underlying asset market is also considered;

o User-defined strategies and B3-defined strategies are assessed by considering the relevant strategy as a single instrument;

o Instruments traded at their closing price plus a spread will be subject to a specific procedure. Trade at settlement in DI1 futures (DI1 TAS) will be evaluated as if it were a DI1 futures with a corresponding maturity; and

o Testing instruments in both segments (equities and derivatives) are not considered.

• Metrics evaluation

In its calculations, the RMKTN measure makes use of:

o Unit risk constants per instrument (market value fluctuation) under each stress scenario. Note that the stress scenarios are the same as those used by the B3 Clearinghouse CORE methodology for margin calculation purposes;

o Trades executed on the day; and

o Trades at the start of day included in the opening portfolio.

The RMKTN assessment is available for investors and their definitive and transitory accounts.

For definitive accounts, RMKTN calculation contemplates the following:

o All trades executed on the day and trades in the opening portfolio, evaluated under the same stress scenarios; and

o The risk of trades executed on the day and of trades in the opening portfolio under each scenario — resulting from the sum of the risks, whether of profit or loss, of trades (net balance in number of contracts or quantity) in each instrument under the relevant scenario.

For transitory accounts, RMKTN calculation considers:

o All trades executed on the day and trades in the opening, evaluated under the same stress scenarios; and

o The risk of trades executed on the day and of trades in the opening portfolio under each scenario — resulting solely from the sum of the risk of trades with a loss in each instrument under the relevant scenario;

For investors, RMKTN calculation follows the same aggregation defined for their definitive and transitory accounts.

Unlike other risk measures, RMKTN has the following peculiarities:

o Risk assessment must be defined for each investor or for each investor account, but it cannot be defined for both entities;

o The relevant choice is mutually exclusive and cannot be altered on an intraday basis (changes to this feature take effect only on T+1 or with the full reload of the LiNe platform);

- This feature results from the high processing cost of RMKTN's assessments, thus preventing it from being jointly done for both entities (investor and account) without compromising the system performance;

- RMKTN configuration is mandatory for investors, meaning that the absence of a limit definition, through either its direct configuration in the investor or in a limits profile, leads to the protected mode being triggered and order cancellations being submitted. The latter cancel all the orders that the document has open on the book;

- The RMKTN limit is optional for accounts, which means that, in the absence of its configuration for accounts, the investor setup will be used as a reference; and

- When the risk limit is violated on investor or account, the document or account will enter in protected mode and all the open orders on the book from this document or account will be canceled.

BCB's Monetary Policy Committee (COPOM) option instruments have their risks measured independently of the stress scenario, at a value equivalent to the worst possible payoff by option expiration, considering all the trades executed on the day, with the following definitions.

Let the number of short (written) contracts in COPOM options be such that:

For definitive accounts, the short quantity is given by:

$$Q_{S_N,v}^{DfAcct} = C0_{S_N,v} + V_{S_N,v} - C_{S_N,v}$$

For transitory accounts, the short quantity is given by:

$$Q_{S_N,v}^{TrAcct} = C0_{S_N,v} + V_{S_N,v}$$

For investors, the short quantity is given by:

$$Q_{S_N,v}^{Inv} = \max\left(\sum_{DfAcct} Q_{S_N,v}^{DfAcct}, 0\right) + \sum_{TrAcct} Q_{S_N,v}^{TrAcct}$$

Where:

$C0_{S_N,v}$ is the balance (in number of contracts) of sell trades in the opening portfolio of COPOM options expiring in v with strike price S_N;

$V_{S_N,v}$ is the balance (in number of contracts) of sell trades in COPOM options expiring in v with strike price S_N;

$C_{S_N,v}$ is the balance (in number of contracts) of buy trades in COPOM options expiring in v with strike price S_N;

Let $Q_{S_1,v}, Q_{S_2,v}, \ldots, Q_{S_N,v}$ be the number of short (written) contracts in options positions with the same expiration date v and strike prices $S_1, S_2, \ldots, S_N$, as defined above, belonging to the account or investor under analysis.

The risk is null for all such positions, except for the position with the largest number of contracts, whose risk (negative) is equal to the option payoff, that is:

$$RMKTN_{i_{CPM}} = \begin{cases} -abs(Q_{S^*,v}) \times C \times N & \text{if } S = S^* \\ 0 & \text{otherwise} \end{cases}$$

With:

$$Q_{S^*,v} = \max\left(Q_{S_1,v}, Q_{S_2,v}, \ldots, Q_{S_N,v}, 0\right)$$

Where:

i_{CPM} is the COPOM option expiring on v with strike price S_N;

S^* is the strike price of the COPOM option expiring on v with the largest number of short contracts, that is, S^* is such that $Q_{S^*,v} = \max\left(Q_{S_1,v}, Q_{S_2,v}, \ldots, Q_{S_N,v}, 0\right)$. When there is a tie (two or more instruments whose number of short contracts is equal to

the maximum number of short contracts, only a single instrument will be chosen per expiration;

C is the contract size, in points; and

N is the point value, in Brazilian reals.

- Calculation metrics for RMKTN

Calculation details for definitive account:

$$RMKTN_{DfAcct} = -\min\left\{\min\left[\min_{\forall c}\left(C0_{(1,c)} + \sum_{\forall i}\left[(C_i - V_i) \times RU_{(i,c)}\right]\right)\right.\right.$$

$$\left.\left. + \sum_{i_{CPM}} RMKTN_{i_{CPM}}, 0\right] - \min\left[\min_{\forall c}(C0_{(1,c)}), 0\right], 0\right\}$$

Calculation details for transitory account:

$$RMKTN_{TrAcct} = -\min\left\{\min\left[\min_{\forall c}\left(C0_{(1,c)} + \sum_{\forall i}\begin{bmatrix}\min(C_i \times RU_{(i,c)}; 0) \\ + \\ \min(-V_i \times RU_{(i,c)}; 0)\end{bmatrix}\right)\right.\right.$$

$$\left.\left. + \sum_{i_{CPM}} RMKTN_{i_{CPM}}, 0\right] - \min\left[\min_{\forall c}(C0_{(1,c)}), 0\right], 0\right\}$$

Calculation details for investor:

$$RMKTN_{Inv} = -\min\left\{\min\left[\min_{\forall c}\left(\sum_{\forall DfAcct} C0_{(1,c)} + \sum_{\forall i}\left[\begin{array}{c}\sum_{\forall DfAcct}(C_i - V_i) \times RU_{(i,c)} \\ + \sum_{\forall TrAcct}\left[\begin{array}{c}\min(C_i \times RU_{(i,c)}; 0) \\ + \\ \min(-V_i \times RU_{(i,c)}; 0)\end{array}\right]\end{array}\right]\right)\right.\right.$$

$$\left.\left. + \sum_{i_{CPM}} RMKTN_{i_{CPM}}, 0\right] - \min\left[\min_{\forall c}\left(\sum_{\forall DfAcct} C0_{(1,c)}\right) + \sum_{i_{CPM_0}} RMKTN_{i_{CPM_0}}, 0\right], 0\right\}$$

Where:

$RMKTN_{DfAcct}$ is the risk for trades measure for the definitive account;

$RMKTN_{TrAcct}$ is the risk for trades measure for the transitory account;

$RMKTN_{Inv}$ is the risk for trades measure for the investor;

$RMKTN_{i_{CPM}}$ is the risk for trades measure of COPOM option i_{CPM} for the account or investor under assessment;

$RMKTN_{i_{CPM_0}}$ is the risk for trades measure of COPOM option i_{CPM_0} for the account or investor under assessment;

C is each existing scenario;

i is each instrument traded, except COPOM options;

i_{CPM} is each COPOM option traded, considering the opening portfolio, trades executed on the day and orders open in the book;

i_{CPM_0} is each COPOM option traded, considering only the opening portfolio;

$C0_{(1,c)}$ is the one-dimensional matrix [1 x c] of the opening portfolio risks on the day under each account scenario (remains unchanged throughout the day);

$RU_{(i,c)}$ is the two-dimensional matrix [i x c] of the unit risk constants for each instrument (row) under each scenario (column);

C_i is the balance (in number of contracts) of buy trades executed for the account in instrument i;

V_i is the balance (in number of contracts) of sell trades executed for the account in instrument i;

- Example

a) Scenario where definitive account has only one instrument.

   Assumption

   - Permission and limits for the authorized currency and index futures markets;

   - Investor 123456 has only one definitive account (ACC10);

   - Risk measure for trades (RMKTN) limit set to BRL 3,000,000;

   - Opening portfolio balance (C0) = long in 1.000 DOLG25 contracts;

   - Balance of trades (S) = 0

   ## I. Trade

   A long order of 100 DOLG25 contracts becames a trade.

Definitive account	Instruments	C0	C	V	S = C -V
1000	DOLG25	1.000	100	0	100

   The 5 scenarios calculated by CORE (post-trade) and sent to LiNe Trading for instrument DOLG25 are:

CORE Scenarios					
Instruments	Scen1	Scen2	Scen3	Scen4	Scen5
DOLG25	500	25.000	-100	-800	-28.000

Instrument DOLG25 under scenario 1 posts a gain of BRL500; under scenario 2 it posts a gain of BRL25,000; and under scenario 3 it posts a loss of BRL300, and so on.

Risk of trades of DOLG25.

$$R(S_1)_c = (C_i - V_i) \times RU_{(i,c)}$$

R (S) = (Balane of Trades) * (Scenario Value)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(S_1)_c$	50.000	2.500.000	-10.000	-80.000	-2.800.000

In this case, the positive scenarios are taken into account (gains are considered); therefore, long and short positions are offset against each other

Risk of trades in the opening portfolio:

$$R(C0)_{(1,c)} = Q \times RU_{(i,c)}$$

Where **Q** is a column matrix **[i, 1]** with the sum of quantities for each instrument *i* in the opening portfolio. If the position is sold, the quantity must be multiplied by (-1).

R (CO) = (Trades in the opening portfolio) * (Scenario Value)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(CO)_{(1,c)}$	500.000	25.000.000	-100.000	-800.000	-28.000.000

The RMKTN metric will be given by:

$$RMKTN_{DefAcct}$$

$$= -\min\left\{ \min\left[\min_{\forall c}\left(C0_{(1,c)} + \sum_{\forall i}[(C_i - V_i) \times RU_{(i,c)}] \right) \right.\right.$$

$$\left.\left. + \sum_{i_{CPM}} RMKTN_{i_{CPM}}, 0 \right] - \min\left[\min_{\forall c}(C0_{(1,c)}) + \sum_{i_{CPM_0}} RMKTN_{i_{CPM_0}}, 0 \right], 0 \right\}$$

As there's only one instrument, there`s no need to make the sum in i

$$RMKTN_{DefAcct}$$

$$= -min\left\{min\left\{\begin{matrix}min\\\forall c\end{matrix}\{[500.000, 25.000.000, -100.000, -800.000, -28.000.000]\right.\right.$$

$$+ [50.000, 2.500.000, -10.000, -80.000, -2.800.000]\}, 0\right\}$$

$$- min\left\{\begin{matrix}min\\\forall c\end{matrix}([500.000, 25.000.000, -100.000, -800.000, -28.000.000]), 0\right\}, 0\right\}$$

$$RMKTN_{DefAcct}$$

$$= -min\left\{min\left\{\begin{matrix}min\\\forall c\end{matrix}\{550.000, 27.500.000, -110.000, -880.000, -30.800.000\}, 0\right\}\right.$$

$$- min\left\{\begin{matrix}min\\\forall c\end{matrix}([500.000, 25.000.000, -100.000, -800.000, -28.000.000]), 0\right\}, 0\right\}$$

$$RMKTN_{DefAcct} = -min\{-30.800.000 + 28.000.000\,, 0\}$$

$$RMKTN_{DefAcct} = -min\{-2.800.000\,, 0\}$$

$$\boldsymbol{RMKTN_{DefAcct} = 2.800.000}$$

As the limit set to the RMTKN metric is BRL 3,000,000, the protected mode is not triggered.

b) Scenario of a definitive account with two instruments

I. **First trade**

Considering that the DOLG25 trade has already happened (as shown in example a), the new trade of sell 200 DI1F26 contracts will now be analyzed.

Instrument	Value
DOLG25	
Opening portfolio	100
Balance of trades	100
RMKTN limit	3.000.000

Instrument	Value
DI1F26	
Opening portfolio	0
Balance of trades	-100
RMKTN limit	3.000.000

Opening portfolio and trades balance by instrument:

Definitive account	Instrument	C0	C	V	S = C -V
1000	DOLG25	1.000	100	0	100
	DI1F26	0	0	100	-100

The 5 scenarios calculated by CORE (post-trade) and sent to LiNe Trading for the instruments are:

Core Scenarios					
Instrument	Scen1	Scen2	Scen3	Scen4	Scen5
DOLG25	500	25.000	-100	-800	-28.000
DI1F26	300	15.000	600	-700	-19.000

Risk of trades:

$$R(S_1)_c = (C_1 - V_1) \times RU_{(1,c)}$$

$$R(S_2)_c = (C_2 - V_2) \times RU_{(2,c)}$$

R (S) = (Balance of trades) * (Scenario Value)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(S_1)_c$	50.000	2.500.000	-10.000	-80.000	-2.800.000
$R(S_2)_c$	-30.000	-1.500.000	-60.000	70.000	1.900.000
$R(S)_c$	20.000	1.000.000	-70.000	-10.000	-900.000

Risk of trades in the opening portfolio:

$$R(C0)_{(1,c)} = Q \times RU_{(i,c)}$$

Where **Q** is a column matrix **[i, 1]** with the sum of quantities for each instrument *i* in the opening portfolio. If the position is sold, the quantity must be multiplied by (-1).

R (CO) = (Trades in the opening portfolio) * (Scenario Value)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(CO)_{(1,c)}$	500.000	25.000.000	-100.000	-800.000	-28.000.000

The RMKTN metric will be given by:

$RMKTN_{DefAcct}$

$$= -\min\left\{\min\left[\genfrac{}{}{0pt}{}{min}{\forall c}\left(C0_{(1,c)} + \sum_{\forall i}[(C_i - V_i) \times RU_{(i,c)}]\right)\right.\right.$$

$$\left.\left. + \sum_{i_{CPM}} RMKTN_{i_{CPM}}, 0\right] - \min\left[\genfrac{}{}{0pt}{}{min}{\forall c}(C0_{(1,c)}) + \sum_{i_{CPM_0}} RMKTN_{i_{CPM_0}}, 0\right], 0\right\}$$

$RMKTN_{DefAcct}$

$$= -min\left\{min\left\{\genfrac{}{}{0pt}{}{min}{\forall c}\{[500.000, 25.000.000, -100.000, -800.000, -28.000.000]\right.\right.$$

$$+ [20.000, 1.000.000, -70.000, -10.000, -900.000]\}, 0\right\}$$

$$- min\left\{\genfrac{}{}{0pt}{}{min}{\forall c}([500.000, 25.000.000, -100.000, -800.000, -28.000.000]), 0\right\}, 0\right\}$$

$RMKTN_{DefAcct}$

$$= -min\left\{min\left\{\genfrac{}{}{0pt}{}{min}{\forall c}\{520.000, 26.000.000, -170.000, -810.000, -28.900.000\}, 0\right\}\right.$$

$$- min\left\{\genfrac{}{}{0pt}{}{min}{\forall c}([500.000, 25.000.000, -100.000, -800.000, -28.000.000]), 0\right\}, 0\right\}$$

$$RMKTN_{DefAcct} = -min\{-28.900.000 + 28.000.000\,, 0\}$$

$$RMKTN_{DefAcct} = -min\{-900.000\,, 0\}$$

$$\mathbf{RMKTN_{DefAcct} = 900.000}$$

As the limit set to the RMTKN metric is BRL 3,000,000, the protected mode is not triggered.

II. Second Trade

Considering that the DI1F26 trade has already happened (as shown in example b.I), the new trade of buy 200 DI1F26 contracts will now be analyzed.

Instrument	Valor
DOLG25	
Opening Portfolio	100
Balance of trades	100
RMKTN limit	3.000.000

Instrument	Valor
DI1F26	
Opening Portfolio	0
Balance of trades	100
RMKTN limit	3.000.000

Opening portfolio and trades balance by instrument:

Conta definitiva	Instrumentos	C0	C	V	S = C -V
1000	DOLG25	1.000	100	0	100
	DI1F26	0	200	100	100

The 5 scenarios calculated by CORE (post-trade) and sent to LiNe Trading for the instruments are:

Core Scenarios					
Instrument	Scen1	Scen2	Scen3	Scen4	Scen5
DOLG25	500	25.000	-100	-800	-28.000
DI1F26	300	15.000	600	-700	-19.000

Risk of trades:

$$R(S_1)_c = (C_1 - V_1) \times RU_{(1,c)}$$

$$R(S_2)_c = (C_2 - V_2) \times RU_{(2,c)}$$

R (S) = (Balance of trades) * (Scenario Value)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(S_1)_c$	50.000	2.500.000	-10.000	-80.000	-2.800.000
$R(S_2)_c$	30.000	1.500.000	60.000	-70.000	-1.900.000
$R(S)_c$	**80.000**	**4.000.000**	**50.000**	**-150.000**	**-4.700.000**

Risk of trades in the opening portfolio:

$$R(C0)_{(1,c)} = Q \times RU_{(i,c)}$$

Where **Q** is a column matrix **[i, 1]** with the sum of quantities for each instrument *i* in the opening portfolio. If the position is sold, the quantity must be multiplied by (-1).

R (CO) = (Trades in the opening portfolio) * (Scenario Value)					
Formula	Scen1	Scen2	Scen3	Scen4	Scen5
$R(CO)_{(1,c)}$	500.000	25.000.000	-100.000	-800.000	-28.000.000

The RMKTN metric will be given by:

$RMKTN_{DefAcct}$

$$= -\min\left\{ \min\left[\min_{\forall c}\left(C0_{(1,c)} + \sum_{\forall i}\left[(C_i - V_i) \times RU_{(i,c)} \right] \right) \right. \right.$$

$$\left. \left. + \sum_{i_{CPM}} RMKTN_{i_{CPM}}, 0 \right] - \min\left[\min_{\forall c}(C0_{(1,c)}) + \sum_{i_{CPM_0}} RMKTN_{i_{CPM_0}}, 0 \right], 0 \right\}$$

$RMKTN_{DefAcct}$

$$= -min\left\{ min\left\{ \min_{\forall c}\{[500.000, 25.000.000, -100.000, -800.000, -28.000.000] \right. \right.$$

$$+ [80.000, 4.000.000, 50.000, -150.000, -4.700.000]\}, 0 \right\}$$

$$- min\left\{ \min_{\forall c}([500.000, 25.000.000, -100.000, -800.000, -28.000.000]), 0 \right\}, 0 \right\}$$

$RMKTN_{DefAcct}$

$$= -min\left\{ min\left\{ \min_{\forall c}\{580.000, 29.000.000, -50.000, -950.000, -32.700.000\}, 0 \right\} \right.$$

$$- min\left\{ \min_{\forall c}([500.000, 25.000.000, -100.000, -800.000, -28.000.000]), 0 \right\}, 0 \right\}$$

$$RMKTN_{DefAcct} = -min\{-32.700.000 + 28.000.000, 0\}$$

$$RMKTN_{DefAcct} = -min\{-4.700.000, 0\}$$

$$\mathbf{RMKTN_{DefAcct} = 4.700.000}$$

As the limit set to the RMTKN metric is BRL 3,000,000, after the transaction is completed, the value of the RMKTN metric increases beyond the assigned limit, triggering the protected mode and canceling all open offers.

5.1.9   Protected mode

The protected mode refers to the state of the trading tool whereby only transactions that offset open positions derived from trades executed on the day and bearing the identification of the final beneficial owner are admitted.

- Features

The protected mode is activated in the following situations:

- o   Automatically, when the investor or the executing account violates any of the measures SFD SDP, SPVD, RMKT and RMKTN;

- o   When the investor violates any of the measures in the carrying participant, except for TMOC/TMOV and SPCI/SPVI. In the case of SPCI/SPVI violation, the synchronous mode will be activated (subsection 5.1.9 of this guide), a condition that triggers the real-time evaluation of give-ups;

- o   Manually, via the portal. In this case, any of the portal's relationship entities may be put in protected mode: PNP/PN/SP/investor/account; and

- o   When any of the limits SFD, SDP, SPVD, RMKT and RMKTN are managed and set to a value lower than the limit consumed by the investor.

In case the SFD or RMKTN measure is violated by a professional trader, orders arising from such participant and open in the book will not be canceled, but any new order will be rejected.

PNPs may put any PNs in protected mode. Thus, all the clients linked to the relevant PN will inherit that same state. From then on, the orders open in the book are canceled and only orders that reduce investor positions will be accepted. In addition to PNs, PNPs may put any clients/accounts linked to them in protected mode.

In turn, PNs may put any clients/accounts linked to them in protected mode.

When investors enter into protected mode, their accounts are not affected. Hence, trades may be carried out through all of the accounts linked to the relevant investor, provided, however, that the orders are aimed at offsetting his or her positions.

In addition to investors, LiNe also permits accounts to enter into protected mode. When this happens, the protected mode is exclusively activated for the account concerned, thus not affecting the investor.

When an entity (PNP/PN) is put in protected mode, either automatically or manually, all of its clients also enter into protected mode. In events where a client is put in protected mode, only this client enters into protected mode, but the accounts linked to him or her will not.

When in protected mode, entities take on the following features:

o Transitory accounts are not allowed to trade;

o Traders may trade as long as they don't violate the SFD measure and hold a definitive account designated upon order entry; and

o Open interest reduction (shares and contracts) will only be assessed for final beneficial owners and/or definitive accounts (according to variable SPI, presented in subsection 5.1.10 of this guide).

When in protected mode, trading takes on a different behavior in relation to risk measure assessments. New orders and/or new trades (in case the orders originate new trades) will only cause certain risk measures to be updated, with no assessments made, while other risk measures are evaluated and updated. Furthermore, two new risk measures are activated for assessment (SPI and RMKT, with incremental limit by open exposure). As a consequence, each measure will behave as follows:

- SPCI/SPVI validates and updates;

- TMOC/TMOV evaluates new order entries;

- RMKT only updates;

- RMKTN – only updates

- SDP only updates;

- SFD only updates;

- SPVD only updates;

- STD remains blocked (forward transactions are not allowed in protected mode;

- SPI — which is only activated in protected mode — must be evaluated and updated (and trigger a rejection when limit is breached). This measure is described in subsection 5.1.10 of this guide; and

- IRMKT — which is only activated in protected mode — must be evaluated and updated (and trigger a rejection when limit is breached). This measure is described in subsection 5.1.11 of this guide.

When an entity enters into protected mode, LiNe automatically triggers the following actions:

- If the protected mode has been triggered due to SFD or RMKTN measure violation, be it at the executing (PNP), intermediary or carrying (PL) participant, LiNe will send a cancellation command for all the orders available in the book, compliant to the applicable trading rules (auction, trading permission, etc.). If any other measure (SDP, SPVD, RMKT) is violated by the investor, the protected mode will be triggered, but only orders derived from the violation will be canceled, with orders that did not immediately participate in the violation not being canceled;

- New order entries are authorized, provided they meet previously defined limits and the measures activated in protected mode (open interest reduction, as measured by SPI, and incremental risk, as calculated by IRMKT);

- Forward market orders are prohibited;

- Cross orders are prohibited; and

- The protected mode will exclusively be deactivated by participant intervention.

To illustrate the behavior of risk measure violations, the following table provides a better understanding of how it works:

Behavior when measures are violated			
Entity	Measure	Protected mode	Action
Executing	SDP	X	Cancellation of orders that violated measure
	SFD	X	Cancellation of all open orders
	RMKT	X	Cancellation of orders that violated measure
	RMKTN	X	Cancellation of all open orders
	SPVD	X	Cancellation of orders that violated measure
	SPCI/SPVI		Order rejection
	TMOC/TMOV		Order rejection
	STD		Order rejection
Carrying	SDP	X	Cancellation of orders that violated measure
	SFD	X	Cancellation of all open orders
	RMKT	X	Cancellation of orders that violated measure
	RMKTN	X	Cancellation of all open orders
	SPVD	X	Cancellation of orders that violated measure
	SPCI/SPVI		Order rejection
	TMOC/TMOV		Order rejection
	STD		Order rejection
CAP – Aggregate position	SDP	X	Cancellation of orders that violated measure
	SFD	X	Cancellation of all open orders
	RMKT	X	Cancellation of orders that violated measure
	RMKTN	X	Cancellation of all open orders
	SPVD	X	Cancellation of orders that violated measure
	SPCI/SPVI		Order rejection
	TMOC/TMOV		Order rejection
	STD		Order rejection
Trader	SDP		Order rejection
	SFD		Order rejection
	RMKT		Order rejection
	RMKTN		Order rejection
	SPVD		Order rejection
	SPCI/SPVI		Order rejection

TMOC/TMOV	Order rejection
STD	Order rejection

5.1.10   Synchronous mode

The synchronous mode is the state of the trading tool where assessment of the LiNe Trading measures will be made in real time, meaning that orders will be evaluated by TMOC/TMOV and SPCI/SPVI before their arrival in the matching engine at both the executing and the carrying participant. The synchronous mode is activated when either the SPCI or SPVI limit is violated at the carrying participant. After the mode's activation, it will not be possible to violate any of LiNe Trading measures at the carrying participant.

When an entity (investor\account) goes into synchronous mode due to an SPCI/SPVI violation in one instrument, LiNe will allow new orders to be sent for other instruments, even if the position is increased. However, orders submitted for instruments that have violated the SPCI/SPVI measure will be assessed by this measure and will only be accepted in case the SPCI/SPVI limit is not violated. As evaluation of the carrying and executing participants' limits are carried out in real time in synchronous mode, an increase in the latency of orders coming from any such entity is expected.

5.1.11   Potential balance per instrument (SPI)

The SPI measure aims to ensure that open interest be reduced in a certain instrument.

- Segments

The SPI assessment exists for both segments (equities and derivatives) and is made by instrument. For calculation purposes, the SPI measure follows the same rules as the SPCI/SPVI.

- Metrics evaluation

The SPI assessment is only carried out for investors and definitive accounts (by instrument). When investors are in protected mode, only their SPI limits will be evaluated. Therefore, the accounts linked to investors in protected mode will trade regularly. However, when an account enters into protected mode, only this account will be subjected to SPI assessment.

When the protected mode is activated at the carrying participant, give-ups will be evaluated inline (critical path of order), guaranteeing the carrying participant's position reduction (SPI). When it is activated at the PNP or PN, SPI reduction shall occur at the PNP or PN.

The SPI limit has no setup, since its assessment is dynamic and, as aforementioned, it only allows for open interest reduction (this limit's reduction). Hence:

- o For instruments with a long balance prior to entering into protected mode, only sell orders will be authorized; and

- o For instruments with a short balance prior to entering into protected mode, only buy orders will be authorized.

For new orders or modification requests, the SPI threshold may decrease to zero, but the position in instrument i cannot be offset — from long to short, or vice versa.

For calculation purposes:

- o Odd-lot instruments (equities) are aggregated within the underlying securities;

- o Block trading solutions for equities and securities representing equities are aggregated within the underlying asset.

- o Strategies will be assessed according to strategy types and features, either by strategy or by each individual leg. User defined strategies (UDS) and B3-defined strategies (EDS) with neutral unit price (PU) or neutral DV01 in one-day interbank deposit futures (DI1 EDS), DI x IPCA spread futures (DAP EDS), FRA on DI x USD spread (FRC EDS), structure U.S. dollar rollover transactions (DOL/WDO EDS), structure Ibovespa rollover transactions (IND/WIN EDS), structure Small Cap rollover transactions (SML EDS) and structured commodities rollover transactions (BGI/ICF/ETH/CCM/SJC/SOY/CNL EDS) are evaluated on each of the legs belonging to the relevant strategy, according to the side and ratio of each leg. For further EDS strategies, assessment will be made by strategy, without breaking down by leg; and

- o Instruments traded at their closing price plus a spread will be subject to a specific procedure. The trade at settlement in DI1 futures (DI1 TAS) will be evaluated as if it were a DI1 futures with a corresponding maturity.

Definitive account

$$SPI_{DfAcct}(i) = L(i) + S(i) + OF(i) + of_N(i)$$

Where:

$SPI_{DfAcct}(i)$ is the definitive account's potential balance in instrument i;

$L(i)$ is the opening portfolio balance of trades in instrument i (positive for long/negative for short);

$S(i)$ is the balance of trades executed in protected mode in instrument i (positive for long/negative for short);

$OF(i)$ is the sum of open orders in protected mode in instrument i (positive for bidb/negative for offer); and

$of_N(i)$ is the new order (positive for bid/negative for offer).

Note: For instruments with a long balance prior to entering into protected mode, only sell orders will be authorized. For instruments with a short balance prior to entering into protected mode, only buy orders will be authorized.

Transitory account

Due to the specificities of this account, whereby buy and sell trades are not netted against each other, the limits resulting from a particular transaction will increase and the transaction will be rejected.

Investor

$$SPI_{Inv}(i) = \sum_{\forall TrAcct} SPI_{DfAcct}(i)$$

Where:

$SPI_{Inv}(i)$ is the investor's potential balance in the instrument.

5.1.12 Risk measure in protected mode (IRMKT)

For both segments (equities and derivatives), a financial assessment takes place (conceptually speaking), but the relevant value is directly obtained from the quantity stated in the order entered or in the trades executed.

- Purpose

The IRMKT measure aims to assure that transactions carried out after the protected mode is triggered reduce the investor's or the account's risk exposure. Its evaluation is performed at the time when the order is entered.

Sending new orders to reduce an investor's position in protected mode (SPI) may increase risk exposure (IRMKT), because the investor may hold long positions and short positions in different instruments. To ensure an orderly reduction of the investor's or the account's positions, the position in protected mode will be subjected to an incremental risk limit (generated by a reduction).

- Features

The incremental risk limit in protected mode is a unique value determined by B3 for all the investors or accounts. The PNP/PN may reduce this limit for their clients or accounts.

The referred measure is only evaluated when the entity is in protected mode and its assessment occurs in real time, meaning that the measure's violation leads to the immediate rejection of the relevant order.

B3 shall define a threshold for RMKT in protected mode. In case the PNP and PN don't set this limit, they will inherit B3's.

PNPs and PNs cannot manage limits for IRMKT at values greater than B3's threshold.

Options exercises will not be prevented from being exercised even if they violate the risk measure in protected mode.

For calculation purposes:

- **Definition** 1: $R(C0, S, OF, of)_{PM}$ is the portfolio risk after an entity enters into protected mode, considering the balance of the opening portfolio (C0), the balance of executed trades (S), orders in the book (OF) and the new order (of);

- **Definition** 2: $R(C0, S)_{PM}$ is the portfolio risk after an entity enters into protected mode, considering only the balance of both opening portfolio (C0) and executed trades (S).

    Note: At the moment when a trade is executed, risk $R(C0, S)_{PM}$ will only be updated if risk is reduced.

    Let:

    $R^{old}(C0, S)_{PM}$ be the risk of executed trades before the order becomes a trade; and

$R^{new}(C0,S)_{PM}$ be the risk of executed trades after the order becomes a trade.

If $R^{new}(C0,\ S)_{PM}$ represents a risk lower than $R^{old}\ (S)_{PM}$, then:

$$R(C0,S)_{PM} = R^{new}(C0,S)_{PM},$$

Bearing in mind that risks are negative in calculations.

o **Definition** 3

$$\Delta RMKT = R(C0,S,OF,of)_{PM} - R(C0,S)_{PM}$$

Example 1

Assumptions

➢ Investor in protected mode.

➢ All orders in the book have been canceled.

DOLN18	Values
Opening portfolio (C0)	100
Balance of trades (S)	400
Buy order (OC)	0
Sell order (OV)	0
New order (of)	0
RMKT limit	10,000,000
ΔRMKT limit	2,000,000

DI1F20	Values
Opening portfolio (C0)	-100
Balance of trades (S)	-500
Buy order (OC)	0
Sell order (OV)	0
New order (of)	0
RMKT limit	10,000,000
ΔRMKT limit	2,000,000

Definitive account	Instrument	C0	C	V	S	OC	OV	of
DOLN18	Intrument_1	100	400	0	400	0	0	0
DI1F20	Intrument_2	-100	0	500	-500	0	0	0

The 3,990 scenarios obtained by CORE will be represented by the 5 scenarios below:

CORE scenarios					
Risks	Scen1	Scen2	Scen3	Scen4	Scen5

DOLN18	700	20,000	-300	-800	-20,000
DI1F20	710	20,100	-350	-790	-20,000

There are no positions in either OF or of. Therefore, risk table $R(S)_{PM}$ below applies:

R (C0, S) = (Opening portfolio + Balance of trades) * (Value in scenario)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0, S_1)_1$	350,000	10,000,000	-150,000	-400,000	-10,000,000
$R(C0, S_2)_1$	-426,000	-12,060,000	210,000	474,000	12,000,000
$R(C0, S)_c$	**-76,000**	**-2,060,000**	**60,000**	**74,000**	**2,000,000**

$R(C0, S)_{PM} = \min[-76,000, -2,060,000, -60,000, 74,000, 2,000,000]$

$R(C0, S)_{PM} = -2,060,000$

Building R (C0, S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0)_c$	-1,000	-10,000	5,000	-1,000	0
$R(of)_c$	0	0	0	0	0
$R(OC)_c$	0	0	0	0	0
$R(OV))_c$	0	0	0	0	0
$R(S)_c$	-75,000	-2,050,000	55,000	75,000	2,000,000
$R(S, OF, of)_c$	**-76,000**	**-2,060,000**	**60,000**	**74,000**	**2,000,000**

$R(C0, S, OF, of)_{PM} = \min[-76,000, -2,060,000, -60,000, 74,000, 2,000,000]$

$R(C0, S, OF, of)_{PM} = -2,060,000$

$\Delta RMKT = R(C0, S, OF, of)_{PM} - R(C0, S)_{PM}$

$\Delta RMKT = -2,060,000 - (-2,060,000)$

$\Delta RMKT = -2,060,000 + 2,060,000$

$\Delta RMKT = 0$

Investor enters sell order for 100 DOLN18 contracts.

Definitive account	Instrument	C0	C	V	S	OC	OV	of
1000	DOLN18	100	400	0	400	0	0	-100

$[B]^3$

1000		DI1F20	-100	0	500	-500	0	0	0

Buikding R (C0, S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0)_c$	-1,000	-10,000	5,000	-1,000	0
$R(of)_c$	-70,000	-2,000,000	0	0	0
$R(OC)_c$	0	0	0	0	0
$R(OV))_c$	0	0	0	0	0
$R(S)_c$	-75,000	-2,050,000	55,000	75,000	2,000,000
$\boldsymbol{R(C0,S,OF,of)_c}$	**-146,000**	**-4,060,000**	**60,000**	**74,000**	**2,000,000**

$R(C0,S)_{PM} = \min[\,-76,000, -2,060,000, -60,000, 74,000, 2,000,000\,]$

$R(C0,S)_{PM} = -2,060,000$

$R(C0,S,OF,of)_{PM} = \min[-146,000, -4,060,000, 60,000, 74,000, 2,000,000]$

$R(C0,S,OF,of)_{PM} = -4,060,000$

$\Delta RMKT = R(C0,S,OF,of)_{PM} - R(C0,S)_{PM}$

$\Delta RMKT = -4,060,000 - (-2,060,000\,)$

$\Delta RMKT = -4,060,000 + 2,060,000$

$\Delta RMKT = 2,000,000$

Limit assigned to $\Delta RMKT$= 2,000,000

The sell order for DOLN18 is accepted.

Building R (C0, S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0)_c$	-1,000	-10,000	5,000	-1,000	0
$R(of)_c$	0	0	0	0	0
$R(OC)_c$	0	0	0	0	0
$R(OV))_c$	-70,000	-2,000,000	0	0	0

$R(S)_c$	-75,000	-2,050,000	55,000	75,000	2,000,000
$R(C0, S, OF, of)_c$	**-146,000**	**-4,060,000**	**60,000**	**74,000**	**2,000,000**

$R(C0, S)_{PM} = -2,060,000$

$R(C0, S, OF, of)_{PM} = -4,060,000$

$\Delta RMKT = 2,000,000$

Note: When the orders in the book become transactions, risk $R(C0, S)_{PM}$ will be updated only for position reduction purposes.

The order for 100 DOLN18 contracts has become a trade.

Calculation is as follows:

Definitive account	Instrument	C0	C	V	S = C-V	OC	OV	of
1000	DOLN18	100	400	100	300	0	0	0
1000	DI1F20	-100	0	500	-500	0	0	0

R (C0, S) = (Opening portfolio + Balance of trades) * (Value in scenario)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0, S_1)_1$	280,000	8,000,000	-120,000	-320,000	-8,000,000
$R(C0, S_2)_1$	-426,000	-12,060,000	210,000	474,000	12,000,000
$R(C0, S)_c$	**-146,000**	**-4,060,000**	**90,000**	**154,000**	**4,000,000**

$R^{new}(C0, S)_{PM} = \min[-146,000, -4,060,000, 90,000, 154,000, 4,000,000]$

$R^{new}(C0, S)_{PM} = -4,060,000$

$R^{old}(C0, S)_{PM} =$ the risk of trades executed before the order becomes a trade

$R^{old}(C0, S)_{PM} = -4,060,000$

As previously mentioned, if $R^{new}(C0, S)_{PM}$ represents a risk lower than $R^{old}(C0, S)_{PM}$, then $R(C0, S)_{PM} = R^{new}(C0, S)_{PM}$.

In this case, $R^{new}(C0, S)_{PM}$ represents a risk higher than $R^{old}(C0, S)_{PM}$.

Hence, risk $R(C0, S)_{PM}$ will not be updated and will remain as:

$R(S)_{PM} = -2,060,000.$

Building R (C0, S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0)_c$	-1,000	-10,000	5,000	-1,000	0
$R(of)_c$	0	0	0	0	0
$R(OC)_c$	0	0	0	0	0
$R(OV))_c$	0	0	0	0	0
$R(S)_c$	-145,000	-4,050,000	85,000	155,000	4,000,000
$\mathbf{R(C0, S, OF, of)_c}$	**-146,000**	**-4,060,000**	**90,000**	**154,000**	**4,000,000**

$R(C0, S, OF, of)_{PM} = \min[-146,000, -4,060,000, 90,000, 154,000, 4,000,000]$

$R(C0, S, OF, of)_{PM} = -4,060,000$

$\Delta RMKT = R(C0, S, OF, of)_{PM} - R(C0, S)_{PM}$

$\Delta RMKT = -4,060,000 - (-2,060,000)$

$\Delta RMKT = -4,060,000 + 2,060,000$

$\Delta RMKT = -2,000,000$

Note that the limit assigned to $\Delta RMKT$ (2,000,000) has been reached. So, any new sell order for DOLN18 will be rejected.

For the investor to continue to reduce his or her positions, an order for DI1F20 must be sent.

The investor enters another order for DOLN18, instead of DI1F20.

$R^{old}(C0, S)_{PM} = -2,060,000$

Definitive account	Instrument	C0	C	V	S = C-V	OC	OV	of
1000_1	DOLN18	100	400	100	300	0	0	-100

1000_1	DI1F20	-100	0	500	-500	0	0	0

As IRMKT is calculated in real time, the calculation that LiNe will perform before accepting or rejecting the new offer is the following:

Building R (C0, S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0)_c$	-1,000	-10,000	5,000	-1,000	0
$R(of)_c$	-70,000	-2,000,000	0	0	0
$R(OC)_c$	0	0	0	0	0
$R(OV))_c$	0	0	0	0	0
$R(S)_c$	-145,000	-4,050,000	85,000	155,000	4,000,000
$\mathbf{R(C0, S, OF, of)_c}$	**-216,000**	**-6,060,000**	**90,000**	**154,000**	**4,000,000**

$$R(C0, S, OF, of)_{PM} = \min[-216,000, -6,060,000, 90,000, 154,000, 4,000,000]$$

$$R(C0, S, OF, of)_{PM} = -6,060,000$$

As in the last trade, risk $R(S)_{MP}$ is:

$$R(S)_{PM} = -2,060,000.$$

$$\Delta RMKT = R(C0, S, OF, of)_{PM} - R(C0, S)_{PM}$$

$$\Delta RMKT = -6,060,000 - (-2,060,000)$$

$$\Delta RMKT = -6,060,000 + 2,060,000$$

$$\Delta RMKT = -4,000,000$$

The order has breached the 2,000,000 threshold. Therefore, it will be rejected.

Investor enters a buy order for DI1F20.

Definitive account	Instrument	C0	C	V	S = C-V	OC	OV	of
1000_1	DOLN18	100	400	100	300	0	0	0
1000_1	DI1F20	-100	0	500	-500	0	0	300

Building R (C0, S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0)_c$	-1,000	-10,000	5,000	-1,000	0
$R(of)_c$	0	0	-105,000	-237,000	-6,000,000
$R(OC)_c$	0	0	0	0	0
$R(OV))_c$	0	0	0	0	0
$R(S)_c$	-145,000	-4,050,000	85,000	155,000	4,000,000
$R(C0,S,OF,of)_c$	-146,000	-4,060,000	-15,000	-83,000	-2,000,000

$$R^{new}(C0,S)_{PM} = \min[-146,000, -4,060,000, 90,000, 154,000, 4,000,000]$$

$$R^{new}(C0,S)_{PM} = -4,060,000$$

$$R^{old}(C0,S)_{PM} = -2,060,000$$

As $R^{new}(C0,S)_{PM}$ represents a higher risk than $R^{old}(S)_{PM}$, risk $R(C0,S)_{PM}$ will not be updated and will remain as:

$$R(C0,S)_{PM} = -2,060,000.$$

$$R(C0,S,OF,of)_{PM} = \min[-146,000, -4,060,000, -15,000, -83,000, -2,000,000]$$

$$R(C0,S,OF,of)_{PM} = -4,060,000$$

$$\Delta RMKT = R(C0,S,OF,of)_{PM} - R(C0,S)_{PM}$$

$$\Delta RMKT = -4,060,000 - (-2,050,000)$$

$$\Delta RMKT = -4,060,000 + 2,050,000$$

$$\Delta RMKT = -2,000,000$$

Outcome published by LiNe: $\Delta RMKT = 2,000,000$.

As it falls within the limit assigned to $\Delta RMKT$, the order will be accepted.

Note, however, that once again the limit assigned to $\Delta RMKT$ has been reached, now as a result of the DI1F20 trading, meaning that any new order for this instrument will be rejected.

To continue reducing his or her position, the investor should enter an order for DOLN18.

The order for DI1F21 has been filled.

Definitive account	Instrument	C0	C	V	S = C-V	OC	OV	of
1000_1	DOLN18	100	400	100	300	0	0	0
1000_1	DI1F20	-100	300	500	-200	0	0	0

Building R (C0, S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0)_c$	-1,000	-10,000	5,000	-1,000	0
$R(of)_c$	0	0	0	0	0
$R(OC)_c$	0	0	0	0	0
$R(OV))_c$	0	0	0	0	0
$R(S)_c$	68,000	1,980,000	-20,000	-82,000	-2,000,000
$R(S,OF,of)_c$	**67,000**	**1,970,000**	**-15,000**	**-83,000**	**-2,000,000**

$R^{new}(C0,S)_{PM} = \min[\, 67,000, 1,970,000, -15,000, -83,000, -2,000,000]$

$R^{new}(C0,S)_{PM} = -2,000,000$

$R^{old}(C0,S)_{PM} = -2,060,000$

As $R^{new}(S)_{PM}$ represents a lower risk than $R^{old}(C0,S)_{PM}$, risk $R(C0,S)_{PM}$ will be updated and become:

$R(C0,S)_{PM} = -2,000,000.$

$R(C0,S,OF,of)_{PM} = \min[\, 67,000, 1,970,000, -15,000, -83,000, -2,000,000]$

$R(C0,S,OF,of)_{PM} = -2,000,000$

$\Delta RMKT = R(C0,S,OF,of)_{PM} - R(C0,S)_{PM}$

$\Delta RMKT = -2,000,000 - (-2,000,000\,)$

$\Delta RMKT = -2,000,000 + 2,000,000$

$\Delta RMKT = 0$

Investor enters a sell order for 100 DOLN18 contracts.

Definitive account	Instrument	C0	C	V	S = C-V	OC	OV	of
1000_1	DOLN18	100	400	100	300	0	0	-200
1000_1	DI1F20	-100	300	500	-200	0	0	0

Building R (C0, S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0)_c$	-1,000	-10,000	5,000	-1,000	0
$R(of)_c$	-140,000	-4,000,000	0	0	0
$R(OC)_c$	0	0	0	0	0
$R(OV))_c$	0	0	0	0	0
$R(S)_c$	68,000	1,980,000	-20,000	-82,000	-2,000,000
$R(S, OF, of)_c$	**-73,000**	**-2,030,000**	**-15,000**	**-83,000**	**-2,000,000**

$\Delta RMKT = -30,000$. The order is accepted.

Investor enters a buy order for 200 DI1F20 contracts.

Definitive account	Instrument	C0	C	V	S = C-V	OC	OV	of
1000_1	DOLN18	100	400	300	100	0	0	0
1000_1	DI1F20	-100	300	500	-200	0	0	200

Building R (C0, S, OF, of)					
	Scen1	Scen2	Scen3	Scen4	Scen5
$R(C0)_c$	-1,000	-10,000	5,000	-1,000	0
$R(of)_c$	0	0	-70,000	-158,000	-4,000,000
$R(OC)_c$	0	0	0	0	0
$R(OV))_c$	-140,000	-4,000,000	0	0	0
$R(S)_c$	68,000	1,980,000	-20,000	-82,000	-2,000,000
$R(S, OF, of)_c$	**-73,000**	**-2,030,000**	**-85,000**	**-241,000**	**-6,000,000**

$\Delta RMKT = -4,000,000$. The order is not accepted, as consumption of the IRMKT measure is higher than the limit.

5.2 Limit setup

A participant can play more than one role across the trading chain. For example, an institution may define limits to its clients as an PNP, as an executing participant, or even as a carrying participant. LiNe reflects the diversified roles that institutions can assume. In such cases, participants will have access to screens corresponding to each role they take on and will be able to define profiles in an independent manner, grouped by clearing member, as the institutions' settlement chain is contemplated by LiNe.

It should be noted that investors for whom no defined limits or profiles have been configured will automatically be associated with the default profile. Further information on the default profile is available in subsection 3.4.1 (Default profile) of this guide.

5.2.1   Limit-receiving entities

LiNe considers investors, accounts and professional traders as entities apt to receive independent limits to trade.

It is strongly recommended that limits be managed by entities through profiles (as described in section 3.4/Profiles of this guide), in order to reduce the number of records to be updated in case the system administrators need to take any action.

It is also possible to define limits per instrument for SPCI/SPVI, TMOC/TMOV and STD measures, for entities or profiles, so as to allow participants to apply a specific restriction.

The possibilities provided by the system when defining limits and upper limits, or CAPs, are presented below.

5.2.2   PNP vs. investor

PNPs are required to set trade limits for clients under their management by authorizing or restricting access to trading and the system limit values, according to their own assessments.

5.2.3   Give-up link

For the execution of investor trades through give-up links, limits should be granted in two independent phases, namely:

- Participant carrying a give-up link: In the first phase, the carrying participant must set up a limit for clients and this limit will aggregate their trades by clearing member into all the executing participants who might hold a give-up link with said carrying participant; and

- Participant executing a give-up link: In the second phase, the executing participant must set up a limit for clients as it would for a client not trading via give-up. It is also worth noting that this limit must be less than or equal to the limit defined by the carrying participant in the first phase.

5.2.4   Trading on behalf

For transactions executed via a trading-on-behalf link, limits must be granted in two phases:

- In the first phase, the executing participant (PNP) must set up a maximum aggregate position limit for each intermediary participant and another maximum individual limit (CAP) per client of such participants; and

- In the second phase, the intermediary participant (PNP, PN or PL) will define limits for clients, subject to CAPs. The CAP thus given by the PNP may include or not an authorization for the PN to send orders via traders without specifying the account. If authorized, the limit of the capture account held by the PNP (executing participant) will be consumed.

It should be emphasized that, even with the definition of CAPs, the executing participant in a trading-on-behalf link will have no access to the details of the intermediary participant's client, thus maintaining client information confidentiality.

LiNe will control the definition of maximum individual limits at the institution that received the CAP upon setup, so as not exceed the CAP defined by the executing

participant. However, the aggregate position measure will not only apply to the account that executed a trade but to every investor under the intermediary where the CAP was defined upon setup.

It is also possible to carry both give-up and trading-on-behalf links in the same accounts. LiNe is capable of handling these features via different screens.

5.2.5   Professional traders

Professional traders are are contemplated by LiNe and must be granted limits from their institutions to be able to enter orders. Otherwise, their orders will be rejected.

Limits for professional traders are set up independently of those for investors and serve as operational limits to be managed by the relevant participant.

Execution via trading-on-behalf link is also included in the definition of limits for professional traders, in the form of CAPs set by the executing participant.

There are two user types for traders in LiNe, namely:

- Trader: Who can access LiNe and consult the use of his or her own limits and the limits of clients under the PNP; and

- Supervising trader: Who can set limits for other traders and consult their consumption by clients under the PNP.

5.3 Tables of limits vs. entities vs. mandates

The following tables show the relationship between limits and entities and the mandate levels applicable to each group, providing an overview to better understand said relationship and guide the management of participant limits.

Table 1 – Entities and limits defined by executing participant

Executing PNP			
Measure	Account	Investor	Trader
SPCI/SPVI	Optional	Optional/Exchange-inherited	Optional/Exchange-inherited
SPVD	Optional	Mandatory	Optional
RMKT	Optional	Mandatory	NA
RMKTN	Optional	Mandatory	NA
SDP	Optional	Mandatory	Mandatory
SFD	Optional	Mandatory	Optional
TMOC/TMOV	Optional	Mandatory	Mandatory
SPI (protected mode)	NA	NA	NA
IRMKT (protected mode)	Optional/Exchange-inherited	Optional/Exchange-inherited	NA
Authorized markets	Optional	Mandatory	Mandatory
STD (forward mkt)	NA	Optional/Exchange-inherited	NA
Trading on behalf CAP | Sum / Max. individual (setup)			
SPCI/SPVI	NA	NA	NA
SPVD	NA	Mandatory	Optional
RMKT	NA	Mandatory	NA
RMKTN	NA	Mandatory	NA
SDP	NA	Mandatory	Mandatory
SFD	NA	Mandatory	NA
TMOC/TMOV	NA	Mandatory	Mandatory
SPI (protected mode)	NA	NA	NA
IRMKT (protected mode)	NA	NA	NA
Authorized markets	NA	Mandatory	Mandatory
STD (forward mkt)	NA	NA	NA
PN with trading-on-behalf link			
SPCI/SPVI	Optional	Optional/Exchange-inherited	Optional/Exchange-inherited
SPVD	Optional <= CAP	Mandatory <= CAP	Optional <= CAP
RMKT	Optional <= CAP	Mandatory <= CAP	NA
RMKTN	Optional <= CAP	Mandatory <= CAP	NA
SDP	Optional <= CAP	Mandatory <= CAP	Mandatory <= CAP
SFD	Optional <= CAP	Mandatory <= CAP	Optional
TMOC/TMOV	Optional <= CAP	Mandatory <= CAP	Mandatory <= CAP
SPI (protected mode)	NA	NA	NA
IRMKT (protected mode)	Optional/Exchange-inherited	Optional/Exchange-inherited	NA
Authorized markets	Optional	Mandatory	Mandatory
STD (forward mkt)	NA	Optional/Exchange-inherited	NA

Table 2 – Entities and limits defined by carrying participant

Carrying PNP/SP	
Measures	Investor
SPCI/SPVI	Optional/Exchange-inherited
SPVD	Mandatory
RMKT	Mandatory
RMKTN	Mandatory
SDP	Mandatory
SFD	Mandatory
TMOC/TMOV	NA
SPI (protected mode)	NA
IRMKT (protected mode)	Optional/Exchange-inherited
Authorized markets	Mandatory
STD (forward mkt)	Optional/Exchange-inherited

Table 3 – Investors and limits defined by B3

B3		
Metrics	B3 CAP for investors	Exchange limit
SPCI/SPVI	Optional	Mandatory
SPVD	Optional	NA
RMKT	Optional	NA
RMKTN	Optional	NA
SDP	Optional	NA
SFD	Optional	NA
TMOC/TMOV	Optional	NA
SPI (protected mode)	NA	NA
IRMKT (protected mode)	NA	Mandatory
Authorized markets	NA	NA
STD (forward mkt)	NA	Mandatory

5.4 Limit assessment

5.4.1   Assessment sequence

As a way of optimizing system processing and limit assessment, the sequence in which LiNe will perform checks before releasing investors' and professional traders' orders, in regular trading mode, is:

- Authorized markets;

- TMOC/TMOV;

- SPCI/SPVI;

- SDP;

- SPVD;

- RMKT;

- RMKTN (When a buy or sell trade is executed in the same instrument);

- SFD (when a buy or sell trade is executed in the same instrument).

In protected mode, the sequence is:

- TMOC/TMOV;

- SPCI/SPVI/SPI;

- SDP;

- SPVD;

- RMKT/incremental risk;

- RMKTN and

- SPI.

In protected mode, forward market orders will not be permitted.

5.4.2 Give-up link

The aggregate measure limits per instrument, defined for carrying participants, will be evaluated in near time. This means that the assessment of all the LiNe Trading and Clearing measures is outside of the critical path of the order.

There are exception cases though, whereby measure evaluations will be carried out in real time. All the LiNe Clearing and Trading measure assessments will performed in real time upon protected mode activation and also for cross orders, which are always evaluated in real time. Exceptions to real-time TMOC/TMOV and SPCI/SPVI measure evaluation will occur when the investor is in synchronous mode or trading the USD *casado* strategy.

Assessment of the limits defined by the executing participant is performed in real time for TMOC/TMOV, SPCI/SPVI and STD measures, whereas LiNe Clearing measures are evaluated outside of the critical path of the order.

5.4.3   Professional traders

It is worth pointing out that, before their orders are entered, the limits defined for professional traders and investors will be validated (for metrics by instrument), which conditions must be met for their orders to be sent to the matching engine.

Execution via trading-on-behalf link is also contemplated in the definition of limits for professional traders, by way of a CAP defined by the executing participant.

Account specification is optional for traders. However, if an order is sent by a trader without designating the account, both capture account and trader limits will be assessed. If a modification request, whereby the PNP decides to specify an account, is submitted, the capture account limits will be removed and transferred to another account. PNPs must be aware of the procedures for creating and deleting accounts, as accounts both created and deleted will be interpreted by LiNe by means of FIX AccountType (tag 581). All DMA orders, with no exception, are required to specify an account.

The CAP assigned to PNPs may include or not an authorization for traders to send orders via PNs without stating the account. If authorized by the PNP, PN traders will be allowed to trade without designating the account, and all LiNe risk measures will be consumed by the relevant PN trader and the PNP capture account. If not authorized by the PNP, all orders originating from the PN without specifying the

account will be rejected, due to the lack of authorization to use the PNP capture account (CAP).

5.4.4   Orders with no price information

For orders sent without setting a price (market on auction, market on close and market), LiNe will use a reference price to calculate the financial obligation weighing down on the measures. This price will be:

- Closing or benchmark price for stocks and options;

- Settlement price for futures contracts; and

- Theoretical price arbitrated by B3 for options created online in the trading platform.

5.4.5   Odd-lot instruments

Odd-lot instruments are handled by the system as round-lot instruments and their respective positions are added to the limits of the corresponding round-lot instruments.

5.4.6   Forward trades

Forward instruments are separate instruments and are subject to their own limits, as described in subsection 5.1.6/Forward trade balance by investor (STD) of this guide. The limits of both lender and borrower will be validated.

5.4.7   User-defined (UDS) and B3-defined strategies (EDS)

5.4.7.1   UDS and EDS – RKMT

These strategies will be evaluated by LiNe through the RMKT and RMKTN measures as a unique instrument. Calculation of each strategy's unit risk will be equivalent to the total unit risk of their legs, subject the side and ratio of each leg.

5.4.7.2 UDS and EDS – SPCI, SPVI, TMOC, TMOV, SFD, SDP and SPVD

Orders and trades involving strategies will be assessed against limits defined either for each strategy or for each individual leg, depending on strategy types and features. If no limits are configured, the order or trade will not be accepted. For further information on strategy evaluation by each measure, please refer to subsections 5.1.1 thru 5.1.7 of this guide.

5.4.8 Options exercises

Options exercises will not be processed by LiNe when submitting an option exercise request but only when the option is actually exercised, thus updating the corresponding limits. The principle in this case is to guarantee that any position that has been created can be exercised.

Given that LiNe doesn't perform validations to either allow or not an exercise request to be submitted, the options market is not among the authorized markets.

5.4.9 Block Trading Solutions for Equities and Securities Representing Equities

There are 3 solutions provided specifically and exclusively for block trading for equities and securities representing equities on the exchange, which are:

1. Midpoint order book (Midpoint)

2. Book of block trade (BBT); and

3. Request for quote (RFQ).

For each of them, there will be different negotiation codes. Namely, for midpoint the ticker will be the underlying equities ticker (e.g.: PETR4) plus the 'M' letter at the end (e.g.: PETR4M). For BBT, will be the 'Q' letter (e.g.: PETR4Q) and finally for RFQ the 'R' letter will be add (e.g.: PETR4R).

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6 REST API INTEGRATION

B3 provides access to the risk tool via REST interface, a web-based protocol, for the maintenance of limits and entities in the LiNe environment. Integrations are available from Monday thru Friday: 7:00 a.m. to 7:00 p.m.

Management of functionalities via REST allows participants to integrate the internal tools of each institution into LiNe through the web protocol. The interface is only available for access via the B3 communications network (RCB).

Important to note are audit data and exchange limits, which will not be available on the REST interface. They can only be utilized via the LiNe web portal or accessed through the reports downloaded from the portal.

Use of the environment will be monitored by B3 which, at its sole discretion, may reduce or restrict an institution's access to utilizing the integration.

6.1 Operations foreseen via REST interface

The operations foreseen for participants to integrate with LiNe via REST are:

- Consultation of clients/accounts and professional traders linked to PNPs;

- Creation/consultation/editing/deletion of profiles;

- Creation/consultation/editing/deletion of limits associated with profiles;

- Creation/consultation/editing/deletion   of   entities (clients\accounts\professional traders) associated with profiles;

- Creation/consultation/editing/deletion of limits (exception) associated with clients\accounts\professional traders linked to PNs;

- Consultation/editing of clients/accounts in protected mode;

- Consultation/editing of blocked clients/accounts;

- Consultation and alert setups registered in LiNe 5.0;

- Receiving alert messages;

- Consumption/position of limits associated with clients/accounts and professional traders; and

- Consultation of PNs.

6.2 REST integration specification

Technical information, description of operations and technical examples are available on B3's website at

http://www.bmfbovespa.com.br/pt_br/servicos/negociacao/line-5-0/.

7 SYSTEM ACCESS AND USABILITY

The LiNe risk tool web portal is available to all participants via a web link in the RCB network (https://line.bvmfnet.com.br). For access control and user profile definition, the B3 Unified Access Control (CAU) system is used.

Carrying settlement participants with no access to B3's extranet and CAU system, as well as users, must first obtain it, in order to access the pre-trade risk tool.

7.1 LiNe web portal

The LiNe web portal will be available Monday thru Friday: from 7:00 am to 9:00 pm, on regular trading days.

7.2 Access management

Access to the LiNe web portal will be made through a CAU system user, so that the institutions' privileged users will be responsible for distributing the profiles available in LiNe to the corresponding users.

7.2.1 User profiles

In order to segregate responsibilities in the trading participants, there will be six login types with different roles. The profiles available to participants are:

CAU profile	LiNe profile
LINE_FIRM_AUD_BVMF	Compliance
LINE_FIRM-MNG-RIS_BVMF	Risk manager
LINE_FIRM-RIS_BVMF	Risk analyst
LINE_FIRM-USR_BVMF	Trader
LINE_SVC-FIRM-MNG-RIS-BVMF	Service user

The list of user profiles for professional traders has the following features:

- Trader, which exclusively allows limits applicable to all traders, investors and accounts to be consulted.

LiNe – Responsibility matrix										
Screens	**Exchange limits**		**Investor/account limits**		**Professional trader limits**		**Profile management**		**Audit**	**Reports**
Profile	Consultation	Management	Consultation	Management	Consultation	Management	Consultation	Management	Consultation	Consultation
Compliance									X	X
Risk manager	X		X	X	X	X	X	X	X	X
Risk analyst	X		X	X	X	X	X	X		X
Trader	X		X		X					

7.2.2 Service users

LiNe will include a service user who will be responsible for accessing and managing API limits. This service user will not be able to access the LiNe portal, nor a regular user will be able to access the system API.

User requests must be submitted via CAU system, according to chapter 6 (REST API integration) of this guide.

7.3 Alert module

LiNe features a parameterizable alert screen for entities' limit consumption and status change, allowing managers to monitor the tool's utilization, so as to reduce trade execution and rejection risks for both participants and investors. Alert

messages are generated by the alert message window in the web portal and via REST integration, permitting users to choose how to use them.

Alert messages are divided by category, as follows:

- Limit consumption: Allows PNPs, PLs and PNs to parameterize thresholds for the SFD, SDP, SPVD, RMKT, RMKTN, SPCI, SPCI and STD measures applicable to any and all entities (investor, account and professional trader) and receive alert messages via the LiNe web portal when a breach of the configured thresholds occurs;

- Order rejection: Allows PNPs, carrying participants and PNs to receive rejection messages originating from LiNe;

- Protected mode: Allows PNPs, carrying participants and PNs to receive alert messages whenever an entity (investor/account) enters into protected mode;

- CAP reduction: Allows PNs to receive alert messages whenever an PNP reduces a CAP applicable to an entity (investor/account/professional trader); and

- Entity blocking: Allows PNPs, carrying participants and PNs to receive alert messages whenever one of the entities (investor/account/professional trader) is blocked.

8 REPORTS

By using LiNe, PNPs, carrying participants and PNs can perform several consultations to generate reports or even troubleshooting tasks. There is more than one report screen, with different purposes. The relevant reports are listed below.

8.1 Audit

LiNe retains data for the last three months in its system. Through the LiNe web portal, PNPs and PNs may conduct searches focusing on audit. The data available for such consultations are:

- Professional trader (user) who has edited limits;

- Thresholds modified in measures;

- Entities impacted by limit editing;

- Date of limit update;

- Time of limit update;

- Login/logout time in system;

- Alert messages received by the web portal and API;

- Profile editing;

- Protected mode activation;

- Professional trader who has created/edited/deleted a profile; and

- User computer IP address.

8.2 Orders rejected by LiNe

LiNe features default alert messages. One such message deals with the rejection of any order from any entity due to lacking or excessive limits. Rejection alert messages can also be sent via API messaging (REST).

LiNe rejections will not be passed through to drop copy. Therefore, follow-ups by trading participants must be performed through on-screen alerts, API and execution reports from the trading session.

9 KEY FEATURES AND FUNCTIONALITIES

9.1 New professional traders

LiNe will be integrated into B3's Professional Qualification Management (GHP) system. In this case, professional traders who are registered in or removed from SINCAD will be reflected in the system on the T+1 window.

9.2 Morning tests

B3 provides trading participants with a daily window, from 7:00 am to 8:00 am, to validate with B3 the integrity of their systems. An authorized market responsible for the limits applicable to testing instruments (fictional instruments) will be made available for PNPs and PNs to also validate the integrity of their systems with LiNe. Further details on testing instruments and their features can be found at Morning tests.

9.3 New instruments – IPOs, ticker changes and new futures contracts

New companies admitted to trading will not require additional configuration of trading participants, as long as they hold a permission to trade in the authorized markets with which the corresponding instrument is associated. Therefore, all securities issued by a new company will have their limits inherited from the relevant authorized market.

Should a company's ticker symbol be modified, the exchange limits impacted by such change will automatically be updated. However, measures SPCI, SPVI, TMOC and TMOV will not be migrated. Therefore, PNPs and PNs must assign a new limit to said measures. If an instrument's ticker is modified and migrates from its authorized market to another, PNs must assign limits to the newly authorized market, if they have not done so yet.

In the event a new futures contract is introduced, the contract and the options based on it will automatically be associated with their authorized markets and inherit the relevant limits.

9.4 New instruments – Creation of online options

As the creation of online options in the BOVESPA segment is possible in the trading platform, LiNe provides the identification and automatic association of the created options with their corresponding groups. Their reference prices will be arbitrated by B3, so that orders with no price information can use them as base price. Since the association with the options group is automatic, participants need no additional configurations for their clients to trade the new options.

9.5 Special auctions

To take part in special auctions, PNPs and PNs must grant permission to the authorized auction market. Special auctions' schedules and notices can be consulted on the B3 website at http://www.bmfbovespa.com.br/pt_br/servicos/leiloes/bolsa-de-valores/.

9.6 Index portfolio balancing

The theoretical index portfolio is valid for four months, for the periods from January to April, May to August and September to December. At the end of each four-month period, the portfolio is balanced, employing the procedures and criteria that are part of the methodology adopted by B3. PNPs, carrying participants and PNs must remain alert to the instruments that will be impacted by the new index portfolio balancing, as the relevant changes will have an immediate impact on LiNe's authorized markets. Further information can be found at B3 Index Definitions and Procedures.

9.7 Order with validity

Orders with a time in force that have remained in the system overnight will automatically consume their respective limits at the opening of the next trading day session, as detailed for each risk measure.

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9.8 B3's order entry and trade execution procedure

The orders and trades registered by B3's market surveillance upon request of PNPs and PNs must include all the relevant limits, as detailed in this guide. In case the order or the trade doesn't specify an account, the limits of the PNP's capture account will be consumed.

All of the procedures described in this chapter will follow the rules set forth in the Operational Procedure Manual.

9.9 Group update and limit cleanup

Aiming to preserve the soundness of the system, the limits set for expired instruments or instruments no longer trading will automatically be deleted. This cleanup procedure will be performed on the day the instrument is excluded.

Inactive clients, accounts and participants will have their configurations deleted if they are deactivated in their source systems. However, cleanup is only done over the weekends, when the platform goes offline. Give-up and trading-on-behalf links will reflect cleaning procedures on the following day.

Grouping of the IBRX-100 instruments will be updated on the day following the announcement of changes to its portfolio composition.

9.10 Trade blocking (panic button)

Trade blocking applies to investors, accounts and professional traders who, once blocked by an executing participant, will have their subsequent orders rejected. Worth pointing out that this setup will remain in force until it is unblocked.

9.11 Message priority

Because LiNe is potentially the only trade blocking tool that participants have in relation to their clients, the system will handle limit management commands as priority over order entry messages. Participants must be attentive to the number of limit management commands they will perform during the day.

9.12   Operation modes

To enable both a phased migration and a parallel production period, LiNe will feature four operating modes:

- Offline: In this mode, LiNe will not perform any validations or limit reductions before orders are sent to the matching engine. No rejections caused by limit breaches will be implemented;

- Parallel production: In this mode, LiNe will not perform any validations before orders are sent to the matching engine but will calculate the limits that can be monitored via web portal or REST interface;

- Operating production: This is LiNe's operating mode that performs validations and updates limit consumption before orders are sent to the matching engine; and

- Blocked: This is LiNe's operating mode that will reject orders sent to the system.

10 ERROR CODES GENERATED BY THE SYSTEM

The rejections generated by LiNe Trading are included in the standard FIX specification. That is, they are conveyed through message types: ExecutionReport (8); OrderCancelReject (9); QuoteRequestReject (AG); and QuoteStatusReport (AI).

Messages are generated by the LiNe plugin on the gateway and delivered to investors in the following scenarios:

- Rejection notifications sent by the risk engine to orders it received for evaluation;

- Insufficient data in the FIX message for routing to the risk engine; and

- Communications problems between plugin and risk engine.

Errors and related codes follow the standard defined for the EntryPoint specification of the PUMA Trading System platform: Entrypoint: Error Codes - version 1.0.8.

FIX message	Details
ExecutionReport (8)	Used to reject NewOrderSingle (D), NewOrderCross (s) Tags to explain reason for rejection: OrdRejReason (103) – 6 full digits Text (58) – Describes reason for rejection (250 characters max) Used to reject OrderCancelReplaceRequest (G)
OrderCancelReject (9)	Used to reject OrderCancelReplaceRequest (G) Tags to explain reason for rejection: CxlRejReason (102) – 6 full digits Text (58) – Describes reason for rejection (250 characters max)
QuoteRequestReject (AG)	Used to reject QuoteRequest (R) Tags to explain reason for rejection: QuoteRequestRejectReason (658) – 6 full digits Text (58) – Describes reason for rejection (250 characters max)
QuoteStatusReport (AI)	Used to reject Quote (S) Tags to explain reason for rejection: QuoteRejectReason (300) – 6 full digits Text (58) – Describes reason for rejection (250 characters max)

For the LiNe system, the error code prefixes are:

030xxx -> Error code for rejections generated by the risk engine and derived from regular orders and executing participants;

031xxx -> Error code for rejections generated by the risk engine and arising from violation of measures by carrying participants; and

032xxx -> Error code for rejections generated by the LiNe plugin on the gateway.

The document entrypoints error codes contains the rejection list originating from LiNe 5.0.

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11 ELEMENTS NOT SUPPORTED BY LiNe

11.1   Account segment − SINCAD

As explained in section 3.3 (Features and enhancements) of this guide, LiNe will be integrated into SINCAD. Their integration is necessary for managing investors and accounts linked to trading participants via SINCAD, whereby they can define the products apt to be allocated via the Real-time Clearing (RTC) system. This permission obtained via SINCAD will not be reflected in LiNe. Thus, it is through SINCAD that PNPs, PNs or carrying participants parameterize restrictions for the markets that can be allocated, and it will be through the authorized market that PNPs, PNs or carrying participants will be able to restrict the authorized markets admitted to trading in the trading platform.

11.2   Account types and their processing by LiNe

In addition to the segment definitions made through SINCAD, PNPs can change the status of accounts (as shown in the table below). Account statuses are used by B3's post-trade systems to validate the allocation rules. However, such features are not reflected in the pre-trade system (LiNe) as they are in the post-trade systems, considering that LiNe processes account statuses as active and inactive for trading.

The table below shows all types of accounts and their possible trading statuses in LiNe.

Processing statuses for accounts registered in SINCAD							
SINCAD domain		LiNe domain	Account statuses				
Code	Description	Processed by LiNe	Active	Partially suspended	Suspended	Deactivating	Inactive
1	Regular	Yes	Yes	Yes	Yes	Yes	No
3	Error	Yes	Yes	Yes	Yes	Yes	No
11	Operational error	Yes	Yes	Yes	Yes	Yes	No
2	Master	Yes	Yes	Yes	Yes	Yes	No
6	Brokerage	Yes	Yes	Yes	Yes	Yes	No
10	Admincon	Yes	Yes	Yes	Yes	Yes	No
20	Intermediary	Yes	Yes	Yes	Yes	Yes	No
21	Fintermo	Yes	Yes	Yes	Yes	Yes	No

22	Transitory for market makers	Yes	Yes	Yes	Yes	Yes	No
24	Transition account	Yes	Yes	Yes	Yes	Yes	No
7	Capture	Yes	Yes	Yes	Yes	Yes	No

12 FILE UPLOAD

File upload is responsible for uploading files containing definitions and limit parameterization for entities (investor, account, trader and profile) in LiNe Trading.

LiNe utilizes the UTF-8 data format for comma-separated values (CSV) files.

UTF-8 is a variable-length Unicode character encoding format. It has the ability to represent each character in a Unicode character set and is also ASCII compliant (as opposed to UTF-16 or UTF-32). For the most part, UTF-8 character representations use only one byte of encoding.

UTF-8 is part of the ISO 10646 schema published in 1990. The idea is to assign a unique code to every character (such as letters, numbers, symbols, ideograms, etc.) covered by the ISO 10646 standard. This standard stipulates a maximum amount of 1.1 million of such code points, but approximately 100,000 are currently attributed to characters. However, this value has been increasing steadily, as previously unrepresented characters are added.

12.1 Secure Client

LiNe uses the Secure Client system to receive files sent by trading participants and thus upload them.

Secure Client employs secure transport technology (file exchange software), in order to send and receive files in an agile, interactive and monitored way.

Secure Client is intended for participants who have access (RCB and VPN) to the trade and post-trade environments, according to their relationship profiles and B3's rules and regulations set forth by its derivatives and equities clearinghouses.

Details of the Secure Client system can be consulted on the <u>Secure Client</u> page.

12.2   Access

All the participants (PNPs/PNs/SPs) who will manage file upload limitations must provide connectivity in the production and certification environments.

Production

mft-trade.bvmfnet.com.br 177.54.211.59 TCP 10022 / 80 / 443

Certification

mft-trade.cert.bvmfnet.com.br 200.19.60.179 TCP 10022 / 80 / 443

12.3   File name pattern

Participants must match the standard name of each file to be sent and received via Secure Client. The standard models are:

File type name + _ + BusinessGroupIdentifier + .CSV

ARQ.LINE.003.01_00123456201201310000000000000000001.csv

ARQ.LINE.005.01_00123456201201310000000000000000002.csv

ARQ.LINE.004.01_BV00093520180824000000001317000197833.csv

ARQ.LINE.006.01_BV00093520180824000000001317000197833.csv

12.4   Compression rule for file traffic – Sending files

B3 will send compressed files to participants and participants must also send compressed files to B3, always formatted with the ZIP extension.

ZIP files must have the same exact names as the encapsulated files, but with the ZIP extension.

E.g.:

```
ARQ.LINE.003.01_0012345620120131000000000000000001.ZIP        contains        file
ARQ.LINE.003.01_0012345620120131000000000000000001.csv

ARQ.LINE.005.01_0012345620120131000000000000000002.ZIP        contains        file
ARQ.LINE.005.01_0012345620120131000000000000000002.csv

ARQ.LINE.004.01_BV00093520180824000000001317000197833.ZIP     contains        file
ARQ.LINE.004.01_BV00093520180824000000001317000197833.csv

ARQ.LINE.006.01_BV00093520180824000000001317000197833.ZIP     contains        file
ARQ.LINE.006.01_BV00093520180824000000001317000197833.csv
```

12.5   BusinessGroupIdentifier creation rule

The unique file identifier (BusinessGroupIdentifier, or BGI) assigned to participants is created as follows:

- The first 8 positions contain the participant code number. If the participant ID number is less than 8 digits, leading zeros must be included. E.g.: 00123456;

- Followed by year, month and day. E.g.: 20120131; and

- Plus another unique participant ID number with 19 positions. If this number is less than 19 digits, leading zeros must be entered. E.g.: 0000000000000067890.

The unique file identifier (BGI) assigned by B3 comprises:

- B3 + the sending system identification. If the system ID number is less than 6 digits, leading zeros must be inserted. In the following example, 405 is the LiNe system number: BV000405;

- Followed by year, month and day. E.g.: 20120131;

- System instance number. E.g.: 0333. If the instance number is less than 4 digits, leading zeros must be included; and

- A number with 15 positions. If this number is less than 15 digits, leading zeros must be entered. E.g.: 000000000067898.

12.6   CSV file validation

All CSV files arriving at the B3 interface for processing are subject to validation rules associated with the syntax and structure of the message itself. In this context, it is possible to distinguish between the consistency and the validity of any message sent to B3.

The major aspects to be met for such validation are the following:

- Files can only contain proper Unicode UTF-8 characters;

- Only 1 record per line;

- Semicolon (;) as field separator;

- Line break as record separator;

- Data type compliant to file layout;

- Mandatory field values according to file layout;

- File name according to B3 standard;

- Uniqueness of file name; and

- File compression.

12.7   Trade validation

In addition to CSV file syntax validation, B3 performs validations based on trading context. The B3 trade validation occurs under a set of pre-defined rules.

In case of violation of trading rules, B3 reports the occurrence to the relevant participants, through an output file. This file will contain all the information the participant needs to understand the reason why a certain transaction was not completed.

All duplicate data in the file will be rejected (e.g., two lines with the same investor, risk measure and threshold). Hence, B3 recommends that participants make a prior review of file content before uploading it.

The file sent by B3 to the participant will contain the trading rule that was violated.

12.8 Compression rule for file traffic – Capturing files

When the file received by B3 (ARQ.LINE.003.01 or ARQ.LINE.005.01) doesn't contain any errors (in file name, header or content), a response file will be delivered (ARQ.LINE.004.01 or ARQ.LINE.006.01) only with the header filled.

E.g.: An ARQ.LINE.004.01 response message will be sent with only the header row having values, in return for an ARQ.LINE.003.01 message with no errors.

Received file name:

ARQ.LINE.003.01_000130292018083100000000000000000230.zip

Returned file name and content:

ARQ.LINE.004.01_BV000935201808310000001317000202412.zip

B3;1-3029;2;2018-08-31T12:00:00;BV000935201808240000001317000197833;0001302920180831000 0000000000000230;

12.9 Behavior expected by Secure Client

LiNe requires that, in case one of the global metrics need to be managed via Secure Client, the other metrics must also be updated or managed, meaning that, when a participant needs to update the SDP measure applicable to an investor, both the RKMT and SFD measures must also be informed, even if the limit is repeated. If this doesn't happen (sending only SDP), the other risk measures (RKMT and SFD) will have their limits parameterized to 0.

Important to note are duplicate rows in the file. As a default behavior, LiNe will reject all rows with duplicate data. Therefore, B3 recommends that this validation be done by the participant before transferring a file to B3.

12.10 Technical error message scenario

Examples of error scenarios and technical validations for each CSV file instance are presented below. Further errors can be found in **Códigos Erros - Mensageria – LINE.xls**.

12.10.1 Scenario 1

In situations where B3 is unable to identify the type of file in a request message submitted by a participant, it will return a BVBG.999 file to the participant, as shown in the following examples.

Scenario 1: Error 1 – Participant sends a file to B3 with the wrong type (e.g., ARQ_LINE.003.01 instead of ARQ.LINE.003.01). B3 cannot identify the type. In this case, file BVBG.999.01 – ErrorReportV03, containing message tsmt.016.001.03, is returned to the participant.

As it is not possible to identify the information code, a BVBG.999.01 file (ISO 20022 standard, according to the second phase of B3's Post-Trade Integration, or IPNV2) will be generated with the error code:

- EARQ0050 – Unregistered information code

The same dynamic will be applied to file names without "_", such as Teste.CSV. In this case, the return code will be:

- EARQ0044 – Character '_' not found in file name

12.10.2 Scenario 2 – File name error encountered by B3

In situations where B3 is able to identify the type of file in a request message submitted by the participant, but this file contains name flaws other than those referred to in scenario 1, B3 will return an appropriate response file (ARQ.LINE.xxx) to the request file in CSV format.

Example: An ARQ.LINE.004.01 message will be sent in return for an ARQ.LINE.003.01 file received without ZIP extension or with BizGroupId exceeding the defined length.

Some examples of possible errors and their corresponding codes are presented below.

- EARQ0045=ZIP extension not found.

- EARQ0046=BizGroupID longer than defined length.

- EARQ0049=Incorrect date in file name [%s].

- EARQ0051=BizGroupID longer than defined length.

- EARQ0052=Business Group ID already registered in FPB database [%s].

  (FPB is B3's message repository.)

For further detail on the ARQ.LINE response layout, check file layout, ErrorFileName session.

Example 1 - BizGroupID longer than defined length:

Received file name: ARQ.LINE.003.01_00302920180824.zip

Input file content is not analyzed.

Return file name and content: ARQ.LINE.004.01_
BV000935201808240000001317000197833.zip

Example 2 - ZIP extension not found:

Request file:
ARQ.LINE.003.01_0000012320180831000000000000000045

Input file content is not analyzed.

Response file:
ARQ.LINE.004.01_BV000935201808310000001317000197833.zip

B3;1-3029;2;2018-08-

06T12:00:00;BV000935201808310000001317000197833;0000012320180831000

0000000000000045;;

0;EARQ0045;ARQ.LINE.003.01_0000012320180831000000000000000045

Example 3 - BizGroupID longer than defined length:

Request file: ARQ.003.01_00001220111231.zip

Input file content is not analyzed.

Response file:
ARQ.LINE.004.01_BV000935201808310000001317000197833.zip

B3;1-3029;2;2018-08-

06T12:00:00;BV000935201808310000001317000197833;00001220111231;;

0;EARQ0051;ARQ.LINE.003.01_00001220111231

Example 4 - Incorrect date in file name:

Request file:
ARQ.003.01_0000012320183108000000000000000045.zip

Input file content is not analyzed.

Response file:
ARQ.LINE.004.01_BV000935201808310000001317000197833.zip

B3;1-3029;2;2018-08-06T12:00:00;BV000935201808310000001317000197833;0000012320183108000 0000000000000045;;

0;EARQ0052;ARQ.LINE.003.01_0000012320183108000000000000000045

Example 5 - Business Group ID already registered in FPB database (duplicate BGI):

Request file:
ARQ.003.01_0000012320183108000000000000000045.zip

Input file content is not analyzed.

Response file:
ARQ.LINE.004.01_BV000935201808310000001317000197833.zip

B3;1-3029;2;2018-08-06T12:00:00;BV000935201808310000001317000197833;0000012320183108000 0000000000000045;;

0;EARQ0052;ARQ.LINE.003.01_0000012320183108000000000000000045

Example 6 - Participant code different from file box:

Secure transport box:123

Request file:
ARQ.LINE.003.01_0000011420180831000000000000000045.zip

Input file content is not analyzed.

Response file:
ARQ.LINE.004.01_BV000405201808310000000000000000097.zip

 B3;3-123;2;2018-08-18T14:56:00;BV000405201808310000000000000000097;0000011420180831000 0000000000000045;;

0;EARQ0047;ARQ.LINE.003.01_0000011420183108000000000000000045

12.10.3 Scenario 3 – Files with header errors

In situations where the file contains header errors, B3 will return an appropriate response file (ARQ.LINE.xxx) to the request file in CSV format.

Example: An ARQ.LINE.004.01 message will be sent in return for an ARQ.LINE.003.01 file containing a header fault.

For further detail on the ARQ.LINE response layout, check file layout, HeaderError session.

<B3 Code>;<External Participant Code>;<Number of Lines in File>;<Creation Date>;<Response File BGI>;<Original BGI>;;

<Line>;<ErrorFrom>;<ErrorTo>;<ErrorTotalLines>;<CreationDate Error>;<ErrorBusinessGroupIdentifier>;<ErrorRelated>;<ErrorUser;<ErrorHostIPA ddress>;<From>;<To>;<TotalNumberOfLine>;<CreationDate>;<BusinessGroupId entifier>;<Related>;<UserName>;<HostIPAddress>

Example 1

Example of response when error EARQ0014 = Header Business Group ID different from file name Business Group ID:

Business Group ID of file name=00013029201808310000000000000000045

Business Group ID of header = 00013029201808310000000000000001145

*Received file name
ARQ.LINE.003.01_00013029201808310000000000000000045.zip*

*Return file name and content:
ARQ.LINE.004.01_BV00093520180831000000001317000197833.zip*

BV;1-3029;2;2018-08-31T12:00:00;BV00093520180824000000001317000197833;000130292018083100000000000000000045;;

1;EARQ0014;;;;;;;1-3029;366;2;2018-08-31T14:00:00;00013029201808310000000000000001145;;p-demolina;127.0.0.1;

12.10.4 Scenario 4 – Files with content errors

In situations where the file contains data content errors, B3 will return an appropriate response file (ARQ.LINE.xxx) to the request file in CSV format.

Example: An ARQ.LINE.004.01 message will be sent in return for an ARQ.LINE.003.01 file containing a data content error.

<B3 Code>;<External Participant Code>;<Number of Lines in File>;<Creation Date>;<Response File BGI >;<Original BGI>;<Profile>;<Modification Type>;<Pre-Trade Segments>;;

<Line>;<ErrorModificationScopeIndication>;<ErrorPreTradeSegmentCode>;<Error EntityTypeCode>;<ErrorEntityIdentifierNumber>;<ErrorPartyIdentification>;<Error CarryingPartyIdentification>;<ErrorExtendedIdentificationType>;<ProfileNumber>; <ModificationScopeIndication>;<PreTradeSegmentCode>;<EntityTypeCode>;<En tityIdentifierNumber>;<ExtendedIdentificationType>;<PartyIdentification>;<Carryin gPartyIdentification>

Example 1

Example of response when error EARQ0027 = Value entered in field not numeric occurs:

PreTradeSegmentCode of file sent = DERIVATIVES

2.3		PreTradeSegmentCode	PreTradSgmtCd	[1..1]	Number	Code that identifies participant pre-trade segments. This segment is specific for LiNe system parameterizations, where users can group participants by the following domain values: 1 - DERIVATIVES 2 - EQUITIES 3 - BOTH

Received file name:
ARQ.LINE.003.01_000130292018083100000000000000000132.zip

Return file name and content:
ARQ.LINE.004.01_BV0009352018083100000001317000180423.zip

BV;1-3029;2;2018-08-

31T12:00:00;BV0009352018083100000001317000180423;000130292018083100

00000000000000132;

2;;; EARQ0027; ;;;;;2363451291;DELT;DERIVATIVES;PRF;10626683891;2;;;

12.11 File structure

12.11.1 ARQ.LINE.003.01

This subsection illustrates the use of file ARQ.LINE.003.01, which allows a trading participant (PNP/PN/SP) to associate one or more entities (investor, account and trader) with an existing profile.

The file upload flow works as follows:

Trading participant sends file ARQ.LINE.003.01 to B3 requesting the association of one or more entities with a profile.

B3 sends back to trading participant a file containing the request status using code ARQ.LINE.003.01.

If some lines of file **ARQ.LINE.003.01** present an error (e.g., investor not found), the response file **ARQ.LINE.004.01** will indicate that error.
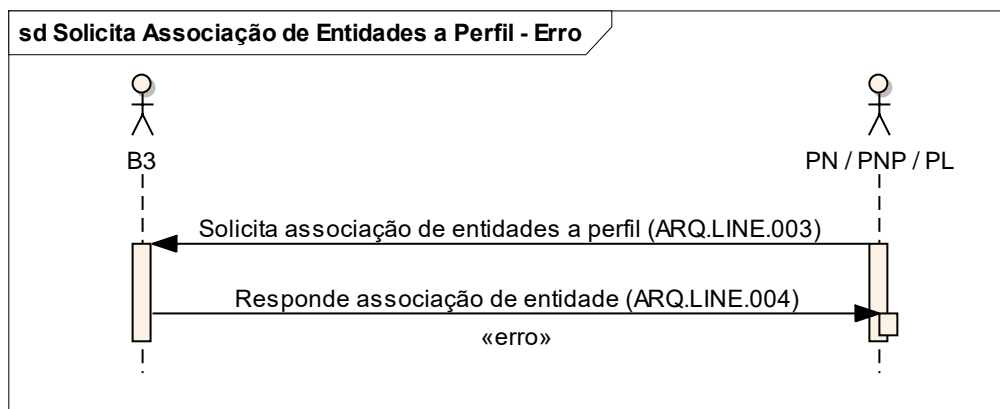

Rules:

R1: Only applicable when entity type is INV;

R2: Only applicable when trading-on-behalf link is available to entity; and

R4: Filling in this field is mandatory for this file.

INDEX	OR	Message Item	Tag	Mult.	Data Type	Description
1.0		BusinessGroupDescription	BizGrpDesc	[1..1]	+	This block contains CSV file header information.
1.1		From	Fr	[1..1]	Max35Text	Sender ID. In the example, 3 is the participant group, such as full trading participant, and number 123456 is the participant ID at B3: 3-123456.
1.2		To	To	[1..1]	Max35Text	Receiving party ID. Ex: B3.
1.3		TotalNumberOfLine	TtlNbOfLine	[1..1]	Number	Total number of lines in file.
1.4		CreationDate	CreDt	[1..1]	ISODateTime	Date and time of file creation. Ex: YYYY-MM-DDThh:mm:ss.
1.5		BusinessGroupIdentifier	BizGrpIdr	[1..1]	Max35Text	If unique file identifier is assigned by participant, it is made up of: • Participant code in first 8 positions. If participant ID number is less than 8 digits, leading zeros must be entered. Ex: 00123456; • Followed by year, month and day. Ex: 20120131; • Plus another unique participant ID number with 19 positions. If less than 19 digits, leading zeros must be entered. Ex: 0000000000000067890.

1.6		Related	Rltd	[0..1]	Max35Text	Specifies BGI of previously sent file. Must be used to specify processing dependency on another previously sent file.
1.7		UserName	UsrNm	[0..1]	Max64Text	User login.
1.8		HostIPAddress	HstIPAdr	[0..1]	Max35Text	Host (sender) IP address.
2.0		Profile	Prfl	[1..*]	+	Contains information about the profile created or deleted by the participant. Trading participants can create as many profiles as they need and associate them with accounts, investors and traders. Such profiles are used to define thresholds assigned to investors, accounts and traders.
2.1		ProfileNumber	PrflNb	[1..1]	Number10	Number that identifies profile.
2.2		ModificationScopeIndication	ModScpIndctn	[1..1]	DataModification2Code	Contains type of modification to be applied to a set of information. Ex: DELT – delete INSE – insert.
2.3		PreTradeSegmentCode	PreTradSgmtCd	[1..1]	Number	Code that identifies participant pre-trade segments. Segments are specific for LiNe system parameterizations, where users can group participants by the following domain values: 1 - DERIVATIVES 2 - EQUITIES 3 - BOTH
2.4		EntityTypeCode	EntyPNCd	[1..1]	Max3Text	Code that identifies type of entity.Ex: PRF - Participant INV - Investor ACC - Account TRD - Trader
2.5		EntityIdentifierNumber	EntyIdrNb	[1..1]	Max40Text	Number of investor, account or trader based on type of entity. Ex: Investor number Account number
2.6		ExtendedIdentificationType	XtndedIdPN	[0..1]	Extended350Code	Specifies ID type. This field requires an external code list. Domain values: 1 - CNPJ# 2 - CPF#
2.7		PartyIdentification	PtyId	[0..1]	Max35Text	Executing participant ID number. Unique identifier for participants using a proprietary identification schema. This field requires an external code list. Participant ID number must be entered as in this example: 123456.
2.8		CarryingPartyIdentification	CrygPtyId	[0..1]	Max35Text	Settlement participant ID number. Unique identifier for participants using a proprietary identification schema. This field requires an external code list. Participant ID number must be entered as in this example: 123456.

12.11.2 ARQ.LINE.004.01

This file is sent by B3 with the purpose of reporting the status of maintenance performed by code ARQ.LINE.004.01.

INDEX	OR	Message Item	Tag	Mult.	Data Type	Description	Rule
1.0		BusinessGroupDescription	BizGrpDesc	[1..1]	+	This block contains CSV file header information.	
1.1		From	Fr	[1..1]	Max35Text	Sender ID. Ex: B3.	
1.2		To	To	[1..1]	Max35Text	Receiving party ID. In this example, 3 is the participant group, such as full trading participant, and number 123456 is the participant ID at B3: 3-123456.	
1.3		TotalNumberOfLine	TtlNbOfLine	[1..1]	Number	Total number of lines in file.	
1.4		CreationDate	CreDt	[1..1]	ISODateTime	Date and time of file creation. Ex: YYYY-MM-DDThh:mm:ss.	
1.5		BusinessGroupIdentifier	BizGrpIdr	[1..1]	Max35Text	If unique file identifier is assigned by participant, it is made up of: • Participant code in first 8 positions. If participant ID number is less than 8 digits, leading zeros must be entered. Ex: 00123456; • Followed by year, month and day. Ex: 20120131; • Plus another unique participant ID number with 19 positions. If less than 19 digits, leading zeros must be entered. Ex: 0000000000000067890. If unique file identifier is assigned by B3, it is made up of: • BV + ID number of message relay system. If system ID number is less than 6 digits, leading zeros must be entered. In this example, 405 is LiNe system number: BV000405; • Followed by year, month and day. Ex: 20120131.	
1.6		Related	Rltd	[0..1]	Max35Text	Specifies BGI of previously sent file. Must be used to specify processing dependency on another previously sent file.	
1.7		UserName	UsrNm	[0..1]	Max64Text	User login.	
1.8		HostIPAddress	HstIPAdr	[0..1]	Max35Text	Host (sender) IP address.	
2.0		ErrorFileInformation	ErrFileInf	[0..1]	+	Provides information about error identified in received file name, making it impossible to validate data entered.	
2.1		ErrorLineNumber	ErrLineNb	[1..1]	int	Identifies line where error occurred. In this case, value must always be 0.	

2.2		RuleIdentification	RuleId	[1..1]	Max35Text	Identifies error code.	
2.3		ErrorFileName	ErrFileNm	[1..1]	Max64Text	Name of file received containing error.	
3.0		HeaderErrorInformation	HdrErrInf	[0..1]	+	Provides information about errors identified in received file header.	
3.1		ErrorLineNumber	ErrLineNb	[1..1]	int	Identifies line where error occurred. In this case, value must always be 1.	
3.2		ErrorFrom	ErrFr	[0..1]	Max35Text	Error code encountered when filling in field From.	
3.3		ErrorTo	ErrTo	[0..1]	Max35Text	Error code encountered when filling in field To.	
3.4		ErrorTotalNumberOfLine	ErrTtlNbOfLine	[0..1]	Max35Text	Error code encountered when filling in field TotalNumberOfLine.	
3.5		ErrorCreationDate	ErrCreDt	[0..1]	Max35Text	Error code encountered when filling in field CreationDate.	
3.6		ErrorBusinessGroupIdentifier	ErrBizGrpIdr	[0..1]	Max35Text	Error code encountered when filling in field BusinessGroupIdentifier.	
3.7		ErrorRelated	ErrRltd	[0..1]	Max35Text	Error code encountered when filling in field Related.	
3.8		ErrorUserName	ErrUsrNm	[0..1]	Max35Text	Error code encountered when filling in field UserName.	
3.9		ErrorHostIPAddress	ErrHstIPAdr	[0..1]	Max35Text	Error code encountered when filling in field HostIPAddress.	
3.10		From	Fr	[0..1]	Max35Text	Copy of field content From from received file.	
3.11		To	To	[0..1]	Max35Text	Copy of field content To from received file.	
3.12		TotalNumberOfLine	TtlNbOfLine	[0..1]	Number	Copy of field content TotalNumberOfLine from received file.	
3.13		CreationDate	CreDt	[0..1]	ISODateTime	Copy of field content CreationDate from received file.	
3.14		BusinessGroupIdentifier	BizGrpIdr	[0..1]	Max35Text	Copy of field content BusinessGroupIdentifier from received file.	
3.15		Related	Rltd	[0..1]	Max35Text	Copy of field content Related from received file.	
3.16		UserName	UsrNm	[0..1]	Max64Text	Copy of field content UserName from received file.	
3.17		HostIPAddress	HstIPAdr	[0..1]	Max35Text	Copy of content of field HostIPAddress from received file.	
4.0		ErrorProfileInformation	ErrPrflInf	[0..*]	+	Provides information about errors identified in received file data.	
4.1		ErrorLineNumber	ErrLineNb	[1..1]	int	Identifies line where error occurred. In this case, value will start with 2.	
4.2		ErrorProfileNumber	ErrPrflNb	[0..1]	Max35Text	Error code identified when filling in field ProfileNumber	

4.3		ErrorModificationScopeIndication	ErrModScpIndctn	[0..1]	Max35Text	Error code identified when filling in field ModificationScopeIndication.	
4.4		ErrorPreTradeSegmentCode	ErrPreTradSgmtCd	[0..1]	Max35Text	Error code identified when filling in field PreTradeSegmentCode.	
4.5		ErrorEntityTypeCode	ErrEntyPNCd	[0..1]	Max35Text	Error code identified when filling in field EntityTypeCode.	
4.6		ErrorEntityIdentifierNumber	ErrEntyIdrNb	[0..1]	Max35Text	Error code identified when filling in field EntityIdentifierNumber.	
4.7		ErrorPartyIdentification	ErrPtyId	[0..1]	Max35Text	Copy of error identified when filling in field PartyIdentification.	
4.8		ErrorCarryingPartyIdentification	ErrCrygPtyId	[0..1]	Max35Text	Copy of error identified when filling in field CarryingPartyIdentification.	
4.9		ErrorExtendedIdentificationType	ErrXtndedIdPN	[0..1]	Max35Text	Copy of error identified when filling in field ExtendedIdentificationType.	
4.10		ProfileNumber	PrflNb	[0..1]	Number10	Copy of field content ProfileNumber from received file.	
4.11		ModificationScopeIndication	ModScpIndctn	[0..1]	DataModification2Code	Copy of field content ModificationScopeIndication from received file.	
4.12		PreTradeSegmentCode	PreTradSgmtCd	[0..1]	Number	Copy of field content PreTradeSegmentCode from received file.	
4.13		EntityTypeCode	EntyPNCd	[1..1]	Max3Text	Copy of field content EntityTypeCode from received file.	
4.14		EntityIdentifierNumber	EntyIdrNb	[1..1]	max40Text	Copy of field content EntityIdentifierNumber from received file.	
4.15		ExtendedIdentificationType	XtndedIdPN	[1..1]	Extended350Code	Copy of field content ExtendedIdentificationType from received file.	
4.16		PartyIdentification	PtyId	[1..1]	Max35Text	Copy of field content PartyIdentification from received file.	
4.17		CarryingPartyIdentification	CrygPtyId	[1..1]	Max35Text	Copy of field content MetricTypeName from received file.	

12.11.3 ARQ.LINE.005.01

This file is sent by trading participants (PNPs/PNs/PLs) to manage limits (entry/modification/deletion) for a profile and/or any of the entities (investor, account and trader) in LiNe Trading.

Rules:

R1: Only applicable when entity type is INV;

R2: Only applicable when trading-on-behalf link is available to entity;

R3: Only applicable when give-up link is available to entity;

R4: Filling in this field is mandatory for this file;

R5: This field must be filled in for instrument measures (SPCI, SPVI, STD, TMOCI, TMOVI) and empty for further measures; and

R6: This field must be filled in for authorized market measures (AUTH, SPMC, SPVM, TMOC, TMOV) and empty for further measures.

ARQ.LINE.005.01 file structure:

INDEX	OR	Message Item	Tag	Mult.	Data Type	Description	Rule
1.0		BusinessGroupDescription	BizGrpDesc	[1..1]	+	This block contains CSV file header information.	
1.1		From	Fr	[1..1]	Max35Text	Sender ID. In this example, 3 is the participant group, such as full trading participant, and number 123456 is the participant ID at B3: 3-123456.	
1.2		To	To	[1..1]	Max35Text	Receiving party ID. Ex: B3.	
1.3		TotalNumberOfLine	TtlNbOfLine	[1..1]	Number	Total number of lines in file.	
1.4		CreationDate	CreDt	[1..1]	ISODateTime	Date and time of file creation. Ex: YYYY-MM-DDThh:mm:ss.	
1.5		BusinessGroupIdentifier	BizGrpIdr	[1..1]	Max35Text	If unique identifier of file is assigned by participant, it is made up of: • Participant code in first 8 positions. If participant ID number is less than 8 digits, leading zeros must be entered. Ex: 00123456; • Followed by year, month and day. Ex: 20120131; • Plus another unique participant ID number with 19 positions. If less than 19 digits, leading zeros must be entered. Ex: 0000000000000067890. If unique identifier of file is assigned by B3, it is made up of: • BV + ID number of message relay system. If system ID number is less than 6 digits, leading zeros must be inserted. In this example, 336 is the number of iCADx (Participant Registration and Accounts) system: BV000336; • Followed by year, month and day. Ex: 20120131; • System instance number. Ex: 0333. If instance number is less than 4 digits, leading zeros must be entered; • Plus a number with 15 positions. If less than 15 digits, leading zeros must be entered. Ex: 000000000067898.	
1.6		Related	Rltd	[0..1]	Max35Text	Specifies BGI of previously sent file. It can also be used to specify processing dependency on another previously sent file.	
1.7		UserName	UsrNm	[0..1]	Max64Text	User login.	R6
1.8		HostIPAddress	HstIPAdr	[0..1]	Max35Text	Host (sender) IP address.	R6
2.0		Limit	Lmt	[1..*]	+	Contains information about limits defined by brokerage house.	

2.1		MetricTypeName	MtrcPNNm	[1..1]	Max10Text	Acronym that identifies type of measure. This information is defined by the participant risk management department. Ex: SFD - Day trade financial balance SDP - Potential debt balance RMKT - Risk measure RMKTN – Risck measure for trades STD - Daily balance of forward trades MKTA - Authorized market TMOC - Maximum buy order size TMOV - Maximum sell order size SPCI - Potential long balance in instrument SPVI - Potential short balance in instrument SPCI_OPT - Potential long balance in options instrument SPVI_OPT - Potential short balance in options instrument SPCG - Potential long balance in instrument group SPVG - Potential short balance in instrument group SPCG_OPT - Potential long balance in options instrument group SPVG_OPT - Potential short balance in options instrument group	
2.2		ProfileLimitValue	PrflLmtVal	[0..1]	Number12	Defines threshold used in profile.	
2.3		TickerSymbol	TckrSymb	[0..1]	TickerIdentifier	Ticker code that identifies exchange traded/registered instrument. Ticker symbol is a short and convenient way of identifying any instrument.	R1
2.4		MonitoringGroupNumber	MntrngGrpNb	[0..1]	Max10Text	Code that identifies rule for an authorized market group. For authorized market measures (MKTA, SPMC, SPVM, TMOC, TMOV), this field must be filled in. It should be empty for further measures.	R2
2.5		PreTradeSegmentCode	PreTradSgmtCd	[1..1]	Number	Code that identifies participant pre-trade segments. Segments are specific for LiNe system parameterizations, where users can group participants by the following domain values: 1 - DERIVATIVES 2 - EQUITIES 3 - BOTH	
2.6		EntityTypeCode	EntyPNCd	[1..1]	Max3Text	Code that identifies type of entity. Ex: PRF - Participant INV - Investor ACC - Account TRD - Trader	R3
2.7		EntityIdentifierNumber	EntyIdrNb	[1..1]	Max40Text	Number of investor, account and trader based on type of entity. Ex: Investor number Account number	

2.8		ExtendedIdentificationType	XtndedIdPN	[0..1]	Extended350Code	Specifies ID status. This field requires an external code list. Such codes and values have been designed in external spreadsheets to allow for their flexible maintenance, according to B3's updating requirements. In this case, external is ExternalIdentificationTypeCode in file ExternalCodeLists_BVMF.xls.	
2.9		PartyIdentification	PtyId	[0..1]	Max35Text	Unique identifier for participants using a proprietary identification schema. This field requires an external code list. Such codes and values have been designed in external spreadsheets to allow for their flexible maintenance, according to B3's updating requirements. In this case, external is ExternalRole in file ExternalCodeLists_BVMF.xls. Participant ID must be entered in the following format: Role+PartyIdentification. Ex: 3-123456, where 3 means PNP (full trading participant).	R4
2.10		CarryingPartyIdentification	CrygPtyId	[0..1]	Max35Text	Settlement participant ID number. Unique identifier for participants using a proprietary identification schema. This field requires an external code list. Such codes and values have been designed in external spreadsheets to allow for their flexible maintenance, according to B3's updating requirements. In this case, external is ExternalRole in file ExternalCodeLists_BVMF.xls. Participant ID must be entered in the following format: Role+PartyIdentification. Ex: 3-123456, where 3 means PNP.	R5

12.11.4 ARQ.LINE.006.01

This file is sent by trading participants (PNPs/PNs/PLs) in response to limit update requests submitted for entities (investor, account and trader).

INDEX	OR	Message Item	Tag	Mult.	Data Type	Description	Rule
1.0		BusinessGroupDescription	BizGrpDesc	[1..1]	+	This block contains CSV file header information.	
1.1		From	Fr	[1..1]	Max35Text	Sender ID. Ex: B3.	

1.2		To	To	[1..1]	Max35Text	Receiving party ID. In this example, 3 is the participant group, such as full trading participant, and number 123456 is the participant ID at B3: 3-123456	
1.3		TotalNumberOfLine	TtlNbOfLine	[1..1]	Number	Total number of lines in file.	
1.4		CreationDate	CreDt	[1..1]	ISODateTime	Date and time of file creation. Ex: YYYY-MM-DDThh:mm:ss.	
1.5		BusinessGroupIdentifier	BizGrpIdr	[1..1]	Max35Text	If unique file identifier is assigned by participant, it is made up of: • Participant code in first 8 positions. If participant ID number is less than 8 digits, leading zeros must be entered. Ex: 0012345; • Followed by year, month and day. Ex: 2012013; • Plus another unique participant ID number with 19 positions. If less than 19 digits, leading zeros must be entered. Ex: 0000000000000067890. If unique identifier of file is assigned by B3, it is made up of: • BV + ID number of message relay system. If system ID number is less than 6 digits, leading zeros must be inserted. In this example, 405 is LiNe system number. Ex: BV000405; • Followed by year, month and day. Ex: 20120131; • System instance number. Ex: 0333; If instance number is less than 4 digits, leading zeros must be entered; • Plus a number with 15 positions. If less than 15 digits, leading zeros must be entered. Ex: 000000000067898.	
1.6		Related	Rltd	[0..1]	Max35Text	Specifies BGI of previously sent file. Must be used to specify processing dependency on another previously sent file.	
1.7		UserName	UsrNm	[0..1]	Max64Text	User login.	
1.8		HostIPAddress	HstIPAdr	[0..1]	Max35Text	Host (sender) IP address.	
2.0		ErrorFileInformation	ErrFileInf	[0..1]	+	Provides information about error identified in received file name, making it impossible to validate data entered.	
2.1		ErrorLineNumber	ErrLineNb	[1..1]	int	Identifies line where error occurred. In this case, value must always be 0.	
2.2		RuleIdentification	RuleId	[1..1]	Max35Text	Identifies error code.	
2.3		ErrorFileName	ErrFileNm	[1..1]	Max64Text	Name of file received containing error.	
3.0		HeaderErrorInformation	HdrErrInf	[0..1]	+	Provides information about errors identified in received file header.	

3.1		ErrorLineNumber	ErrLineNb	[1..1]	int	Identifies line where error occurred. In this case, value must always be 1.	
3.2		ErrorFrom	ErrFr	[0..1]	Max35Text	Error code encountered when filling in field From.	
3.3		ErrorTo	ErrTo	[0..1]	Max35Text	Error code encountered when filling in field To.	
3.4		ErrorTotalNumberOfLine	ErrTtlNbOfLine	[0..1]	Max35Text	Error code encountered when filling in field TotalNumberOfLine.	
3.5		ErrorCreationDate	ErrCreDt	[0..1]	Max35Text	Error code encountered in field CreationDate content.	
3.6		ErrorBusinessGroupIdentifier	ErrBizGrpIdr	[0..1]	Max35Text	Error code encountered in field BusinessGroupIdentifier content.	
3.7		ErrorRelated	ErrRltd	[0..1]	Max35Text	Error code encountered in field Related content.	
3.8		ErrorUserName	ErrUsrNm	[0..1]	Max35Text	Error code encountered in field UserName content.	
3.9		ErrorHostIPAddress	ErrHstIPAdr	[0..1]	Max35Text	Error code encountered in field HostIPAddress content.	
3.10		From	Fr	[0..1]	Max35Text	Copy of field content From from received file.	
3.11		To	To	[0..1]	Max35Text	Copy of field content To from received file.	
3.12		TotalNumberOfLine	TtlNbOfLine	[0..1]	Number	Copy of field content TotalNumberOfLine from received file.	
3.13		CreationDate	CreDt	[0..1]	ISODateTime	Copy of field content CreationDate from received file.	
3.14		BusinessGroupIdentifier	BizGrpIdr	[0..1]	Max35Text	Copy of field content BusinessGroupIdentifier from received file.	
3.15		Related	Rltd	[0..1]	Max35Text	Copy of field content Related from received file.	
3.16		UserName	UsrNm	[0..1]	Max64Text	Copy of field content UserName field from received file.	
3.17		HostIPAddress	HstIPAdr	[0..1]	Max35Text	Copy of field content HostIPAddress from received file.	
4.0		ErrorLimiPNarticipantInformation	ErrLmPNtcptInf	[0..*]	+	Provides information about errors identified in received file records.	
4.1		ErrorLineNumber	ErrLineNb	[1..1]	int	Identifies line where error occurred. In this case, value will start with 2.	
4.2		ErrorMetricTypeName	ErrMtrcPNNm	[1..1]	Max35Text	Error code encountered in field content MetricTypeName.	
4.3		ErrorProfileLimitValue	ErrPrflLmtVal	[0..1]	Max35Text	Error code encountered in field content ProfileLimitValue.	
4.4		ErrorTickerSymbol	ErrTckrSymb	[0..1]	Max35Text	Error code encountered in field content TickerSymbol.	
4.5		ErrorMonitoringGroupNumber	ErrMntrngGrpNb	[0..1]	Max35Text	Error code encountered in content field MonitoringGroupNumber.	
4.6		ErrorPreTradeSegmentCode	ErrPreTradSgmtCd	[1..1]	Max35Text	Error code encountered in content field PreTradeSegmentCode.	

4.7		ErrorEntityTypeCode	ErrEntyPNCd	[1..1]	Max35Text	Error code encountered in field content EntityTypeCode.	
4.8		ErrorEntityIdentifierNumber	ErrEntyIdrNb	[1..1]	Max35Text	Error code encountered in field content EntityIdentifierNumber.	
4.9		ErrorExtendedIdentificationType	ErrXtndedIdPN	[0..1]	Max35Text	Error code encountered in field content ExtendedIdentificationType.	
4.10		ErrorPartyIdentification	ErrPtyId	[0..1]	Max35Text	Error code encountered in field content ErrorPartyIdentification.	
4.11		ErrorCarryingPartyIdentification	ErrCrygPtyId	[0..1]	Max35Text	Error code encountered in field content CarryingPartyIdentification.	
4.12		MetricTypeName	MtrcPNNm	[1..1]	Max10Text	Copy of field content MetricTypeName from received file.	
4.13		ProfileLimitValue	PrflLmtVal	[0..1]	Number12	Copy of field content ProfileLimitValue from received file.	
4.14		TickerSymbol	TckrSymb	[0..1]	TickerIdentifier	Copy of field content TickerSymbol from received file.	
4.15		MonitoringGroupNumber	MntrngGrpNb	[0..1]	Max10Text	Copy of field content MonitoringGroupNumber from received file.	
4.16		PreTradeSegmentCode	PreTradSgmtCd	[1..1]	Number	Copy of field content PreTradeSegmentCode from received file.	
4.17		EntityTypeCode	EntyPNCd	[1..1]	Max3Text	Copy of field content EntityTypeCode from received file.	
4.18		EntityIdentifierNumber	EntyIdrNb	[1..1]	Max40Text	Copy of field content EntityIdentifierNumber from received file.	
4.19		ExtendedIdentificationType	XtndedIdPN	[0..1]	Extended350Code	Copy of field content ExtendedIdentificationType from received file.	
4.20		PartyIdentification	PtyId	[0..1]	Max35Text	Copy of field content PartyIdentification from received file.	
4.21		CarryingPartyIdentification	CrygPtyId	[0..1]	Max35Text	Copy of field content CarryingPartyIdentification from received file.	

12.11.5 BVBG.999.01 – ErrorReportV03

Error file BVBG.999.01 is sent to participants by B3 when it cannot identify the type or the file and when the file cannot be opened.

File BVBG.999.01 consists of message tsmt.016.001.03. Structure of message "StatusReportRequest" (tsmt.016.001.03).

The header of file (bvmf.052.01) and the structure of message tsmt.016.001.03 can be consulted in this document.

12.11.6 TSMT.016.001.03 – ErrorReportV03

Message tsmt.016.001.03 is sent to participants by B3 when a problem characterized as technical is found.

This message is used in reporting technical errors encountered in any of the files sent by participants.

INDEX	OR	Message Item	Tag	Mult.	Data Type	Description	Rule
1.0		ReportIdentification	RptId	[1..1]	+	Identifies report.	
1.1		Identification	Id	[1..1]	Max35Text	BusinessMessageIdentifier ID. Unique identifier of message assigned by participant or B3. If assigned by participant, identifier is made up of: • Participant code in first 8 positions. If participant ID number is less than 8 digits, leading zeros must be entered. Ex: 00123456; • Followed by year, month and day. Ex: 2011122; • Plus another unique ID number per "platform" (ex: clearinghouse or risk simulator) at participant, with 19 positions regardless of type (message file or messaging system). If less than 19 digits, leading zeros must be entered. Ex: 0000000000000007890. If assigned by B3, identifier is made up of: • BV + ID number of message relay system. If system ID number is less than 6 digits, leading zeros must be entered. In this example, 405 is LiNe system number: BV000405; • Followed by year, month and day. Ex: 20111228; • System instance number. Ex: 1308. If instance number is less than 4 digits, leading zeros must be inserted; • Plus a number with 15 positions. If less than 15 digits, leading zeros must be included. Ex: 000000000007899.	
1.2		CreationDateTime	CreDtTm	[1..1]	ISODateTime	Date and time of message creation.	
2.0		RejectedMessageReference	RjctdMsgRef	[0..1]	+	Reference to rejected message ID.	

2.1		Identification	Id	[1..1]	Max35Text	BusinessMessageIdentifier ID. Unique identifier of message assigned by participant or B3. If assigned by participant, identifier is made up of: • Participant code in first 8 positions. If participant ID number is less than 8 digits, leading zeros must be entered. Ex: 00123456; • Followed by year, month and day. Ex: 20111228; • Plus another unique ID number per "platform" (ex: clearinghouse or risk simulator) at participant, with 19 positions regardless of type (message file or messaging system). If less than 19 digits, leading zeros must be entered. Ex: 0000000000000007890. If assigned by B3, identifier is made up of: • BV + ID number of message relay system. If system ID number is less than 6 digits, leading zeros must be inserted. In this example, 405 is LiNe system number: BV000405; • Followed by year, month and day. Ex: 20111228; • System instance number. Ex: 1308. If instance number is less than 4 digits, leading zeros must be entered; • Plus a number of 15 positions. If less than 15 digits, leading zeros must be included. Ex: 000000000007899.
2.2		CreationDateTime	CreDtTm	[1..1]	ISODateTime	Date and time of message creation.
3.0		NumberOfErrors	NbOfErrs	[1..1]	+	Specifies total number of errors identified in rejected message.
3.1		Number	Nb	[1..1]	Number	Sequence or total number.
4.0		ErrorDescription	ErrDesc	[1..*]	+	Describes error that caused rejection.
4.1		SequenceNumber	SeqNb	[1..1]	Number	Sequence number assigned to error.
4.2		RuleIdentification	RuleId	[1..1]	Max35Text	Encoded ID of rule violated by rejected message.
4.3		RuleDescription	RuleDesc	[1..1]	Max350Text	Detailed description of rule.
4.4		Element	Elmt	[0..*]	+	Description of elements that violated rule.
4.4.1		ElemenPNath	ElmPNth	[1..1]	Max350Text	From message root, specifies full path of element that violated rule.
4.4.2		ElementName	ElmtNm	[1..1]	Max35Text	Name of element
4.4.3		ElementValue	ElmtVal	[0..1]	Max140Text	Content of element.

12.11.7 Examples

Participants must create a file in **CSV** format and compress it to **ZIP** format before sending it via Secure Client.

LiNe – CONCEPT GUIDE

ARQ.LINE.003.01 (assigns entities to a profile)

ARQ.LINE.003.01_00000100201811060000000000000000001

ARQ.LINE.005.01 (assigns limits to LiNe Trading entities)

ARQ.LINE.005.01_00000100201811050000000000000000001

File layout examples may be found on the B3 website under the "file layout" option.

http://www.b3.com.br/pt_br/solucoes/plataformas/gestao-de-risco-line/especificacao/

12.12   LiNe's error codes

The business rules implemented for uploading files must be complied with. Should any such rule be violated, errors will be generated. The following error codes interpret errors made by any violation of LiNe's trading rules.

Code	Description
ELNE0001	Internal server error
ELNE1000	Unspecified error (API)
ELNE1001	Access denied
ELNE1002	Entity not found
ELNE1003	Participant not found
ELNE1004	Investor not found
ELNE1005	Account not found
ELNE1006	Professional trader not found
ELNE1007	Profile not found
ELNE1008	Instrument not found
ELNE1009	Metric not supported by instrument
ELNE1010	Metric not supported by group
ELNE1011	Asset not found
ELNE1012	Market group not found
ELNE1013	Profile not supported by entity
ELNE1014	Exception profile not supported
ELNE1015	Forbidden to delete investor profile
ELNE1016	Metric not supported
ELNE1017	Invalid metric group
ELNE1018	Limit exceeded
ELNE1019	Limits not entered

ELNE1020	Participant not authorized
ELNE1021	Invalid entity
ELNE2000	Unspecified error (DOMAIN)
ELNE2001	Measures SPCG, SPVG, SPCG_OPT and SPVG_OPT must be registered
ELNE2002	Measures SPCI and SPVI must be registered
ELNE2003	SPCI_OPT and SPVI_OPT invalid for instrument
ELNE2004	Period required
ELNE3000	Unspecified error (FILE)
ELNE3001	Metric doesn't allow brokerage house
ELNE3002	Metric doesn't allow period
ELNE3003	Carrying participant not supported by entity
ELNE3004	Full trading participant not supported by entity
ELNE3005	Segment not supported by entity
ELNE3006	Type of investor not supported by entity

12.13   Secure Client error codes

The rules for file layout must also be complied with, as Secure Client, which is responsible for transferring files to LiNe Trading, also validates and monitors the files it transmits. The complete list of all the errors that might be generated by the system is presented below.

Code	Description
EARQ0001	File format not supported by defined format (File received: %s). Not a valid compressed file.
EARQ0002	File format not supported by defined format (File received: %s). Number of internal files greater than allowed [%s].
EARQ0003	File name not supported by defined format (File received: %s), Business Group ID shorter than defined length [%s].
EARQ0004	File name not supported by defined format (File received: %s), Business Group ID longer than defined length [%s].
EARQ0005	File name not supported by defined format (File received: %s), Participant code described in Business Group ID is different from ID in inbox.
EARQ0006	Internal file name not supported by defined format (File received: %s), Internal file [%s].
EARQ0007	File name code not registered at B3.
EARQ0011	Incorrect number of header fields.
EARQ0012	Participant header code different from participant file name code.
EARQ0013	File code not registered for participant group and code.
EARQ0014	Header Business Group ID different from file name Business Group ID.
EARQ0015	Number of header lines/records different from number of file lines/records.
EARQ0021	Incorrect number of fields.

EARQ0022	Mandatory field value not filled.
EARQ0023	Incorrect minimum length for field value.
EARQ0024	Incorrect maximum length for field value.
EARQ0025	Incorrect field value format (not supported by defined format).
EARQ0026	Value entered in field not allowed.
EARQ0027	Value entered in field not numeric.
EARQ0028	Minimum length of decimal part in number field is shorter than allowed.
EARQ0029	Maximum length of decimal part in number field is larger than allowed.
EARQ0040	An unexpected error occurred while validating file: [%s].
EARQ0041	Internal FPB error (File received: %s), No processing with %s ID encountered for reprocessing.
EARQ0042	Internal FPB error (File received: %s), In context map, item with key "direction," which is expected to exist, is missing.
EARQ0043	File name not supported by defined format (File received: %s).
EARQ0044	Character '_' not found in file name.
EARQ0045	File name not supported by defined format (File received: %s), '.zip' extension not found.
EARQ0046	BizGroupID longer than defined length.
EARQ0048	File name not supported by defined format (File received: %s), Information code described in msg is different from file name.
EARQ0049	Incorrect date in file name [%s].
EARQ0049	File name not supported by defined format (File received: %s), Invalid date [%s].
EARQ0050	Information code not registered in FPB database.
EARQ0050	File name not supported by defined format (File received: %s), Information code not registered in FPB database [%s].
EARQ0051	BizGroupID longer than defined length.
EARQ0052	File name not supported by defined format (file received: %s), Business Group ID already registered in FPB database [%s].
EARQ0053	An unexpected error occurred while validating file: [%s].
EARQ0054	An unexpected error occurred while validating file: [%s].
EARQ0055	An unexpected error occurred while validating file: [%s].
EARQ0056	An unexpected error occurred while validating file: [%s].
EARQ0057	Internal file name not supported by defined format (File received: %s), Internal file name different from external file name [%s <> %s].
EARQ0058	An unexpected error occurred while validating file: [%s].
EARQ0059	An unexpected error occurred while validating file: [%s].
EARQ0060	An unexpected error occurred while validating file: [%s].
EARQ0061	An unexpected error occurred while validating file: [%s].
EARQ0062	An unexpected error occurred while validating file: [%s].
EARQ0063	An unexpected error occurred while validating file: [%s].
EARQ0064	An unexpected error occurred while validating file: [%s].

EARQ0065	An unexpected error occurred while validating file: [%s].
EARQ0066	An unexpected error occurred while validating file: [%s].
EARQ0067	An unexpected error occurred while validating file: [%s].
EARQ0068	An unexpected error occurred while validating file: [%s].
EARQ0069	An unexpected error occurred while validating file: [%s].
EARQ0070	An unexpected error occurred while validating file: [%s].
EARQ0071	An unexpected error occurred while validating file: [%s].