VaR Margin Calculation Software
GUI Application Specification

Version 3.0

Issue Date: June 2024

Change History

Version	Date	Section	Description
1.0	Nov. 1, 2022		First release
1.01	Jan. 31. 2023	3. Performance & Capacity	Removal of section details and addition of reference information due to transfer of performance test result to a separate document
1.1	Mar. 17, 2023	1.4.1 Log	Added file name information for monthly log rotation, etc.
		2.1.4 Parameter Settings	Added reference information due to the addition of Attachment6
			Added information about -Dvar.log.rotate.total.size.cap
2.0	Jan. 30, 2024	2.2 How to Perform Calculation	Added dependency between Date in "parameters", "Position file", "BPF" and "APF"
			Added to InputFilesFolder to store only extracted csv instead of zip files
			Added that when using a network drive for PositionFile, InputFilesFolder, and OutputFileFolder, the file/folder path should be specified after mounting the drive
		4.2 List of Characters Allowed	Added that allowed characters also apply to data items
3.0	Jun. 28, 2024	1.2 Calculation Scope	Added Add-on Charge, VaR Risk and All to calculation scope
		1.3 Input	Added SPF to data category
		2.2.1.1Calculation Screen	Removed the condition for BaseDate
			Added SPF to InputFilesFolder. Removed the validation for the date.
			Updated the OutputType to: All excluding SAM, VaRMargin, Add-on Charge, VaR Risk, All
		2.2.2 Input File Location	Added SPF
		4.1 Reference Document	Added SPF

Table of Contents

1   Introduction

1.1   Overview

The VaR Margin Calculation Software – GUI application is stand-alone client software that allows users to execute VaR margin calculations on servers of their own via the GUI application. By using the GUI application users will be able to calculate initial margin requirements for cleared positions and reconcile them with JSCC.

1.2   Calculation Scope

The GUI application supports the functionality to calculate either of the following scopes in a single request:

- All (excluding SAM): VaR Margin, Add-on Charge, VaR Risk
- VaR Margin
- Add-on Charge
- VaR Risk
- All: VaR Margin, Add-on Charge, VaR Risk, Margin Requirement, SAM

1.3   Input

The GUI application requires input of the following ~~four~~ five categories of data to cover the full scope of initial margin requirement calculation.

#	Data Category	Data Format	Description
1	VPF	CSV	Calculation parameters
2	BPF	CSV	Input for Margin calculation
3	APF	CSV	Input for Add-on Charge calculation
4	SPF	CSV	Input for SAM calculation
5	Position	CSV	Target positions for margin calculation

Since the GUI application supports unzipped files only, files downloaded from JSCC website have to be unzipped before use.

Calculation target positions need to refer to instruments included in the BPF file(s). If referred instruments are not in the BPF file(s), the application will return an error message and not perform calculations.

Detailed connection specifications for the required input data are described in the following documents:

  VPF_specification, BPF_specification, APF_specification, SPF_specification, PositionData_specification

 (Listed in [4.1 Reference Document](#)）

1.4 Output

Margin requirement calculation results will be output in CSCV format.

Note: Detailed connection specifications for the definition of calculation result format are described in the following document: CalculationResult_specification (Listed in 4.1 Reference Document)

Upon an error occurrence, a list of error codes and error messages will be returned and the request will be determined to be unsuccessful. Refer to details of the error message(s) and adjust the input data accordingly. Error codes are of the format E[XXXX] or ES[XXX], where XXXX and XXX are combinations of numbers.

Note: Details of error codes with error messages are described in 2.3 Error Occurrence.

1.4.1   Log

The GUI application maintains application logs. Log contents are divided into 2 categories, INFO and ERROR, depending on the log level.

INFO log messages are prefixed with Status Code of type I[XXXX], where XXXX is a combination of numbers. ERROR log messages are prefixed with Status Code of types E[XXXX] and ES[XXX], where XXXX and XXX are combinations of numbers.

Logs contain information that provides users with the possibility to self-diagnose application errors and adjust operations and GUI calls accordingly.

Application log file names are as follows.

(Daily log rotation) apl_YYYYMMDD.X.log (Note: "X" takes sequential numbers starting with 0)

(Monthly log rotation) apl_YYYYMM.X.log (Note: "X" takes sequential numbers starting with 0)

Frequency of log rotation can be changed in -Dvar.log.rotate (see 2.1.4 Parameter Settings for how to set the parameter).

"YYYYMMDD" will take the OS date.   The time displayed in the log file will be in JST.

When the size of an application log file exceeds the maximum size of a log file, another application log will be created by log rotation. (See 2.1.4 Parameter Settings for how to set the maximum size of a log file.)

The GUI application uses log framework "logback", which is configurable to determine the maximum log file size.   If there is no log file with the corresponding date when the GUI application is started, a new log file will be created. If the day's log already exists, the application will continue to write in the existing log file.

When specified periods have past, log files will be rolled. (See 2.1.4 Parameter Settings for details.)

For details of log rotation and log deletion, please refer to "Attachment 6_Log Rotation and Deletion".

Note: Detailed specification for the Status Code and Status Messages are described in "Attachment4_Status Code List"

1.5   3rd Party Libraries

See "Attachment3_Third_Party_Libraries_List ".

2   How to Use GUI Application

This section provides information on how to use the GUI application.

2.1   Default Settings

This section provides an explanation of preparation and settings required for the initial use of the GUI application. For the second time and subsequent use where no setting changes are required, proceed to 2.2 How to Perform Calculation.

2.1.1   Preparation of Environment

Refer to "Supported OS and Java" in "Overview of VaR Margin Calculation Software" and have supported OS and Java versions ready.

2.1.2   Preparation of GUI Application

Download the Zip file containing the GUI application (refer to "Outlines of Accommodation of New Margin Calculation Method (VaR Method) for Futures/Option Contracts" for link information) and unzip the file in your own environment. The following files are contained.

No	File Name	Description
1	VaRMarginCalculator-gui.jar	Application jar file
2	sample_gui_start.bat	Sample File to Start Application (bat)
3	gui_bat_params.ini	Sample config file The number of simultaneous calculations, etc. can be changed by editing the file as described in 2.1.4 Parameter Settings.
4	Sample position file	Excel file for position file editing By saving the file in CSV format, a position file can be created.
5	List of 3rd Party Libraries	Excel file containing a list of 3rd party libraries used in CUI application (a similar file to the attachment to this document)

2.1.3   GUI Application Location

GUI application files have to be located in the following way.

No	File Name	Storage Folder	Remarks
1	VaRMarginCalculator-gui.jar	The folder specified by the Sample File to Start Application (see 2.1.5 Editing of Sample File to Start Application for how to specify) Example: C:\var\exe	
2	sample_GUI_start.bat (the above is a sample name)	Folder of user's choice Example: C:\var\bat	
3	gui_bat_params.ini (the above is a sample name)	The same folder as that of sample_gui_start.bat, or; The folder defined in the Sample File to Start Application (see 2.1.5 Editing of Sample File to Start Application for how to define) Example: C:\var\bat	

2.1.4   Parameter Settings

The following settings can be changed by editing Config files.   The sample Config file (gui_bat_params.ini) can also be used without changing the file name or contents.

No	Parameter	Parameter Name	Description	Default	Possible Setting
1	-Dvar.log. apl.level	Log Level	Log output level With INFO set, logs will be output when GUI application is started/stopped, calculation is started, an error occurs, etc. With ERROR set, logs will be output only when an error occurs.	INFO	INFO, ERROR
2	-Dvar.log. path	Log Output Path	Output folder path for application logs	Current Folder	Folder Path (When this parameter is left unset, var.log.path_IS_UNDEFINED folder will be created for the bat file path as a storage location for application logs and error files.)
3	-Dvar.log. rotate.file.size	Max Size per Log File	Threshold for log file rotation Selectable from KB, MB, or GB. If not specified, "B" is applied. See "Attachment6_Log Rotation and Deletion" for details.	100MB	Number
4	-Dvar.log. rotate	Log Rotation Unit	Log rotation unit (either day or month) See "Attachment6_Log Rotation and Deletion" for details.	yyyyMMdd	Per day: yyyyMMdd Per month: yyyyMM Note: No variable. Enter the actual numerical date such as yyyyMM (year + month).
5	-Dvar.log. rotate. max.history	Log Retention Cycle	Log rotation cycle in combination with -Dvar.log.rotate For example, when the GUI application is started in October 2022 with -Dvar.log.rotate set to yyyyMM and this parameter to 3, log files created in and before July 2022 will be deleted. See "Attachment6_Log Rotation and Deletion" for details.	30	Integer 1 or greater
6	-Dvar.log. rotate. total.size.cap	Total Size of Log Files to be Retained	Maximum total size of log files to be retained Selectable from KB, MB, or GB. If not specified, "B" is applied.	100GB	Numbers

			See "Attachment6_Log Rotation and Deletion" for details.		
7	-Dvar.pool. size.core	Minimum Pool Size of Multithreaded Processes	The number of multithread processes (the number of simultaneous processes) Note: Processes will be executed per account. The unique keys to account information are "Clearing Member code" and "Trading Participant code & Account code" (for omnibus accounts, "Omnibus Client ID" in addition).	200	Integer 1 or greater
8	-Dvar.pool. size.max	Maximum Pool Size of Multithreaded Processes	Maximum number of multithreaded processes (the number of simultaneous processes) When the number of processes in the queue exceeds the maximum number set, threads will be increased up to the number set in this parameter.	200	Integer 1 or greater
9	-Dvar.pool. size.queue	Queue Size	The maximum number of queues to be used when all threads are used up. When set to 0, no limit will be applied to the number of queues.	0	Integer 0 or greater Note: When a number other than 0 is set, processing of position files containing account information exceeding the maximum number of multithreaded processes may be rejected and the process may be aborted.
10	-Dvar.pool. threshold	Upper Limit Value of Accounts to be Processed by a Single Thread	When the number of accounts contained in a position file is less than the value set in this parameter, single thread calculation will be performed. When 0 or less is set, 1 will be applied.	50	Integer Note: When the number of accounts contained in a position file is smaller than this value, processing will be performed by a single thread and the process speed may decrease.
11	-Dvar.pool. idle.timeout	Idle Thread TTL	When threads subsequently added to those set in the minimum multithread pool size (-Dvar.pool.size.core) are in idle condition, the number of threads	60	Integer (unit: second)

12	-Dvar.gui.property	Property File Path	Property file containing information about PositonFile, InputFilesFolder and OutputFileFolder Input and output folders for "Calculation.properties" Note: This file will be output when ⑪SaveSettings in [2.2.1.1 Calculation Screen](#) is selected.)	Jar file storage path	Folder Path
			will decrease after the idle thread TTL timeout.		

The following is an example image of config file editing.

```
-Dvar.log.spring.level=INFO
-Dvar.log.path=C:\etd\log
-Dvar.log.rotate.file.size=100MB
-Dvar.log.rotate=yyyyMMdd
-Dvar.log.rotate.max.history=30
-Dvar.pool.size.core=200
```

2.1.5 Editing of Sample File to Start Application

By editing the Sample File to Start Application users can specify the location for jar file storage, config file names and file paths.

The following is an example image of editing of the Sample File to Start Application.

```
@echo off
setlocal ENABLEDELAYEDEXPANSION

set sts=0

::The value can be modified
set -path=C:\etd-var-gui\exe\

for /f "delims=" %%a in (C:\etd-var-gui\exe\gui_bat_params.ini) do (

    set param=!param! %%a
)

if not exist %-path%VaRMarginCalculator-gui.jar (
    echo [%-path%VaRMarginCalculator-gui.jar] does not exist.
    goto failed
) else (
    start javaw %param% -jar %-path%VaRMarginCalculator-gui.jar && (goto succeed) || goto failed
)

:succeed

    echo The process was completed normally.
    set sts=0
    goto end

:failed

    echo The process was completed abnormally.
    set sts=1

:end
```

Specify the folder for jar file storage in absolute path format.

Specify the config file path in absolute path format.

Specify the application jar file name.
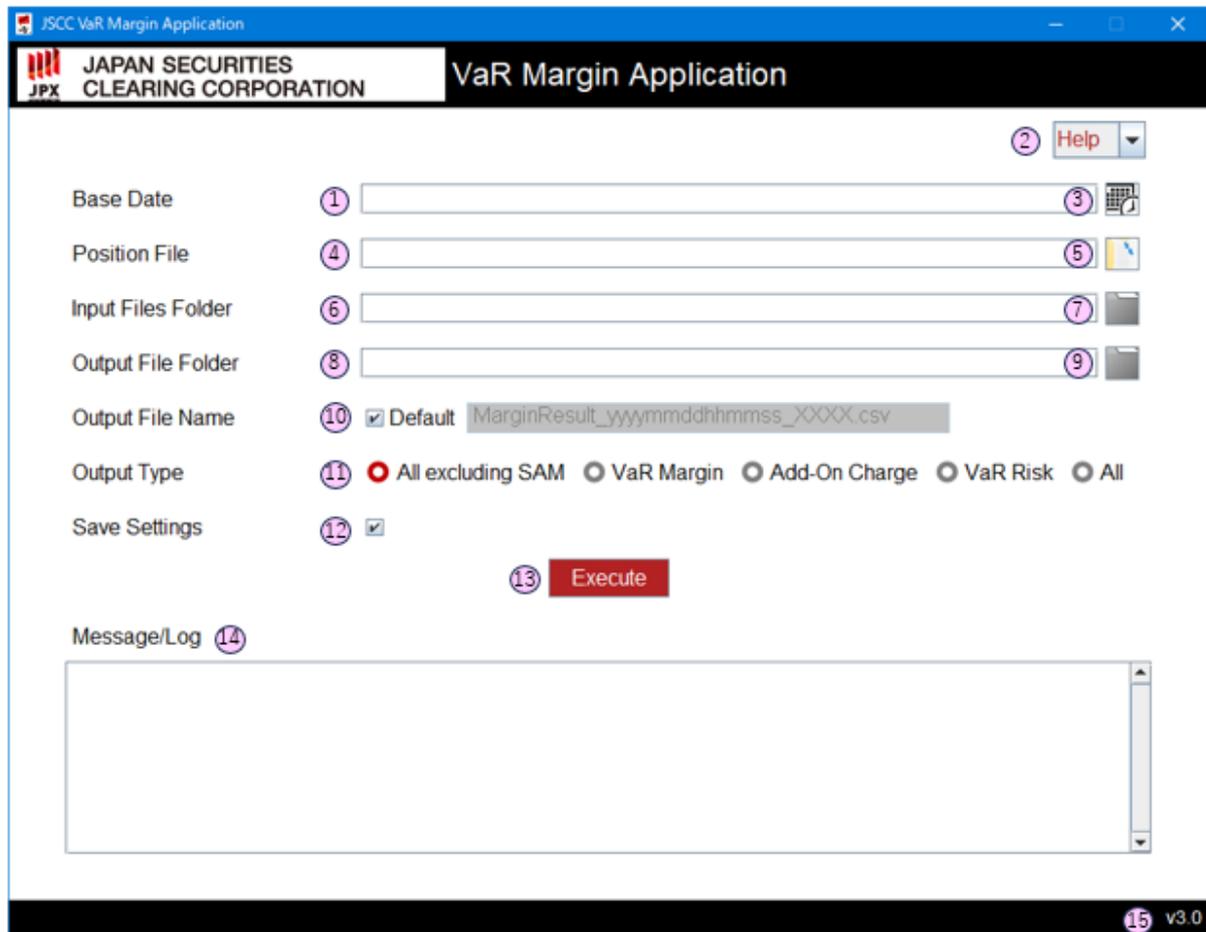
2.2 How to Perform Calculation

This section provides information on how to perform calculation.

2.2.1 Screen Information

The GUI application has 3 screens: Calculation screen, Help screen and About screen.

2. 2. 1. 1 Calculation Screen

The Calculation screen has the following structure.

① Base Date: Input the calculation base date in YYYY-MM-DD format. ~~The date should be the same as BusinessDate in the specified Position file~~.

② Pull-down menu button for page transition: Transition to the Help screen and the About screen is possible by pull-down menu selection.

③ Calendar: The Base Date can also be selected from the calendar provided.

④ Position File: Specify a position file by using a file path. A drag-and-drop operation is also possible. When using a network drive, please both mount it and specify the file path in advance.

⑤ Position File icon: A file path can also be selected by using this button.

⑥ Input Files Folder: Specify the path to a folder containing VPF, BPF, APF and SPF. A drag-and-drop operation is also possible. ~~Put BPFs and APFs with a date that is the same as or earlier than the BusinessDate in the specified Position file (BusinessDate in the Position file >= Date in the BPF or APF).~~ When using a network drive, please both mount the drive and specify the folder path in advance. Please confirm there is no zip file in this folder as running the calculation with a zip file results in an error.

⑦ Input Files Folder icon: The folder path can also be specified by using this button.

⑧ Output File Folder: Specify the folder where margin calculation result files and error files are stored. A drag-and-drop operation is also possible. When using a network drive, please both mount it and specify the folder path in advance.

⑨ Output File Folder icon: The folder path can also be specified by using this button.

⑩ Output File Name check box/input: When Default is not selected (= no check mark in the box), the name of a margin calculation result file can be specified. When Default is selected (= a check mark in the box), the default file name "MarginResult_yyyymmddhhmmss_uid.csv" will be set. (Note: "yyyymmddhhmmss" will take the date and time of file output. "uid" will be provided with random 4-digit ID.）

⑪ Output Type: Select calculation scope from "All excluding SAM", "VaRMargin", "Add-on Charge", "VaR Risk" and "All".

⑫ Save Settings: When a check mark is in the box, the settings for Position File, Input Files Folder and Output File Folder will be saved in a property file (calculation.properties). The property file will be generated in the folder storing jar files when the Execute button is pressed. From the next GUI application start, the incorporated property file contents will be available for use as pre-set data.

⑬ Execute button: Margin calculation will be performed by pressing this button.

⑭ Message/Log: Messages and logs will be displayed in this window.

⑮ Version: The version of the GUI application will be displayed.

2.2.1.2 Help Screen

The Help screen will provide information about the calculation screen in the upper part and a list of error messages in the lower part.

2.2.1.3 About Screen

The About screen will provide licence information and version information.

2.2.2   Input File Location

Store the 4 5 files (3 files, excluding APF, when calculating VaR margin requirements only) described in "1.3 Input" in the following folders.

No	File Name	Storage Folder	Remarks
1	VPF	Folder specified in 2.2.1.1 Calculation Screen (in ⑥ or ⑦). Example: C:\var\input_files	VPF, BPF, APF and SPF must be all stored in the same folder.
2	BPF		
3	APF		
4	SPF		
5	Position File	Folder specified in 2.2.1.1 Calculation Screen (in ④ or ⑤) Example: C:\var\position	Position File does not have to be stored in the folder containing VFP, BPF, APF and SPF.

2.2.3   Execution of Calculation

This section provides an explanation of the procedure for margin calculation.
Double-click the Sample File to Start Application. (Note: Operation may fail when multiple GUI applications are simultaneously started on the same terminal.)
The Sample File to Start Application mentioned here is "sample_GUI_start.bat" stored in the GUI application Zip file. Although a sample, the file can also be used without changing the file name and/or information contained.
Open the Calculation screen, enter required item information and press the Execute button. (See 2.2.1.1 Calculation Screen for details.)

Once the calculation is completed, the following output will be displayed in the Message/Log field. (See ⑭ of 2.2.1.1 Calculation Screen.)

Output for normal termination:

The process ended normally. Please check the processing result in "Output File Folder".

Output for abnormal termination:

The processing has terminated abnormally.

The calculation result will be output to the folder specified in parameter "Output Folder" (set in ⑧ or ⑨ of 2.2.1.1 Calculation Screen) for calculation execution under the file name specified in "Output File Name" (set in ⑩ or ⑪ of 2.2.1.1 Calculation Screen) (MarginResult_yyyymmddhhmmss_uid.csv is set as the default file name).

In case of an error occurrence, an error log will be output to the folder specified in parameter "Output Folder" (set in ⑧ or ⑨ of 2.2.1.1 Calculation Screen) under the name Error_MarginResult_yyyymmddhhmmss_uid.log. (Note: "yyyymmddhhmmss" will take the date and time of file output. "uid" will be provided with random 4-digit ID.) See 2.3 Error Occurrence for error message details.

2.3   Error Occurrence

Refer to "Attachment 4_Status Code List" for error message details. Please note that the information contained in the attachment may change.

3 Performance & Capacity

Refer to "Attachment 5_Performance Test Result" for details of the performance test result.

4 Note

4.1 Reference Document

This document refers to the following support documents, which are found in the file named below.

Reference Document	File Name
VPF_specification	Attachment1_VaR Margin Calculation Software Attachment to Connection Specifications
BPF_specification	Attachment1_VaR Margin Calculation Software Attachment to Connection Specifications
APF_specification	Attachment1_VaR Margin Calculation Software Attachment to Connection Specifications
SPF_specification	Attachment1_VaR Margin Calculation Software Attachment to Connection Specifications
PositionData_specification	Attachment1_VaR Margin Calculation Software Attachment to Connection Specifications
CalculationResult_specification	Attachment1_VaR Margin Calculation Software Attachment to Connection Specifications

4.2 List of Characters Allowed

The GUI application supports only the following characters as those usable for file paths and folder paths and data items.

Character	Windows
Half-width uppercase alphabetical character	A – Z
Half-width lowercase alphabetical character	a - z
Half-width numerical character	0 - 9
Symbol	! # $ % & ' ( ) - ^ \ @ [ ] ; : , . = ~ ` { } + _ Note: "\" and ":" are usable for folder paths and data items only.