User Guide

# BTS®: PRE-TRADE VALIDATION SERVICE FOR IDEM MARKET

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**BORSA ITALIANA**

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# Revision History

| Date | Version | Description | Author |
|------|---------|-------------|--------|
| **May 2017** | 1.0 | First release | Borsa Italiana |
| **Dec 2017** | 2.0 | Amendments related to SOLA 11 technical deployment | Borsa Italiana |
| **Feb 2021** | 2.1 | Added description of PTV Alerts (3.9) | Borsa Italiana |
| **Apr 2021** | 2.2 | Euronext rebranding | Borsa Italiana |

# 1. INTRODUCTION

# 1.1 Functional Overview

The Pre-Trade Validation (PTV) functionality complements the risk control systems in place by IDEM Members to control order flow activity.

In particular, PTV functionality provides an additional tool for:

- an IDEM Member to monitor the risk associated to its own trading activity;
- an IDEM Member offering Direct Market Access (DMA) to control the risk related to the trading activity of its DMA clients;
- a General Clearing Member (GCM), delegated by its NCM (which is an IDEM Member), to manage the cleared risk exposure generated by the trading activity of its NCM.

For the purpose of the use of the PTV functionality, two roles are defined:

- the "Risk Manager", identifying either an IDEM Member or its GCM (in case of delegated use), which controls the level of risk determined respectively by the order flow of its own activity / its DMA clients' activity or by its NCM (as the case may be) trading products listed on IDEM;
- the "Managed Entity", identifying either an entire Member Firm (defined by its Member ID), a single TraderID or a group of TraderIDs of the same Member Firm, which are subject to a common set of PTV controls as defined by the Risk Manager. The Managed Entity could be subject to PTV controls by more than one Risk Manager; in this case, the more stringent limits will apply.

The Pre-Trade Validations (PTVs) are the controls which can be configured by a Risk Manager (for one of the purposes described above) to constrain the trading activity of its controlled Managed Entity, in particular:

- Maximum Order Quantity limit for orders and quotes;
- Maximum Order Quantity limit for orders to execute Negotiated Transactions (cross / bundled / third party orders);
- Maximum Notional Value limit for orders and quotes;
- Maximum Notional Value limit for orders to execute Negotiated Transactions (cross / bundled / third party orders);
- Price Collar limit for orders and quotes, allowing to automatically reject orders and quotes not meeting a set of price interval parameters defined at Instrument series level, in addition to Exchange-based dynamic price deviation controls; in particular, for each Instrument series, the Risk Manager is able to define a reference price and a maximum upward/downward divergence by this (expressed in percentage points);
- Position limit on executed trades (net long/short position) during the day, expressed in quantity terms:
- the trade triggering the limit's breach is executed;
- the breach of the net long threshold triggers the cancellation of all booked buy orders and quotes (and viceversa for the net short threshold);

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- Exposure limit on open orders (excluding quotes) plus executed trades (net long/short position) during the day, expressed in quantity terms:
  - the incoming order that would breach the net long threshold triggers cancellation of all booked buy orders and quotes (and viceversa for the net short threshold);
- Access to Kill Switch functionality (KS), which allows the Risk Manager to:
  - remove all resting orders (including orders to execute Negotiated Transactions) and quotes of the Managed Entity, and
  - subject to a specific RM user configuration, disable a TraderID or a predefined Group of TraderIDs, thus preventing the Managed Entity from entering or modifying any order or quote in the SOLA trading system.

The Risk Manager is requested to pay the necessary attention when triggering the KS functionality, in order to avoid situations likely to hinder orderly trading (for example, activating the KS functionality close to the end of the auction phases);

- Access to the "Market Maker Quoting Protection" (MMQP), allowing the Risk Manager to specifically control the Managed Entity's quoting activity based on bulk quotes. Since the MMQP is available to both Market Makers and their Risk Managers, in case two sets of limits are applied to the same Managed Entity, the most restrictive configurations will apply.

For each Managed Entity, PTVs can be configured at the level of:

- Instrument Series (not available for strategies);
- Instrument Group.

In case there are Maximum Order Quantity / Notional Value limits defined at both Instrument Series and Instrument Group level, the most restrictive limit will prevail.

Based on configurations defined by the Risk Manager, SOLA will perform real-time checks before allowing each order and quote to enter the SOLA trading system. Risk Manager can update configured thresholds in real-time, with immediate effectiveness.

SOLA will disseminate Risk Usage Notification messages in order to alert both the Risk Manager and the related Managed Entity of the current usage level of the allowed Risk Limit Threshold by the Managed Entity itself. Exchange configuration of PTV functionality will result in alerts being disseminated when relevant Risk Limit Threshold has been "used" at 50%, 60%, 70% and further 10% intervals of its full value, as may be defined by the Risk Manager.

It is responsibility of the Risk Manager to set up and manage the Pre-Trade Validation controls for each Managed Entity, and to inform the Managed Entity of the controls that have been applied to its trading activity. Independently of the activation of the PTV functionality, according to the Borsa Italiana's Rules and related Instructions, IDEM Members are required to establish, maintain and enforce adequate systems and controls to prevent anomalous orders in terms of price, quantity, countervalue and frequency.

For further details on the PTV functionality, please refer to the "IDEM Market Guide to Pre-Trade Validation (PTV) functionality" available on Borsa Italiana's website.

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# 2. PRE-TRADE VALIDATION SERVICE

BTS® front-end provides a GUI that allows authorized Risk Managers to set daily limits, view limits, amend daily limits and receive visual alerts for participants approaching or exceeding their set limits.

## 2.1 PTV tool

By clicking the PTV icon that can be found in the PTV menu reserved to Risk Managers.



PTV interface will open, the list of Markets the Risk Manager is authorised:
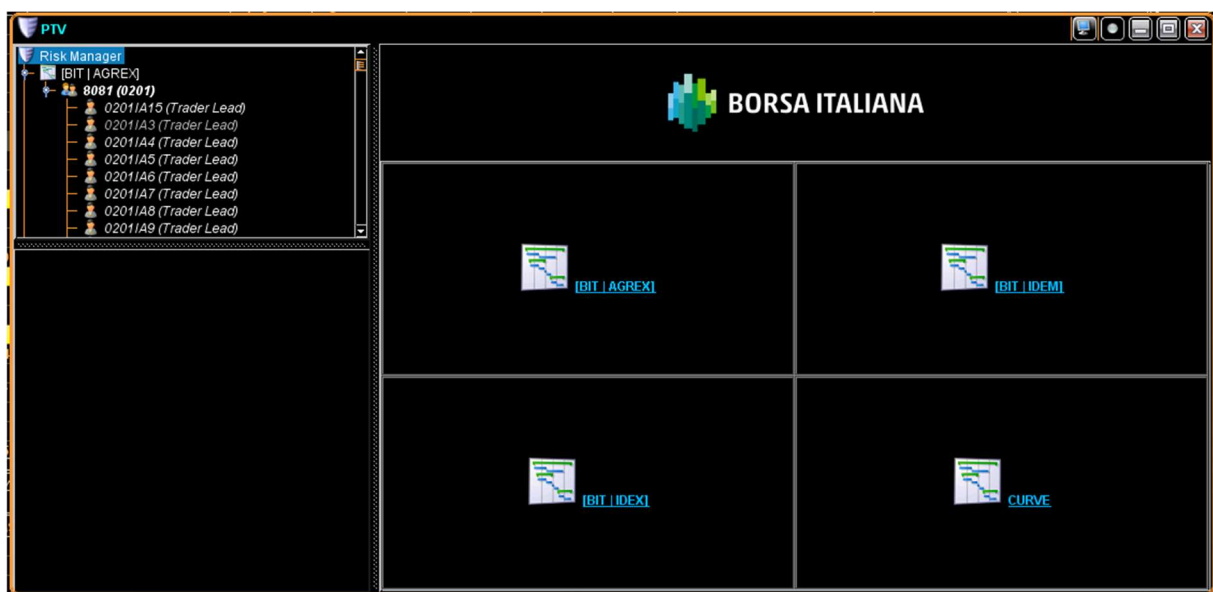


## 2.2 PTV hierarchy tree

By clicking on the Market () where the user is entitled as Risk Manager, members hierarchy will appear.

Each member is identified by their BTS® Member name and SOLA FirmID, in particular a GCM BTS® member (**8080**) and SOLA FirmID (**0200**) can be easily distinguished from managed NCMs by bold font and different icon color.

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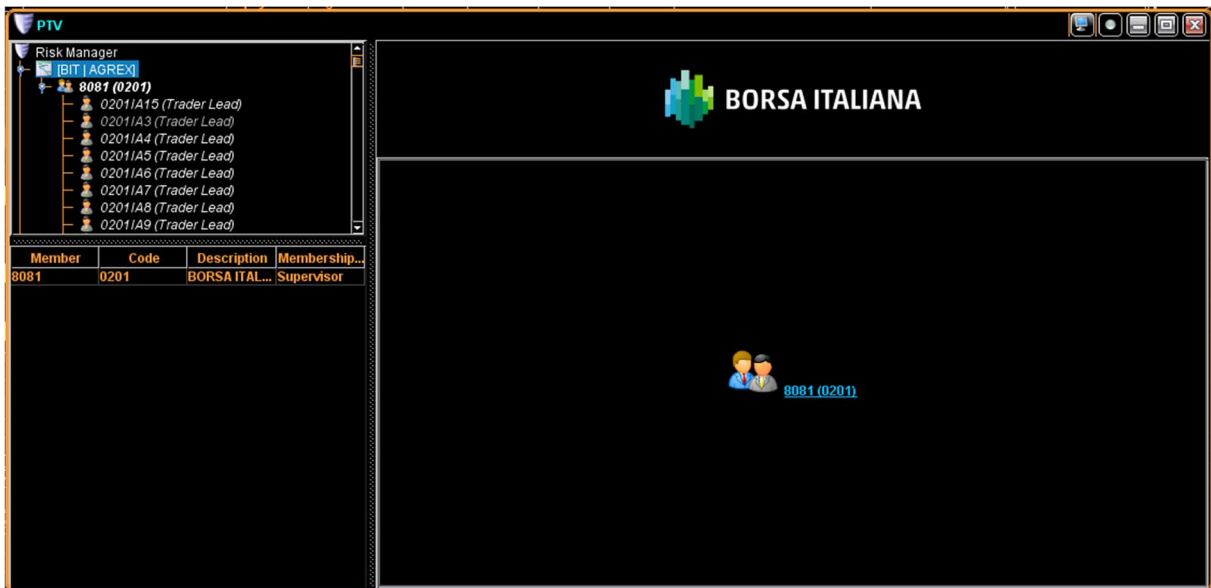
By clicking the circle on the left of Member **8080** the node will expand, showing the managed TraderIds of the selected Member.
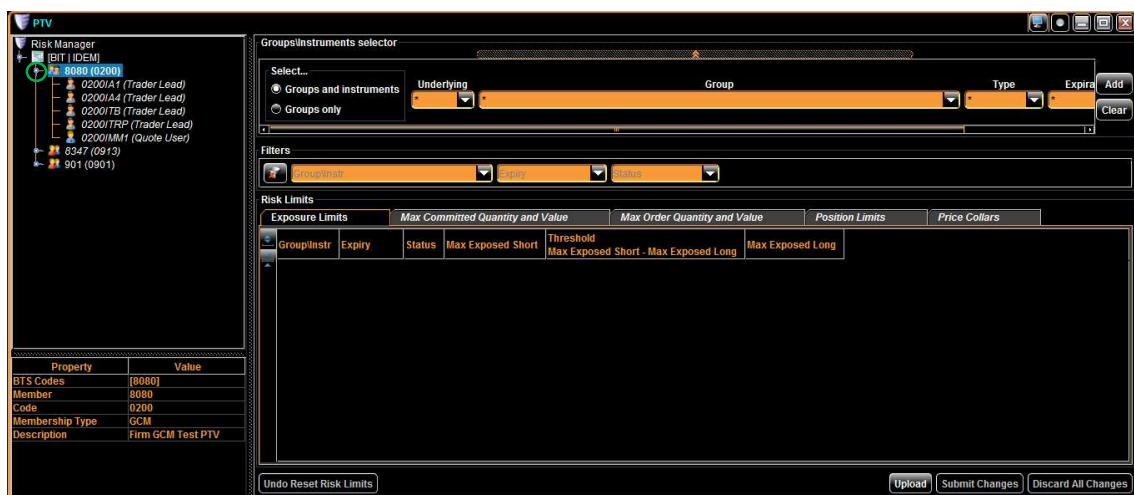


A Group of TraderIds can be differentiated between Trader Leads and Quote Users through the graphical icon and description in brackets.

If a Trader Lead or Market Maker is selected, its dependent TraderIds are displayed in the panel under the risk manager list (highlighted in the green box below):

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The enablement of the Trader Lead or the Market Maker, and the Limits Status on the frontend are identified by the following notation convention:

*Italics* : no limits are active on IDEM, nor changes on the BTS® PTV are waiting for confirmation

Underlined : limits set on BTS®,PTV but not yet confirmed and active on IDEM (see 3.5)

Standard white : limits set on BTS® PTV, confirmed and active on IDEM

Grey : the Entity is disabled on IDEM (see 3.3)

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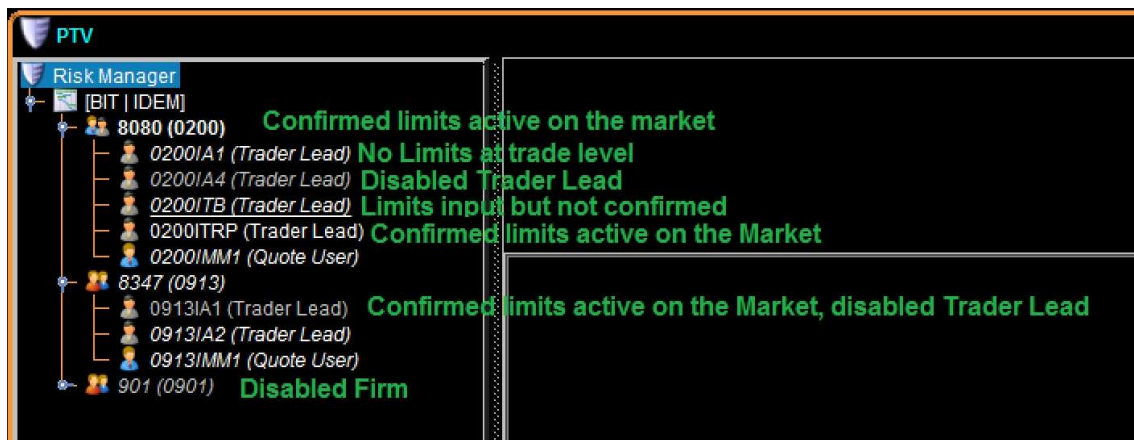
## 2.3 Kill Switch functionality (KS)

To activate the Kill Switch functionality, right click on the Firm or Market Maker / Trader Lead in Risk Manager tree and select "Kill Switch":
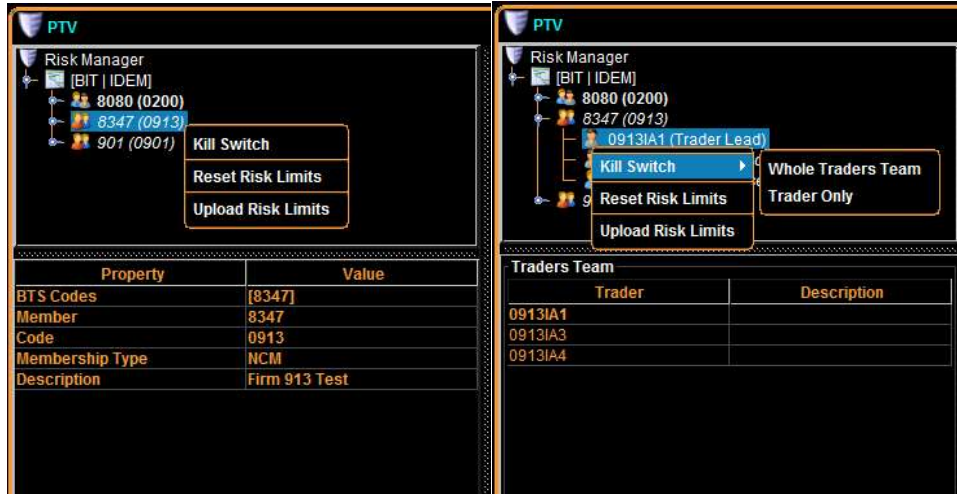


Once KS triggering is confirmed, the color of the entity switches to grey:



KS can be triggered even for Traders that are nota TraderLead.

In the little panel below the hierarchy tree by right clicking on the Trader, KS option is proposed.

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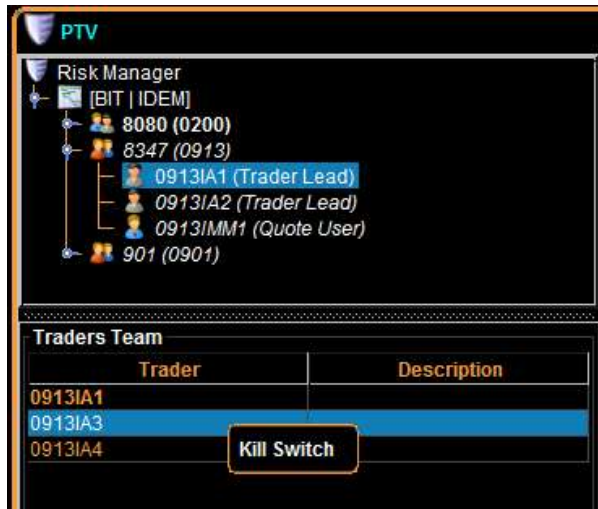
For a TraderLead, there is the possibility to trigger the KS for all the Traders subordinated to the selected TraderLead or for the TraderLead only.
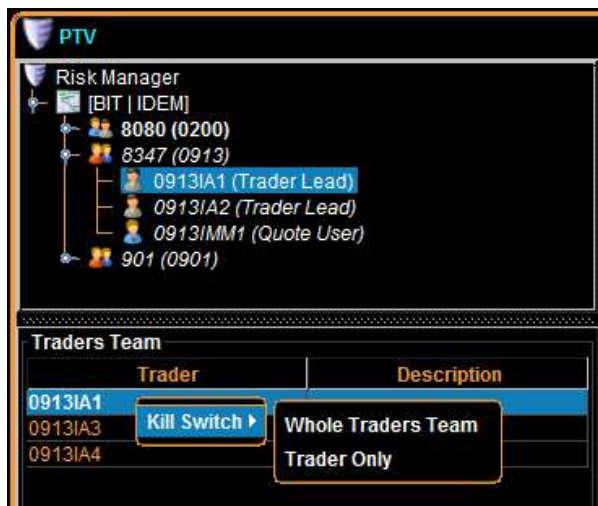


## 2.4 Groups/Instruments list

By clicking on a risk managed entity (Firm or Trader Lead) the Risk Manager is responsible for, the list of the groups active on the market is displayed in the right hand pane.

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The Risk Manager has the possibility to select a list of Instruments and the Group they belong by using the following fields:

- Underlying;
- Group description;
- Type (Future, Option, Call/Put Option);
- Expiration Day;
- Instrument Symbol.

If the Option "Groups only" is ticked only Underlying and Group filters are enabled.

For instance, if a specific underlying (FTMIB) and the Instrument Type "Futures" are selected and "Groups and Instruments" option has been clicked:



FTMIB Future Group and Future products belonging to the group are added to the Risk panels:



Each of the tabs displays the risk limits that can be set on the specific market.

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By clicking the circle to the left of a Group (z0 | FTSE MIB INDEX FUTURE for instance) the node will expand, listing all the Instruments belonging to the Group.

At Instrument level, the Expiration Date (YYYY/MM/DD) is also shown.
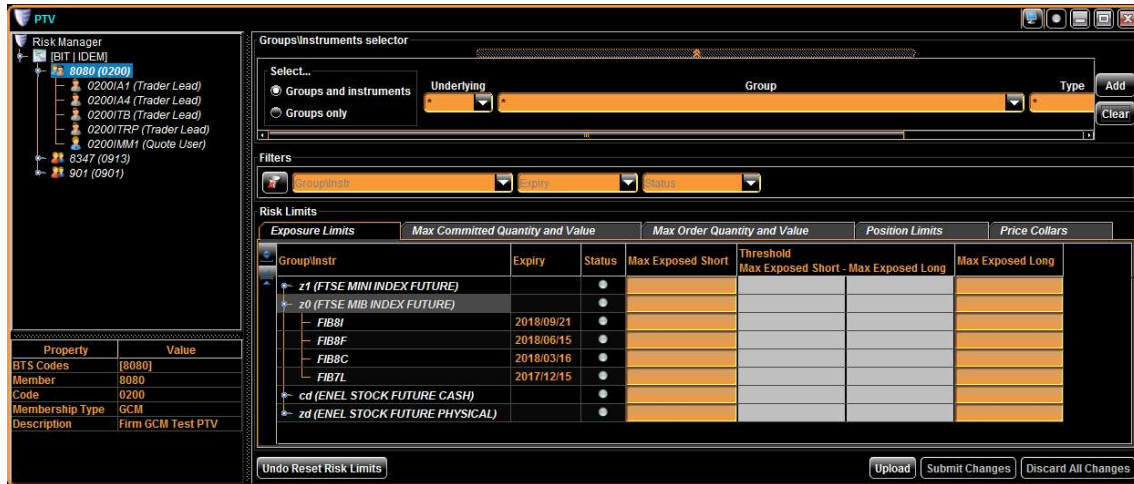


Above the Groups \ Instruments list, a filter panel is provided
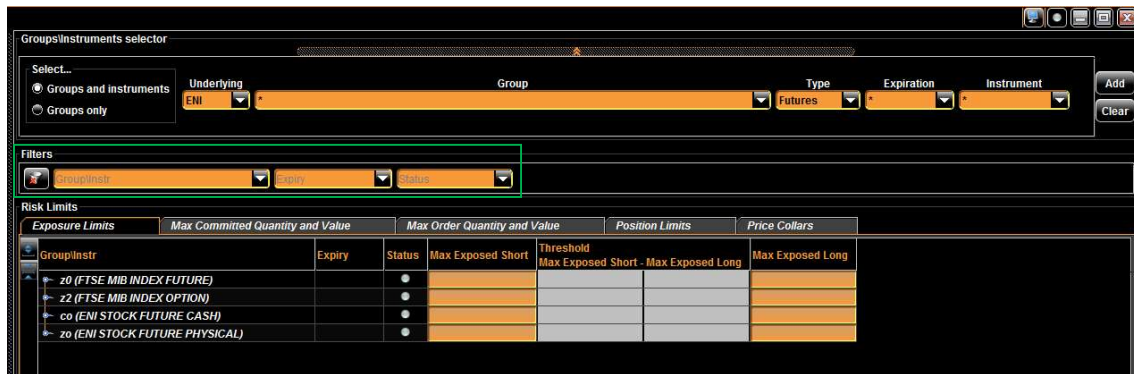


By clicking in the "Expiry" field and pressing the down arrow key, the list of Instrument Expiration Dates is shown in the drop down list.
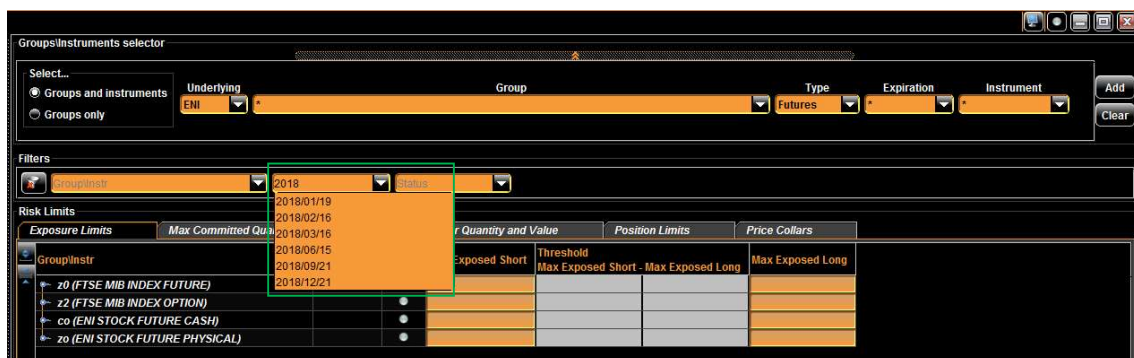


Once an Expiration Date is selected, the relevant Instruments are filtered out.

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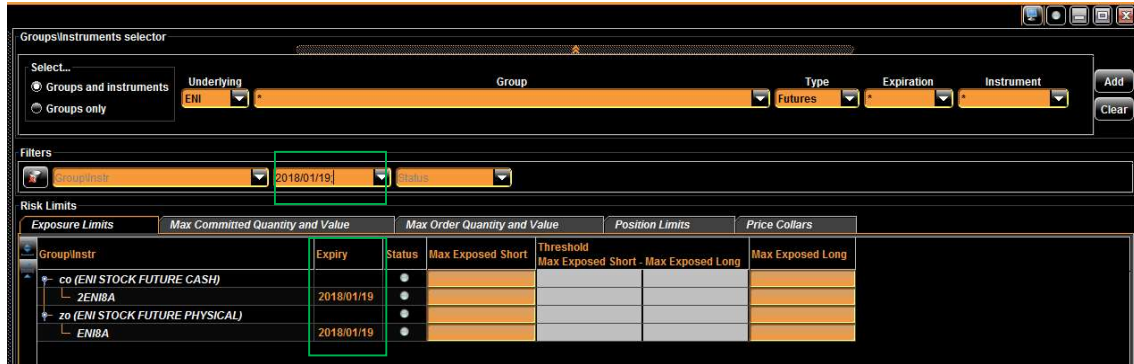
The field supports an autocomplete function so that – while typing – only the entries matching the field content are listed.

# 2.5 Groups/Instruments list Quote User

If a Market Maker is selected, only the groups where the Market Maker has obligations are listed.

For Market Makers, Market Maker Protection limits are displayed by default, but by clicking the upwards arrow on the window border, Order Risk Limits input mask is shown:



In this way the Risk Manager may enter Orders Risk Limits for a selected Market Maker, too.

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# 2.6 Set Risk Limits

## 2.6.1 Manual settings

BTS® Pre-Trade Validation Service tool allows Risk Managers to set limits for multiple Instruments/Groups for the same entity (Trader or Firm).

Select the entity (e.g.: 8080 | 0200), click on the tab of the selected limit ('Exposure Limits' is displayed by default):
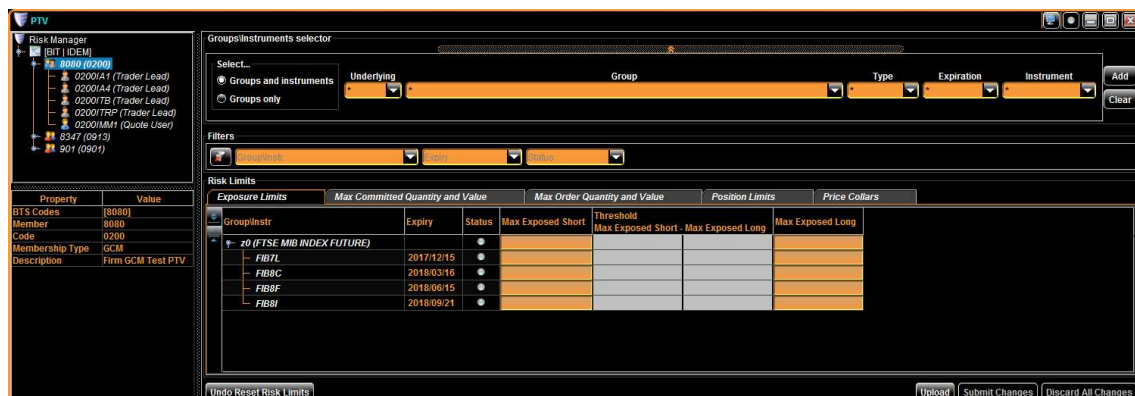


Input the limit value in the cell related to the required Instrument/Group (please note that, for Exposure Limits and Position Limits, Long and Short limits are provided), once the value is confirmed (Enter key or mouse clicking outside the cell) the cell turns yellow, while Entity, Limit and Instrument/Group tags become underlined.

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Once a value has been input in the cell, the Risk Manager user can extend the values to multiple rows.



By clicking on cell corner Risk Manager user can:



1) Drag and drop the value that will copied in the selected cells

2) Double click and the value will be automatically extended to:

   a. All the instruments below the one selected belonging to the same group

   b. All the instruments belonging to the group if the value is set at group level and the group is expanded

   c. All the groups displayed if the value is set at group level and the group is collapsed

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## 2.6.2 Excel Upload

Risk Manager user can upload Risk limits using a specifically formatted excel file.

Accepted file types are .xls and .xlsx.

Starting from cell A1, Excel file must be built as follows.

Row 1 column header:

- A. "Group": SOLA Instrument Group id, Mandatory
- B. "Instr": SOLA Instrument Symbol
  - If specified, limits will be applied at the Instrument level only
  - If blank, limits will be applied at Group level only
  - If * is used, limits will be applied to all the Instruments belonging to the Group
- C. "Max Exposed Short"
- D. "Max Exposed Long"
- E. "Max Cross/Committed Order Quantity"
- F. "Max Cross/Committed Order Value"
- G.  "Max Order Quantity"
- H. "Max Order Value"
- I.  "Max Traded Short" "Max Traded Long"
- J. Max Price Collar (Instrument level only)
- K. Min Price Collar (Instrument level only)

Please note that an empty cell will remove the value present in the PTV table.

In order to keep the value, user must use the '#' symbol

Considering the Excel example below

| | A | B | C | D | E | F | G | H | I | J | K | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Group | Instr | Max Exposed Short | Max Exposed Long | Max Cross/Committed Order Quantity | Max Cross/Committed Order Value | Max Order Quantity | Max Order Value | Max Traded Short | Max Traded Long | Max Price Collar | Min Price Collar |
| 2 | z0 | | 1000 | 1000 | 250 | 500000 | | | 700 | 700 | | |

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| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | z0 | FIB7L | 600 | 600 | | | 50 | 10000 | 500 | 500 | 25000 | 23000 |
| 4 | z0 | FIB8C | 500 | 500 | 100 | 250000 | 25 | 7500 | 250 | 250 | | |
| 5 | z0 | FIB8F | # | # | 0 | 0 | 15 | 5000 | 150 | 150 | | |
| 6 | z0 | FIB8I | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | z1 | * | 100 | 100 | 10 | 5000 | 5 | 1000 | 80 | 80 | 22200 | 21800 |
| 8 | z2 | | 500 | 500 | 25 | 12500 | 25 | 12500 | 400 | 400 | 800 | 25000 |

Values will be uploaded as follow:

- **Row 2** : Limits uploaded for z0 group only since "Instr" cell is blank
- **Row 3** : Limits uploaded for FIB7L (belonging to z0 group), "Max Cross/Committed Order Quantity (and Value)" value will be reset
- 
- **Row 5** : Current "Max Exposed Short" and "Max Exposed Long" values in the PTV table will be maintained
- **Row 7** : Price Collar limits set for all instruments belonging to z1 group
- **Row 8**: Price Collar limits are not allowed at Group Level, all the limits for z2 group will be rejected.

The same logic applies to Market Maker Protection Limits

Starting from cell A1, Excel file must be built as follow :

Row 1 column header:

A.    "Group" : SOLA Instrument Group id, Mandatory
B.    "Protection Number of Trades"
C.    "Protection Trade Quantity"
D.    "Calculation Time Interval (number of seconds)"
E.    "Maximum Volume"
F.    "Maximum Value"
G.    "Maximum Delta Volume"
H.    "Maximum Delta Value"

See the example below:

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| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| **1** | Group | Protection Number of Trades | Protection Trade Quantity | Calculation Time Interval (number of seconds) | Maximum Volume | Maximum Value | Maximum Delta Volume | Maximum Delta Value |
| **2** | z0 | 30 | 10 | 120 | 500 | 30000 | 1800 | 50000 |
| **3** | z1 | 20 | 5 | 120 | 100 | 10000 | 1000 | 30000 |

On PTV window by clicking Upload button:



An Open File pop up window will appear
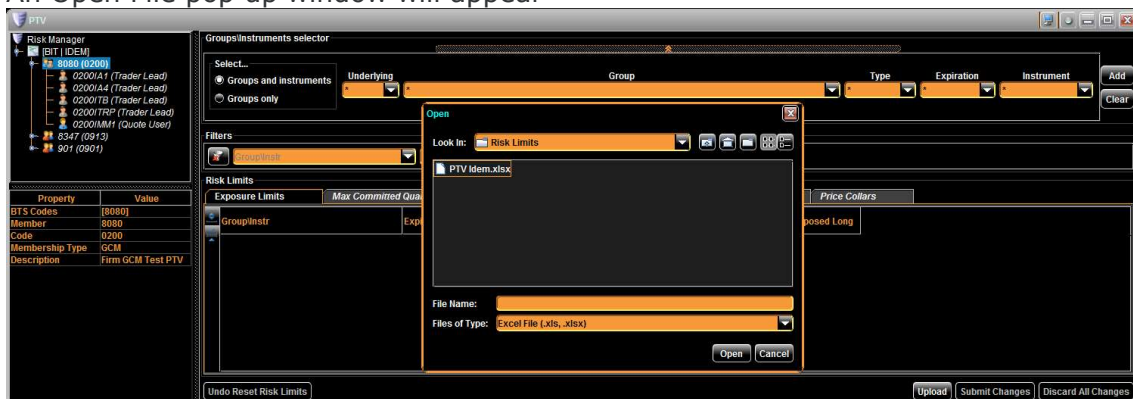


Once the file is uploaded a confirmation dialog that summarizes the operation (listing possible errors) is displayed and limits are ready to be submitted.

In case of rows in error, the whole row will be rejected.

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## 2.6.3 Limits Submission

By clicking the Submit Changes button, pending changed limits are submitted to SOLA, while a click on Discard All Changes clears the table:



Once the limits are submitted to SOLA, cells color switches back to orange and the underlining is removed.



In the Status column a green light icon informs the user if the limit/s for the Instrument or Group is/are active on SOLA, in case of a Limit that includes both Long and Short components, if only one side is set up the icon would be yellow (eg : FIB8F).

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Please also note that "0" is a limit value accepted by IDEM, in such event the correspondent 'Threshold' cell turns red.

The filter selector can be used to filter out Instruments or Groups by Limit Status:
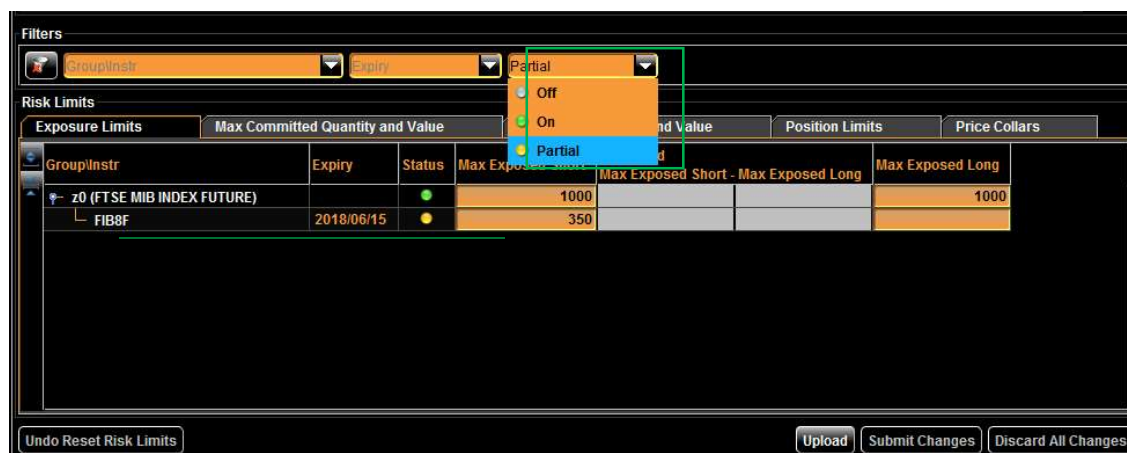


## 2.6.4 Discard all changes

If limits have been inserted but not yet confirmed (yellow cell), Risk Manager may discard all the changes applied to the limits by right clicking on the Group/Instrument and then select "Discard all Changes": in this way all the risks for the selected Instrument or Group will be reverted to the previous values.

The button "Discard all Changes" on the bottom edge of the window will revert all the values just changed in the selected entity:
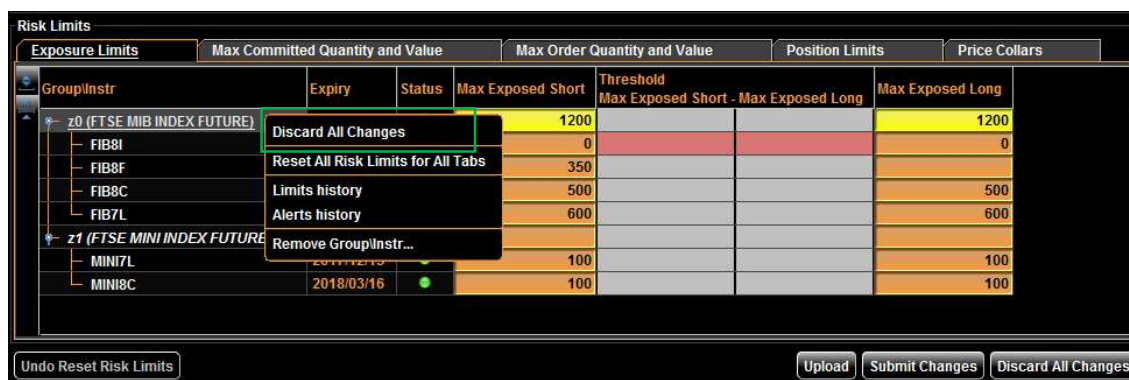


## 2.6.5 Reset Risk Limits

Risk Manager may remove active limits set on all groups/instruments both at Firm and Trader Lead level.

Moreover, by right clicking on the Group or Instrument, all the limits placed on a single Instrument/Group will be removed; this includes limits in the background tabs.

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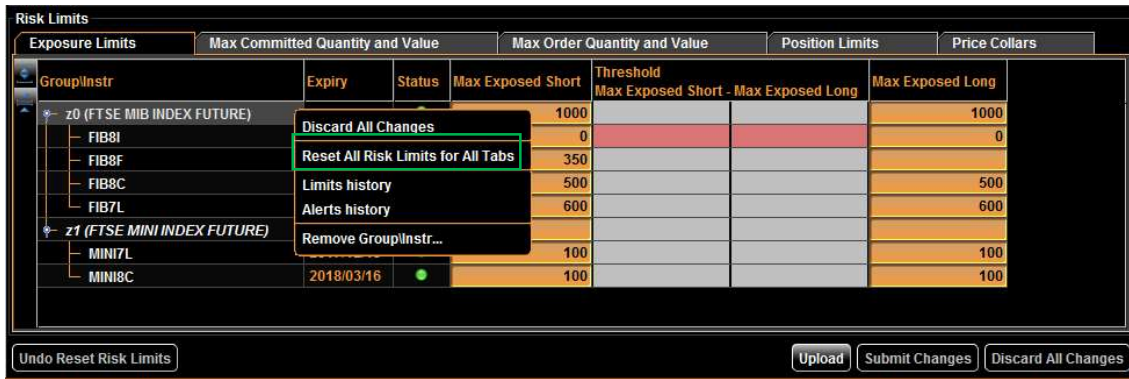
## 2.6.6 Reset MMP Limits

In the same way as for Firm / Trader lead 'Reset Risk Limits', Risk Manager may reset the Market Makers Protection Limits set on groups/instruments both at Firm and Trader Lead level:
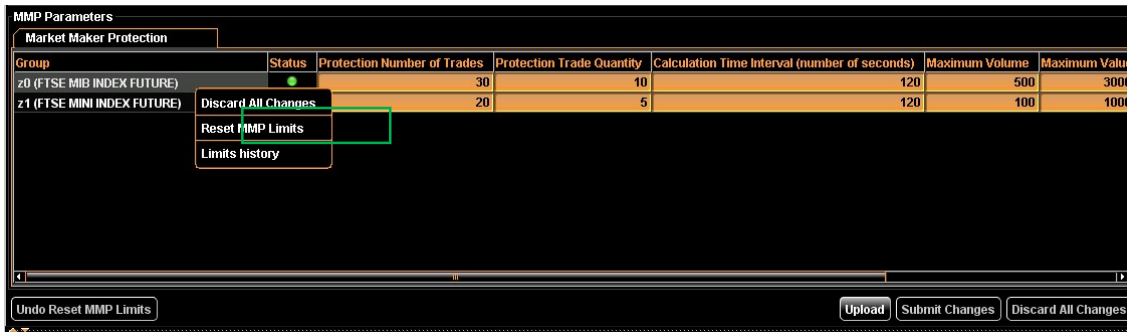


## 2.6.7 Undo Reset Risk Limits

Once the Limits Reset has been confirmed, Risk Manager may request BTS® to revert the table to the removed values, The functionality is available only on the same entity where no new limits have been submitted following the reset.

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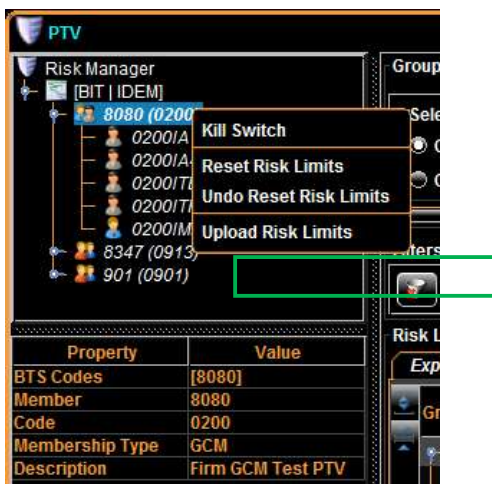
## 2.6.8 Excel Export

All the values displayed in the PTV table can be exported as Excel file by selecting the proper option in the columns header context menu
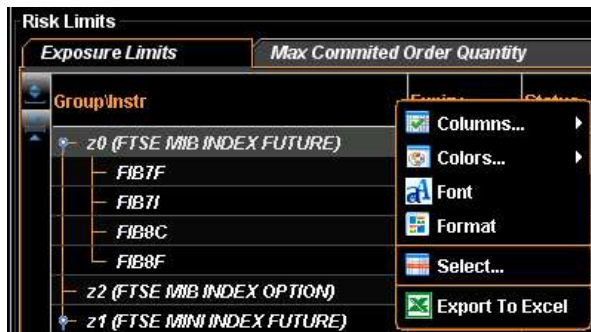


# 2.7 Threshold Update

The PTV window provides a graphical view of the current quota exploitation of the Risk Limits for each limit set at Instrument/Group level (except for Max Order Quantity and Max Committed Order Quantity).

Below 50% of usage the threshold diagram is not displayed



Above 50%, the usage is represented with a progress bar, where color and length are proportional to the current usage of the limit, shown as a percentage, and updated every 10% of increment or decrease.

If the limit value is removed, the threshold is cleared.

In the below example, 3 orders belonging to Firm 8080 (entered by any of 0200I* TraderIDs) firm are active on IDEM Market:

Size 260 on FIB7I, size 410 on FIB7F that gives a sum of 670 for the whole group z0.

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Also, by hovering the mouse pointer over the percentage bar a tooltip providing the current usage of the limits is displayed in absolute terms.



In case the Limits Threshold is updated the Risk Limits, the Group/Instrument and the Managed Entity (Firm/Trader) involved are highlighted in yellow:



Please note that the higher level (both in hierarchy tree and Group/Instr list) is highlighted if the tree is collapsed and the update concerns a lower level item.

Eg: if the update is received on FIB8C, if the structure is closed the Group Name is highlighted.

When the tree is expanded, only the instrument will be highlighted:

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By clicking the highlighted Instr/Group the alert will be acked.

## 2.8 Limits and Alerts History

Risk manager has the possibility to consult the history of amendments applied to the Limits Values (providing a 5-days depth) and the history of all the Alerts received for each Instrument/Group (providing just a daily history).



Once clicked 'Limits History', the Limits History window pops up.

Given the example below, events are described as follows:

1- Limit values are empty

2- Values of 1000 are added both on Long and Short sides

3- Max Exposed Short is modified to 1200

4- Max Exposed Short is reset



Once clicked 'Alerts History', the Alerts History window pops up, providing all the usage updates of the limit for the selected Group/Instrument for the current trading day:

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| Max Exposed Short | Threshold Max Exposed Short - Max Exposed Long | Max Exposed Long | UpdTimestamp |
|---|---|---|---|
| 500 | 100.00% | 500 | 2017-04-20 15:17:05.000 |
| 500 | 72.00% | 500 | 2017-04-20 15:16:56.000 |
| 500 | 92.00% | 500 | 2017-04-20 15:16:42.000 |
| 500 | 52.00% | 500 | 2017-04-20 14:54:21.000 |
| 500 | | 500 | 2017-04-20 14:50:46.000 |

Alerts history: 8080 (0200), z0( FTSE MIB INDEX FUTURE), FIB7I 2017/09/15

In the same way as explained for Risk Limits values, both the Alerts history and Limits history can be exported as Excel file.

# 2.9 PTV alerts in Messages viewer

A set of alerts is available in **Messages viewer** for PTV events.



An alert, a Message and/or Sound, as configured in Options under General Settings menu will be actioned in case of the following events are triggered for the entities of the firm:

• Kill Switch activation.

• Market Maker Protection limits change.

• Risk Limits change.

- Threshold of Exposure or Position limits update.

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# CONTACT

**Client Support**

**T (toll free): 0080026772000**

**T (from mobile): +39 02 45411399**

**E: Client-Support@borsaitaliana.it**


**Customer Relationship Management**

**T: +39 02 72426 512**

**E: clients-services@borsaitaliana.it**

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