Mitsubishi ELectric SELECTion software (MELSELECT) for Mitsubishi Electric low-voltage circuit breaker

User manual

Contents

1. 1. Introduction

This user manual explains how to use Mitsubishi ELectric SELECTion software, MELSELECT (Ver.1.0.0) for low-voltage circuit breaker.

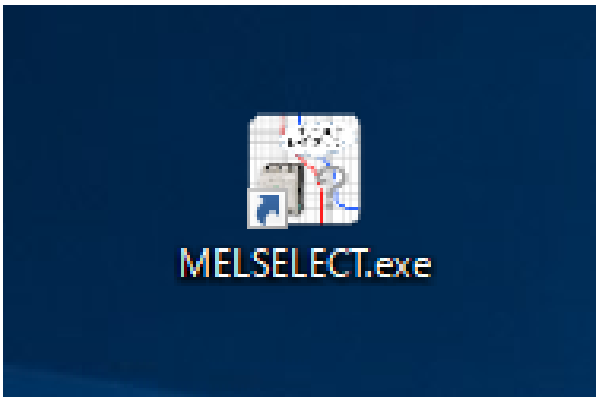
1.1 System requirements

Item	Recommended requirements
Operating system (OS)	Microsoft Windows10 (32/64 bit) Pro
Microsoft .NET Framework	Microsoft .NET Framework 4.6
Microsoft Word/Excel/Access	Microsoft Word 2013

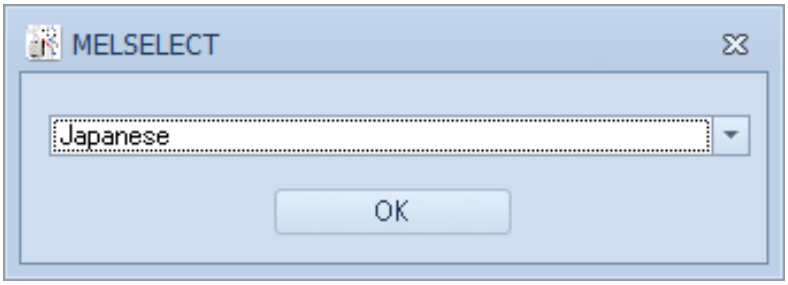
1.2 Start MELSELECT

(1) Download MELSELCT and decompress the compressed folder.

(2) Double click [MELSELECT.exe] in the downloaded folder and open it.



(3) Select language (Japanese/English/Chinese). You will be asked to select language for the first time only.



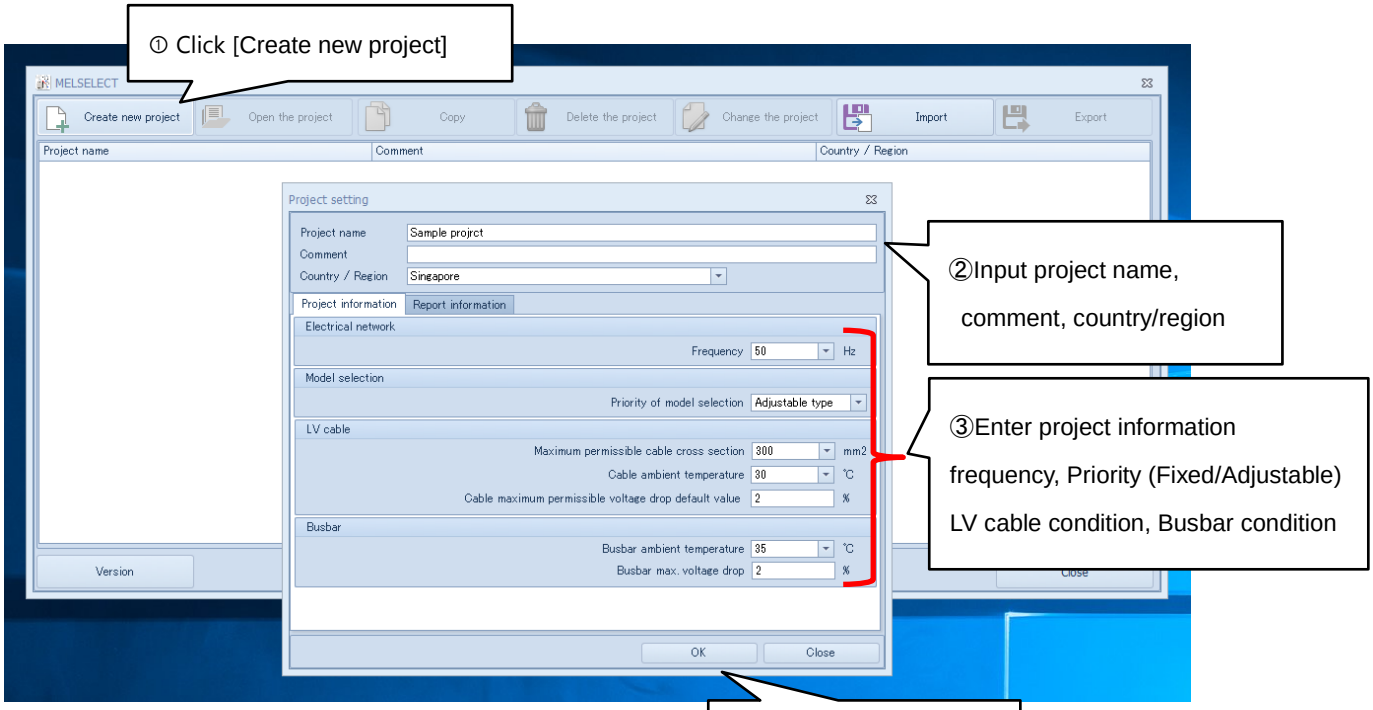
2. Create single-line diagram

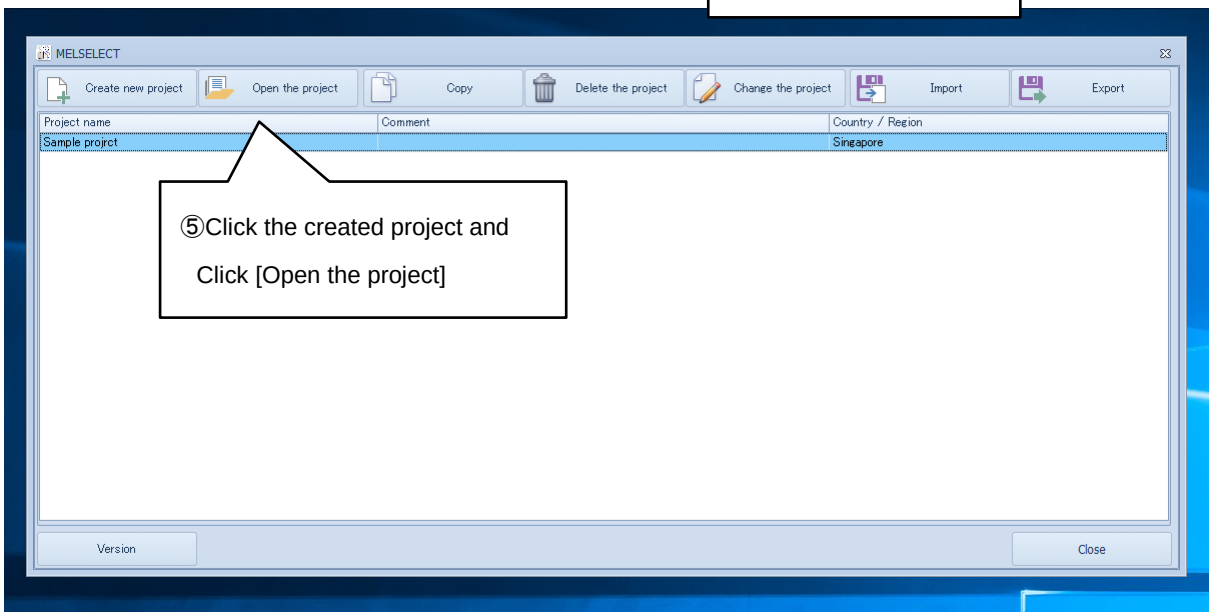
2.1 Create project

(1) Click [Create new project] button.

(2) Enter “Project name”, input “Comment” and select “Country/Region” in Project setting. If necessary, set “Frequency” and “Priority of model selection (Adjustable type or Fixed type)”.

(3) Click the created project to open main window.



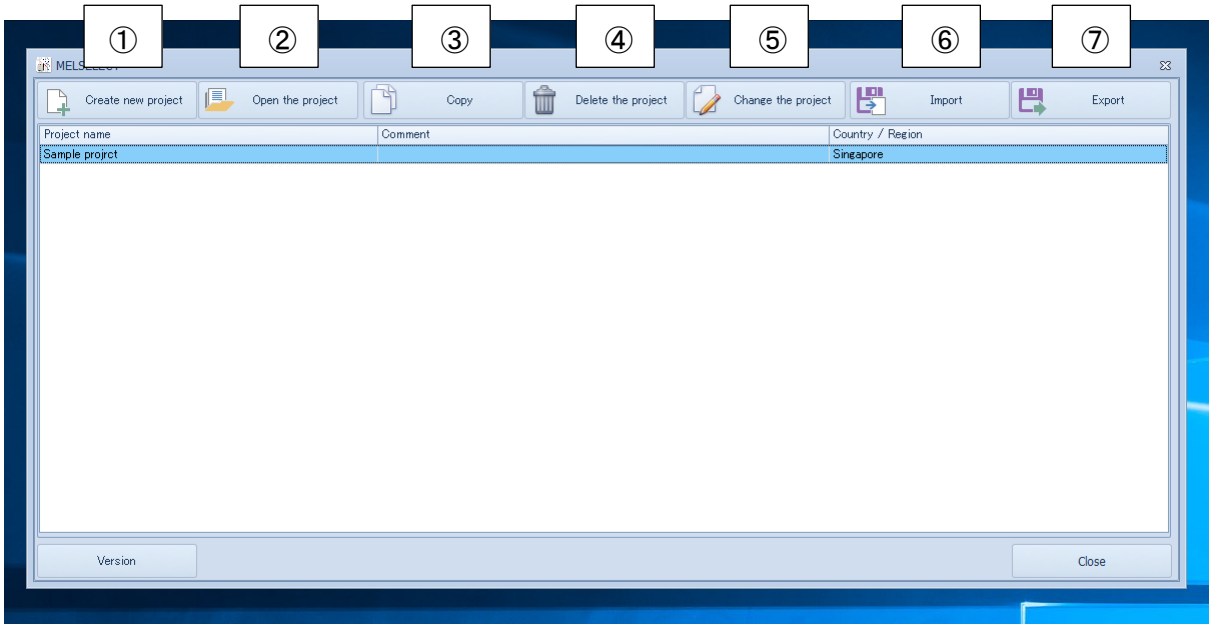


＜Project management＞

(4) Following operations are available for the project.

Table 1. Project management function list

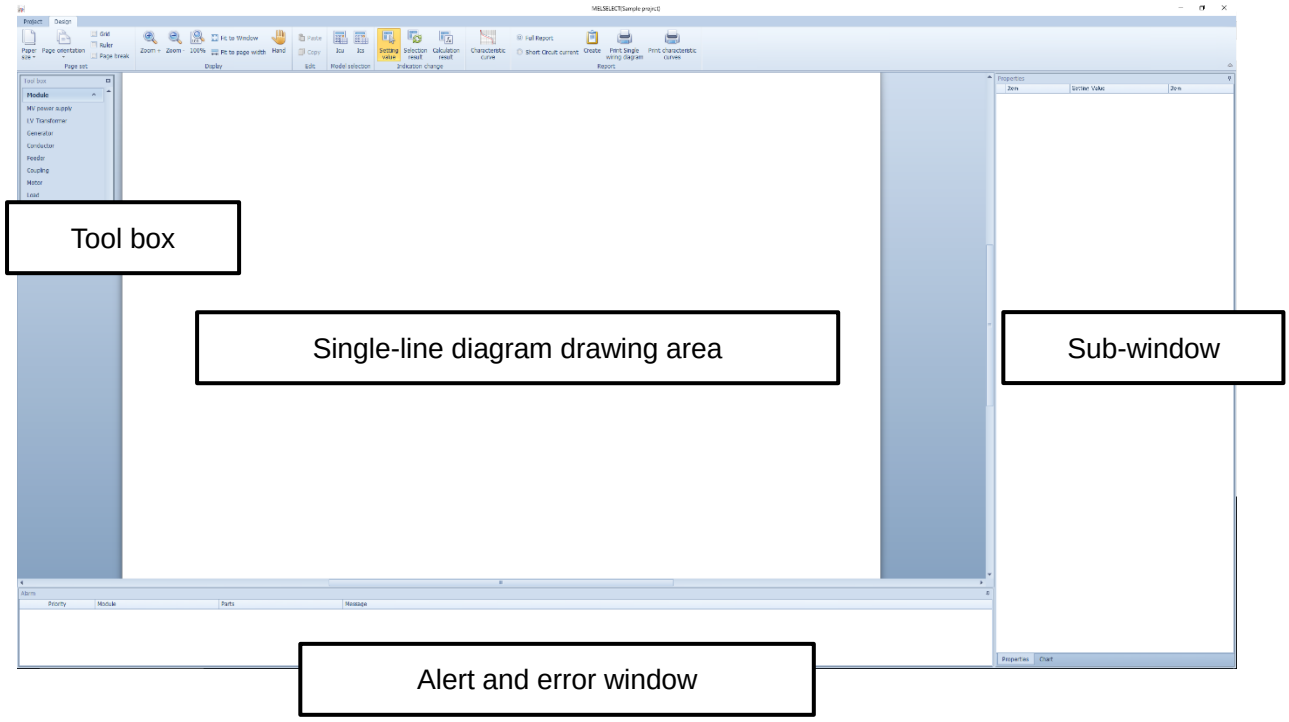
No	Item	Function
①	Create new project	To create new project
②	Open the project	To open and show single-line diagram of selected project
③	Copy	To copy selected project and create other project name
④	Delete the project	To delete selected project
⑤	Change the project	To open project setting window and change the setting of selected project （Project information and Report information are changeable）
⑥	Import	To import project file from other folder
⑦	Export	To export selected project to other folder



2.2 Draw single-line diagram

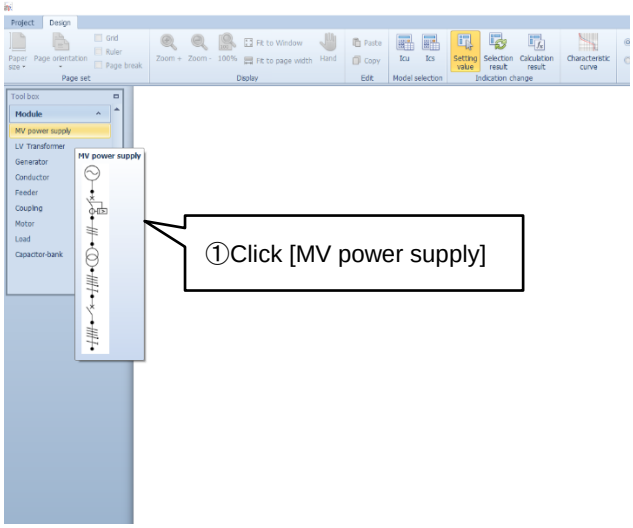
(1) Select each module from Tool box on left side and put them to draw single-line diagram.

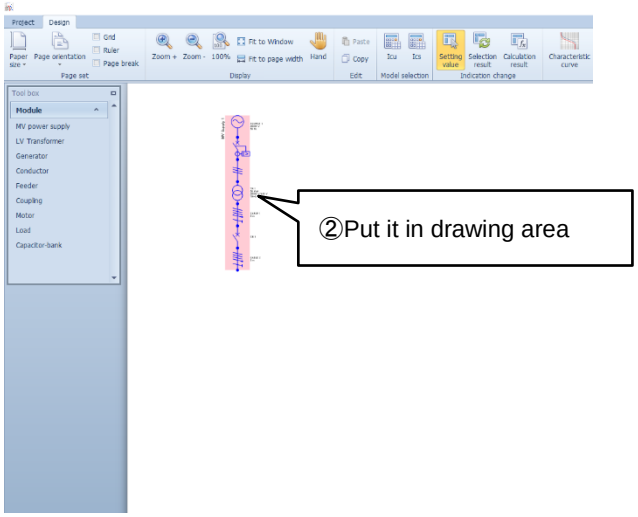
It is able to put up to 200 modules in single-line diagram drawing area.



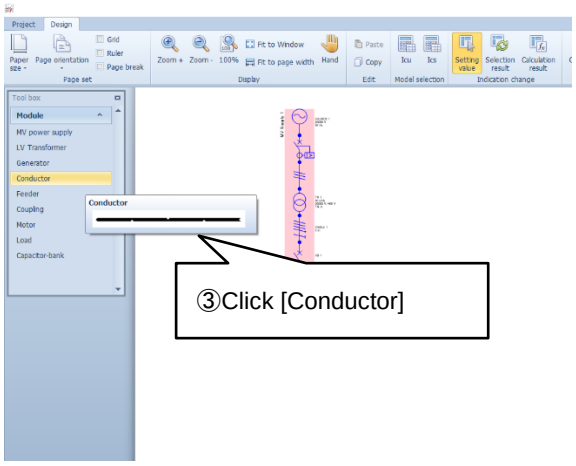
（ex：In the case of creating single-line diagram including general load and motor load）

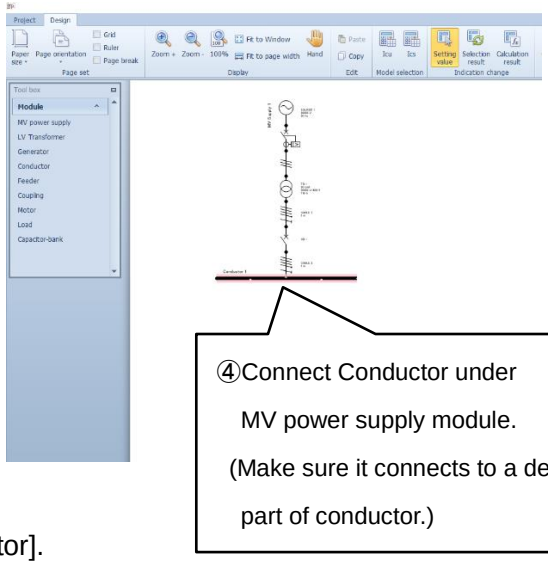
[1] Click [MV power supply] in Tool box and put it in drawing area.



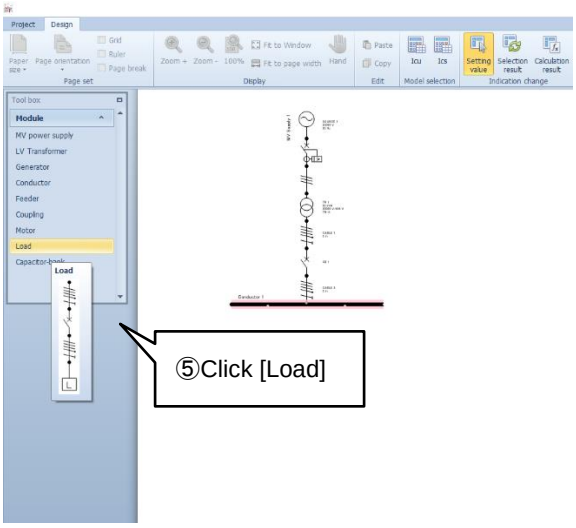


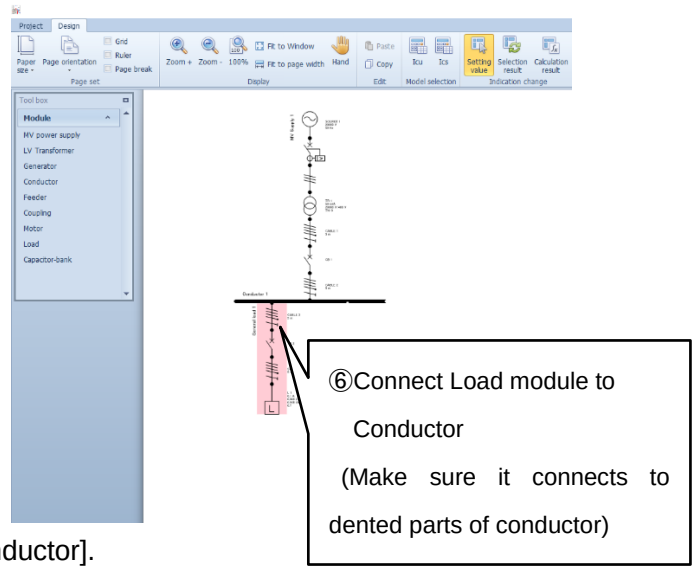
[2] Click [Conductor] in Tool box and put it under MV power supply.



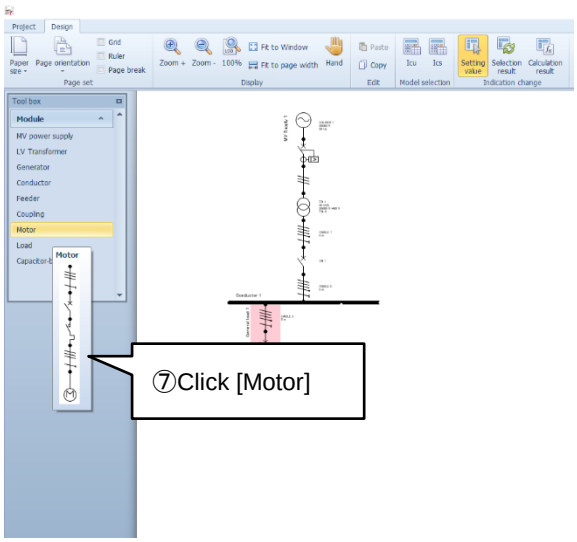


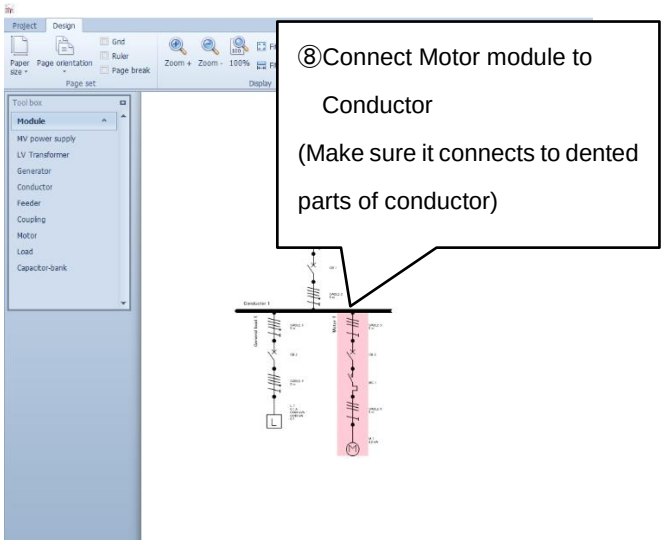
[3] Click [Load] in Tool box and put it under [Conductor].





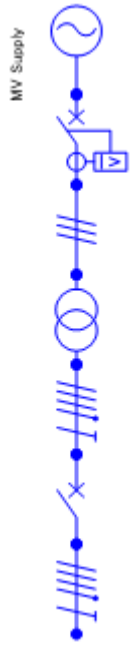
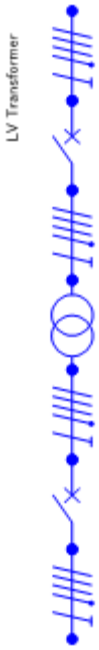
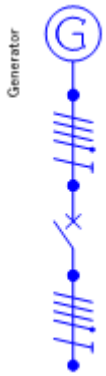
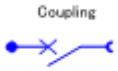
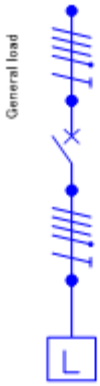
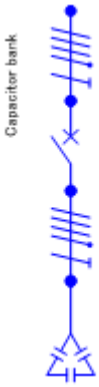
[4] Click [Motor] in Tool box and put it under [Conductor].





[5] After creating single-line diagram, click [Project] tab on upper left and click [Save]

Table2. Module list

Item	Module	Item	Module	Item	Module
MV power supply		LV Transformer		Generator	
Feeder		Coupling			
Conductor					
Motor		Load		Capacitor bank	

2.3 Set each module parameter

(1) Set parameters such as value, material and system before short-circuit current calculation.

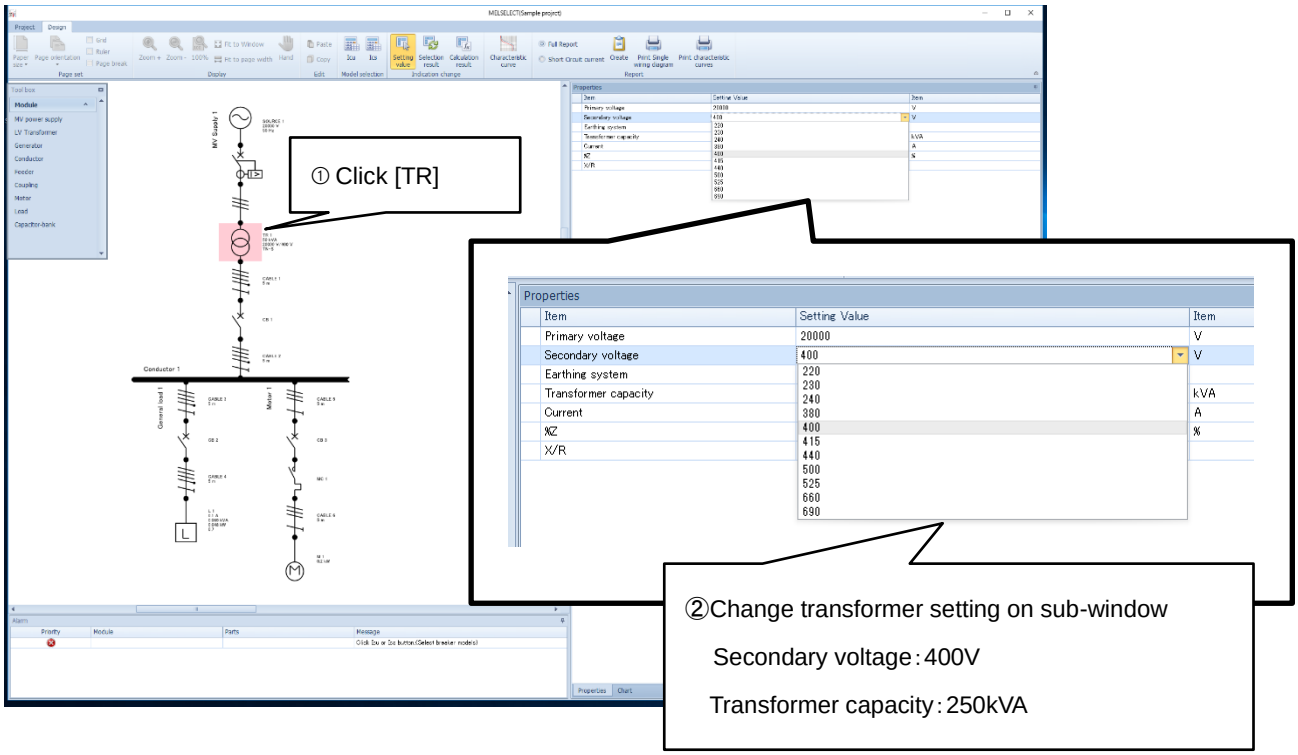
(2) Click each element and set parameter in [Properties] window on right side according to the condition and purpose. Main changeable parameters are as follows.

Table 3. Changeable main parameters

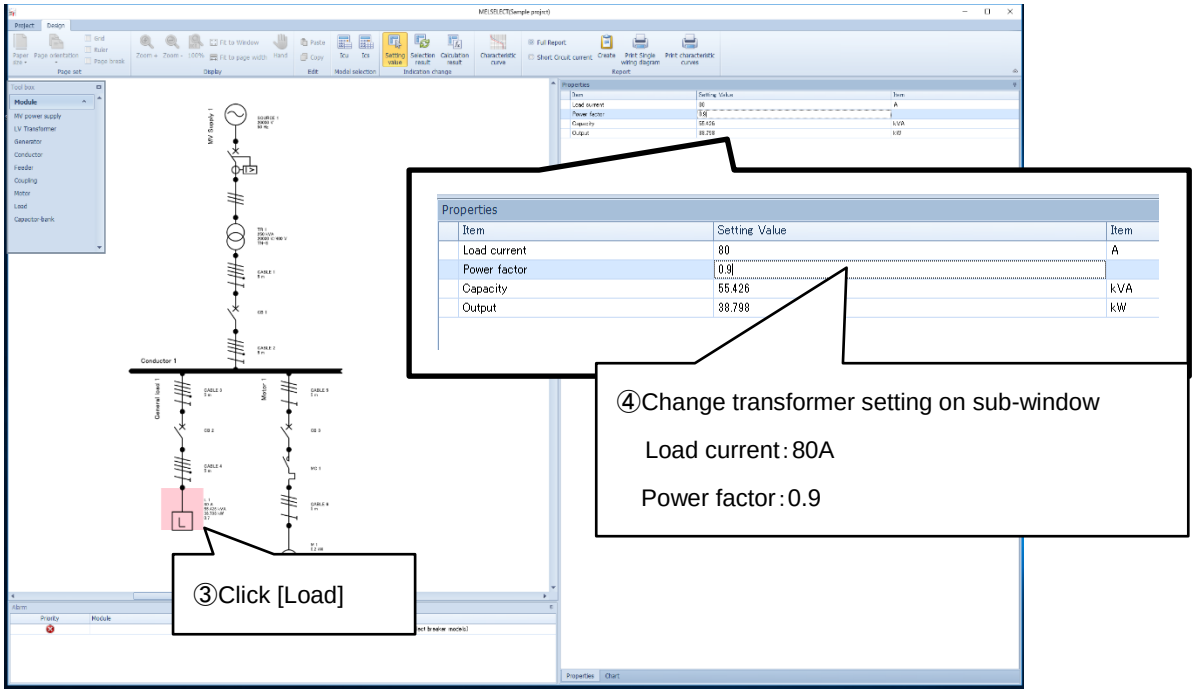
Element	Parameter 1	Parameter 2	Parameter 3	Parameter 4
SOURCE	Voltage	—	—	—
TR	Secondary voltage	Earthing system	Transformer capacity	—
Generator	Voltage	Earthing system	Capacity	Transient reactance
Cable	Cable/Busbar	Length	material	—
Load	Load current	Power factor	—	—
Motor	Starting method	Output	—	—
Capacitor-bank	Capacitance	—	—	—
CB	Type of circuit breaker	Standard	Number of poles	Residual current protection

（ex：In the case of changing the parameters of single-line diagram created at 2.2.）

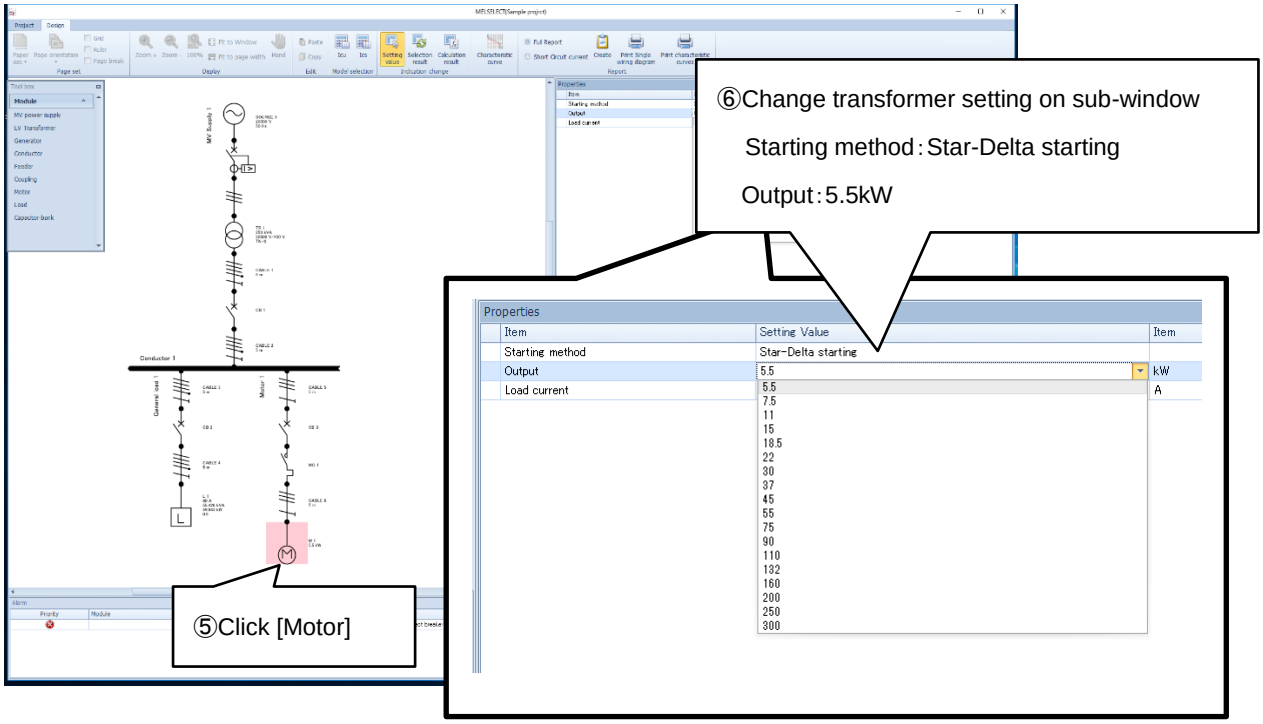
[1] Click transformer (TR) in the single-line diagram and change “Secondary voltage” and “Transformer capacity”.



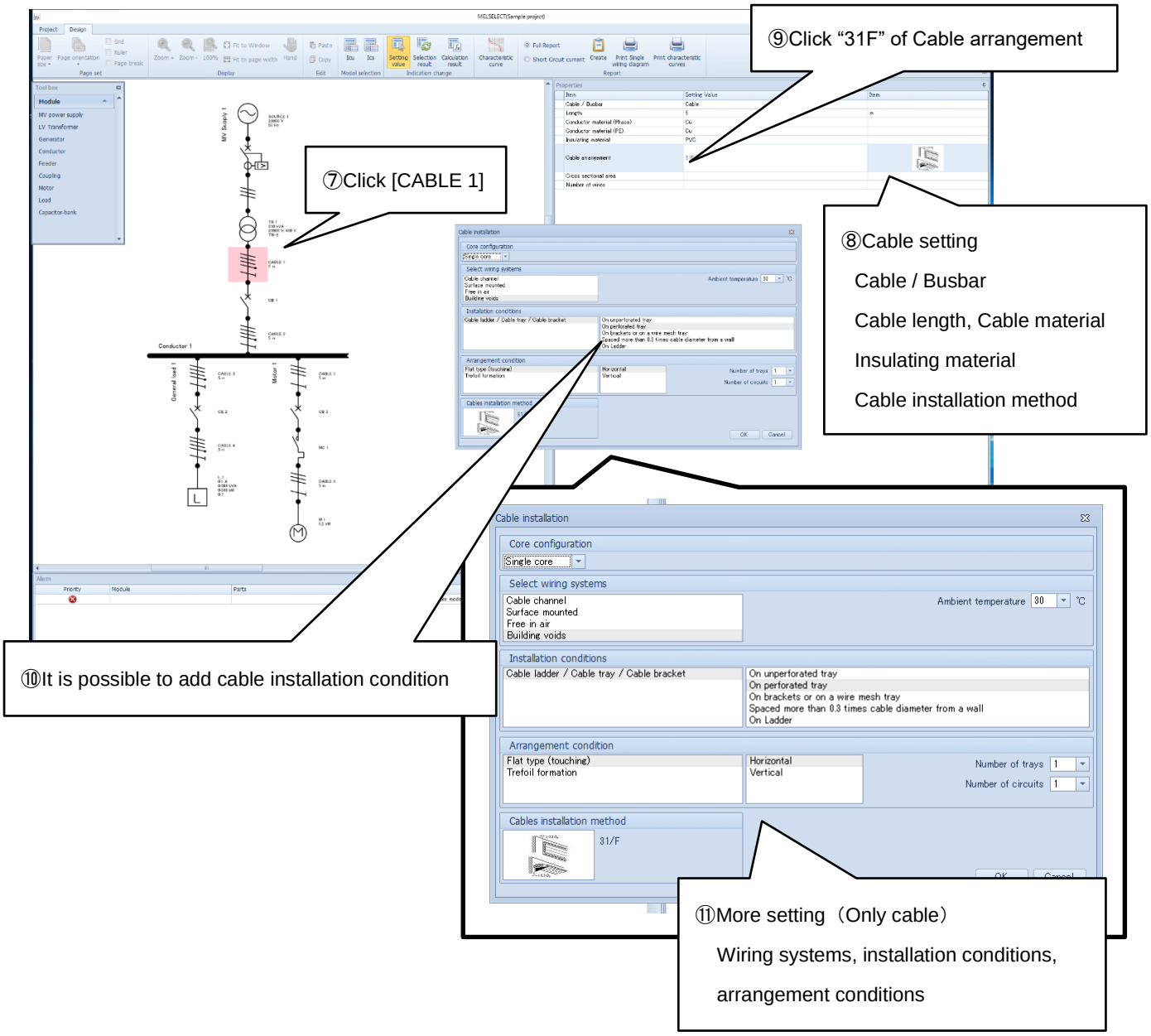
[2] Click [Load] in the single-line diagram and change “Load current” and “Power factor”.



[3] Click [Motor] in the single-line diagram and change “Starting method” and “Output”.



[4] Cable setting is also changeable.



The setting before short-circuit current calculation is completed.

3. Calculate short-circuit current and select model

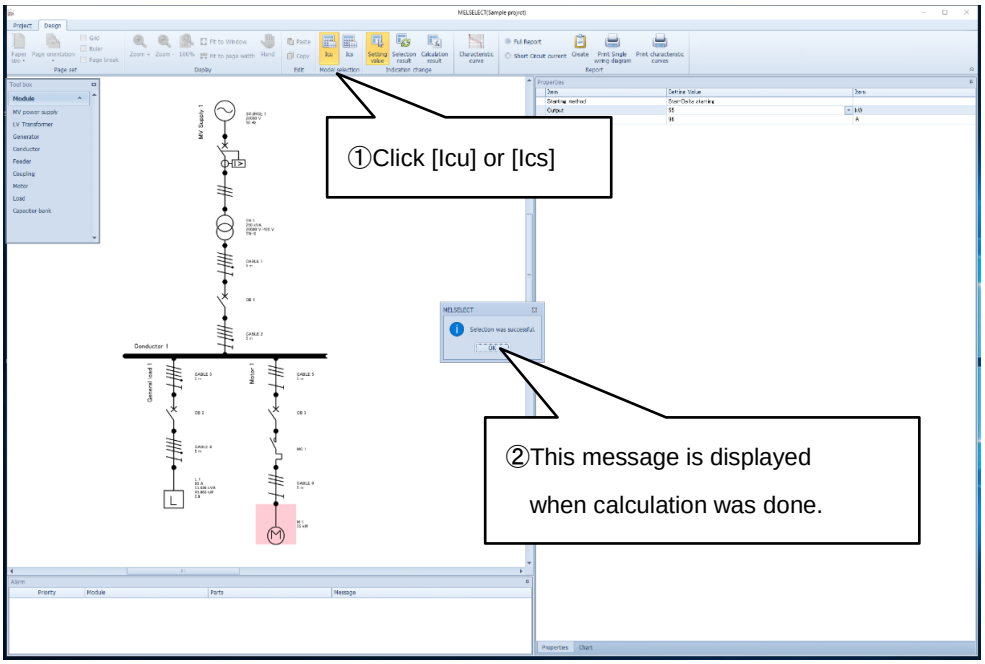
3.1 Calculate short-circuit current

(1) MELSELECT calculates short-circuit current of created single-line diagram at Chapter 2 and selects suitable model to protect from short-circuit current.

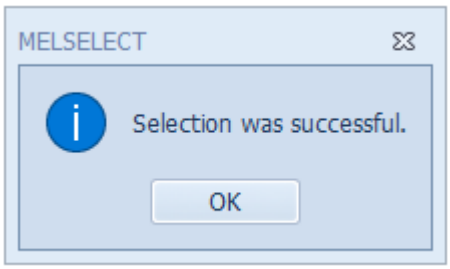
(2) According to the condition and purpose, select [Icu] or [Ics] for short-circuit current calculation.

Icu：Rated ultimate short-circuit breaking capacity （IEC60947-2）

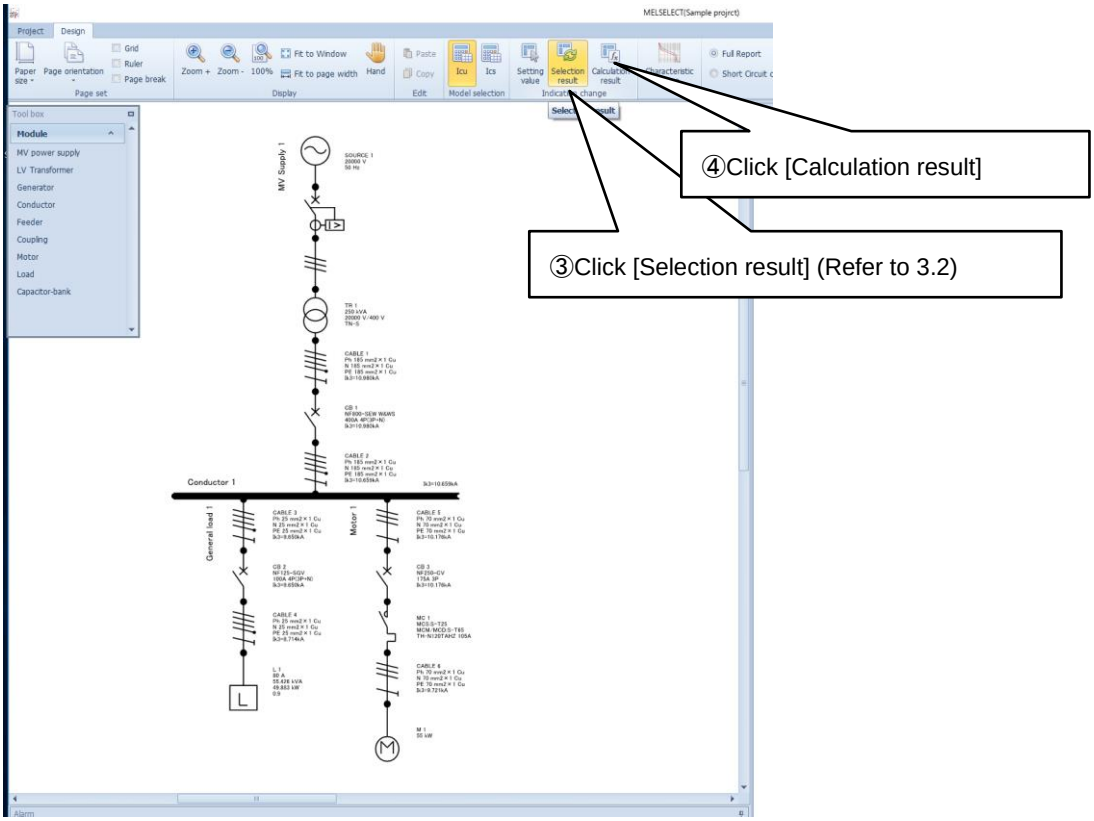
Ics：Rated service short-circuit breaking capacity （IEC60947-2）



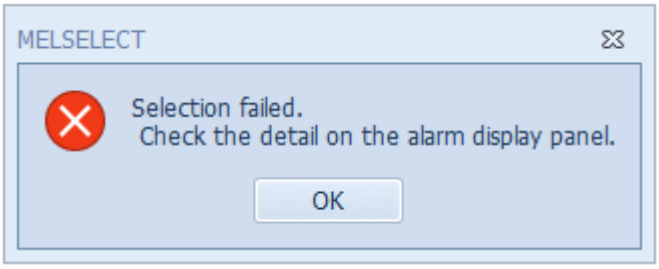
(3) When short-circuit current calcualtion was completed without any problem, “Selection was successful.” is displayed in the middle.



(4) After calculating short-circuit current, click [Calculation result] to show the calculation results in drawing area. To show selection results, click [Selection result]. (Refer to chapter 3.2)



(5) When short-circuit current calculation has some problems, “Selection failed.” is displayed in the middle.



(6) In the case of (5), error message is displayed at the bottom. According to the error message, change parameter.

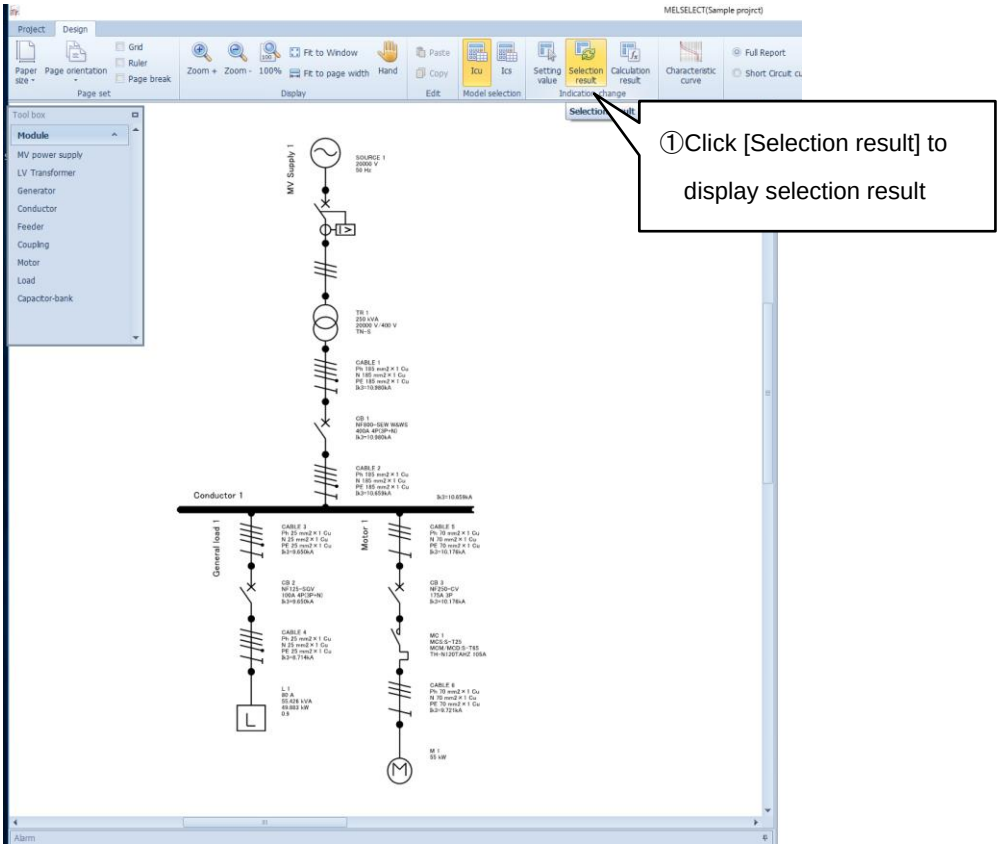
Table 4. Examples of error messages

Examples of error messages	Examples of solutions
Secondary current is less than sum or load current	Since secondary current is too small, change transformer capacity.
	Since load current is too large, change load current.
Failed to acquire breaking capacity.	There is no suitable model, change calculation condition.

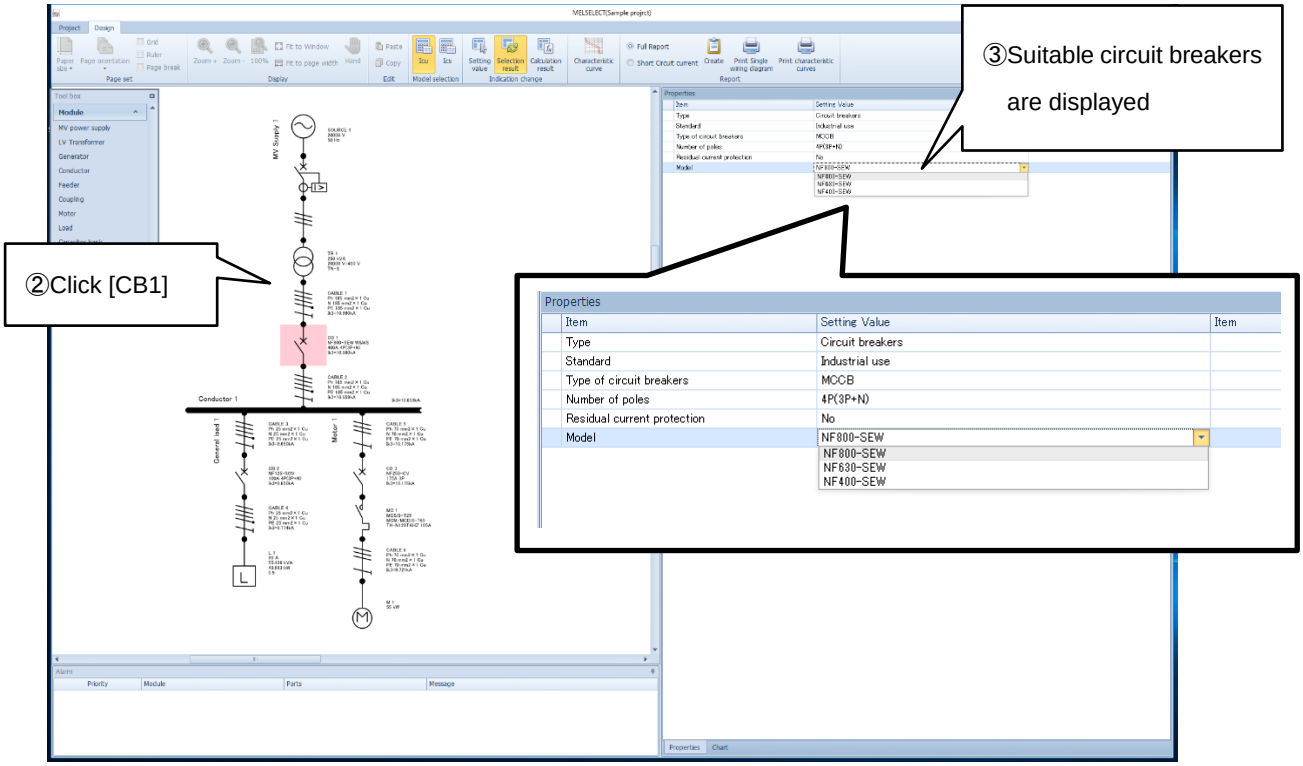
(7) When you change parameter setting after short-circuit current calculation, calculation results and selection results will be cleared. Calculate by [Icu] or [Ics] again.

3.2 Select model

(1) After short-circuit current calculation (Chapter 3.1), click [Selection result] to show selection results of each circuit breaker.

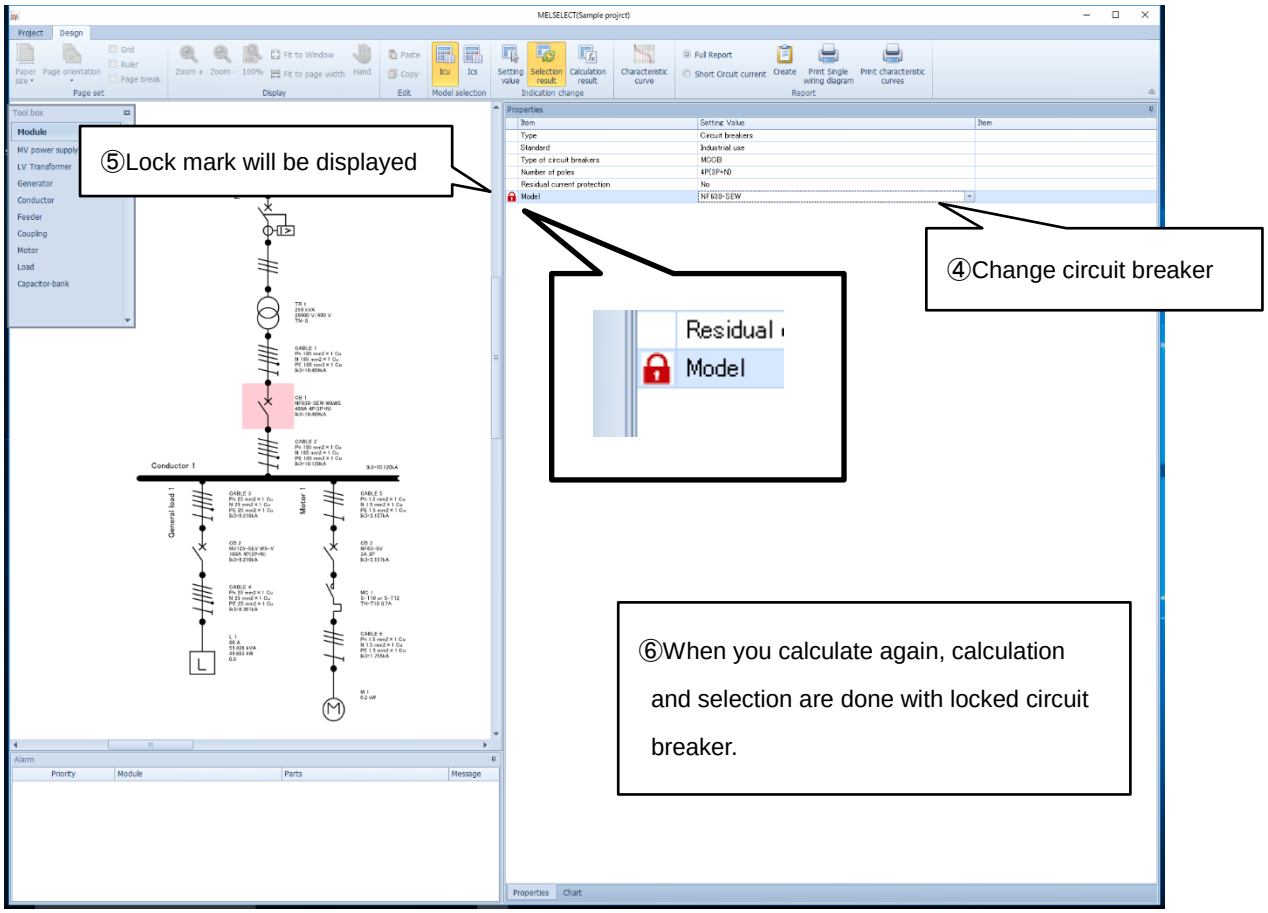


(2) Depending on calculation results, multiple circuit breakers can be selected.
Click the circuit breaker (ex: CB1) and select suitable circuit breaker from “Model” of Properties on right sub-window.

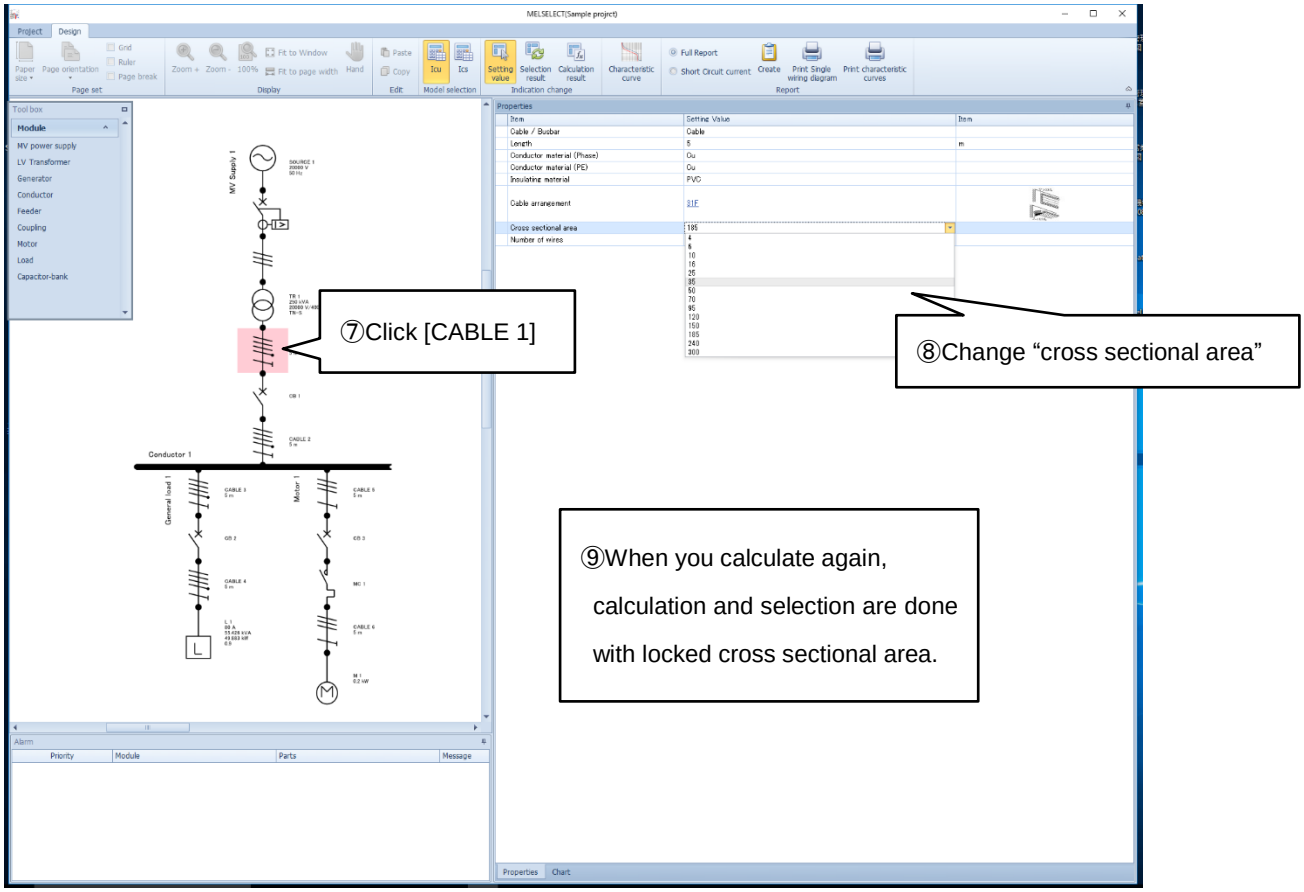


Moreover, if you select circuit breaker manually, lock mark will be displayed. And if you click [Icu] or [Ics] for calculation again, calculation and selection will be done with the selected circuit breaker.

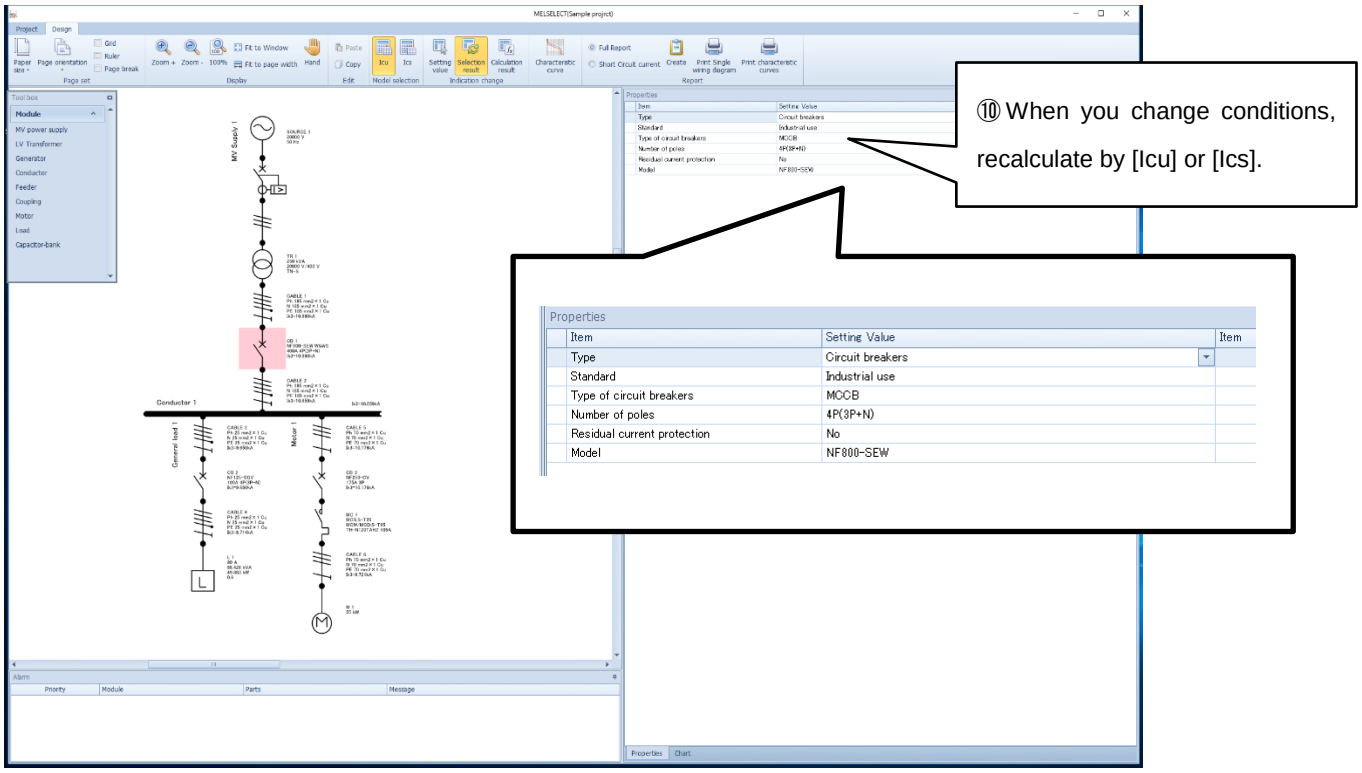
Note. If you click the lock mark again, it will be unlock.



(3) Cable/Busbar can be locked as same as circuit breaker.



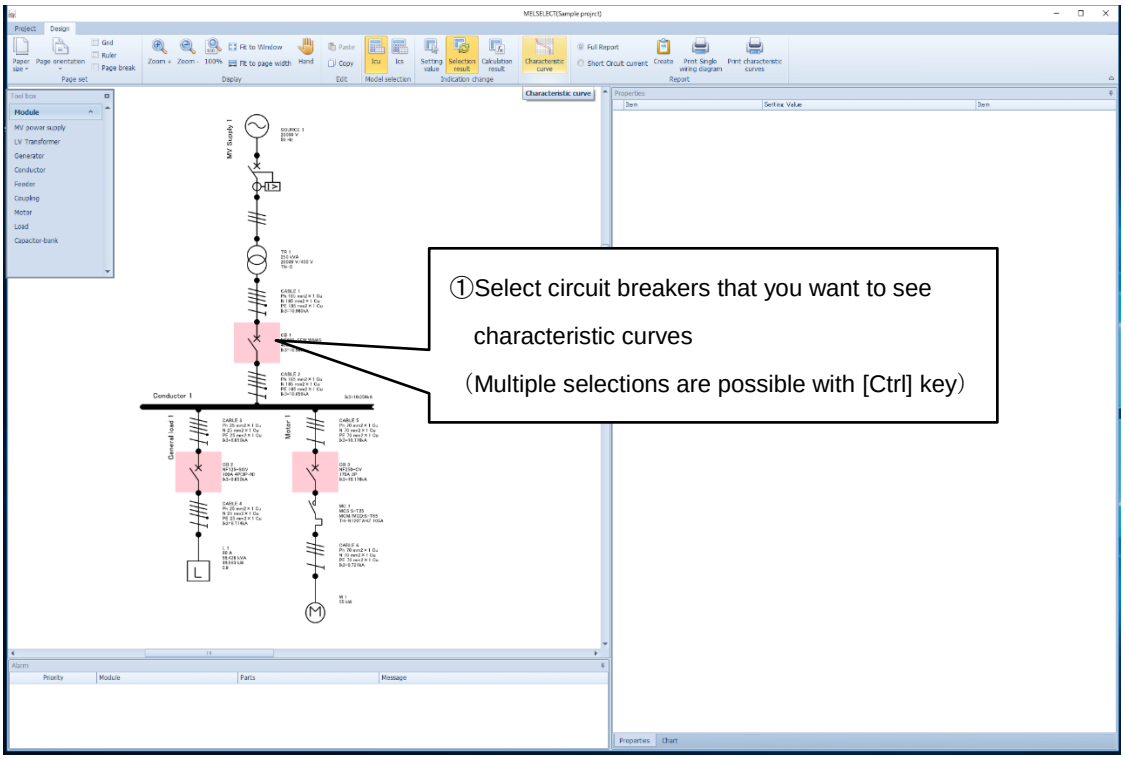
(4) Besides, when you change “Residual current protection (Yes/No)”, “ACB/MCCB” and other elements, recalculate by [Icu] or [Ics] and reselect.

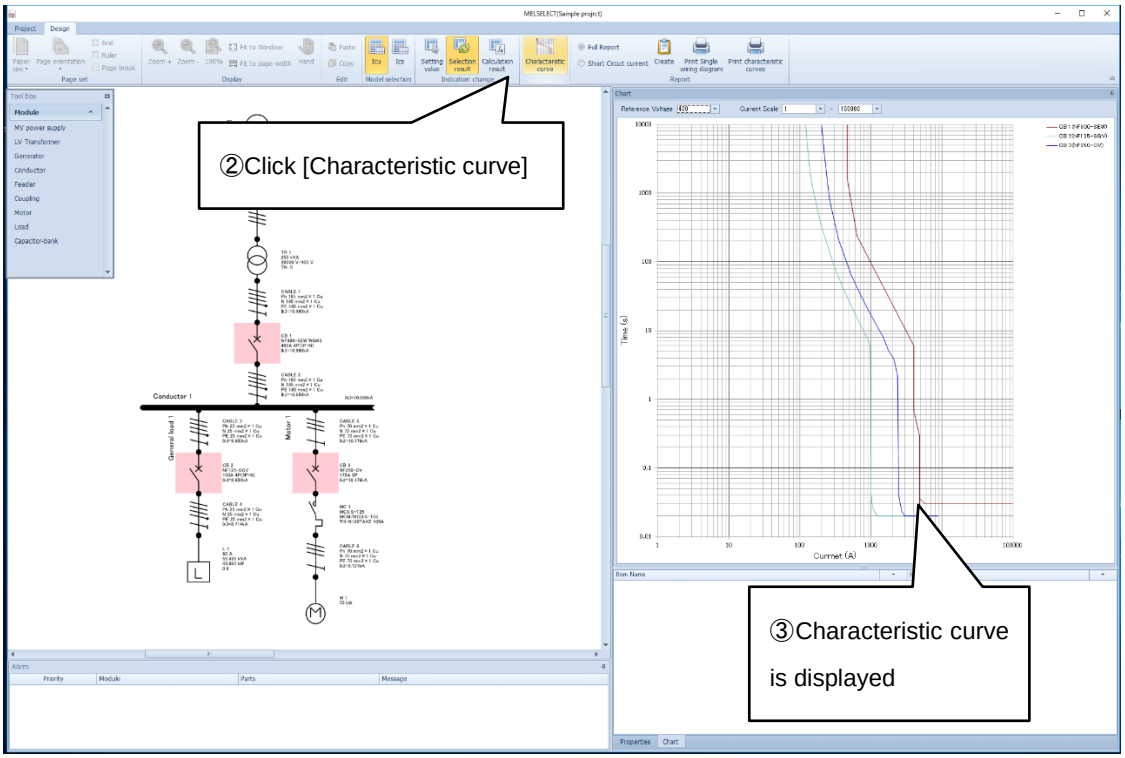


3.3 Display characteristic curve

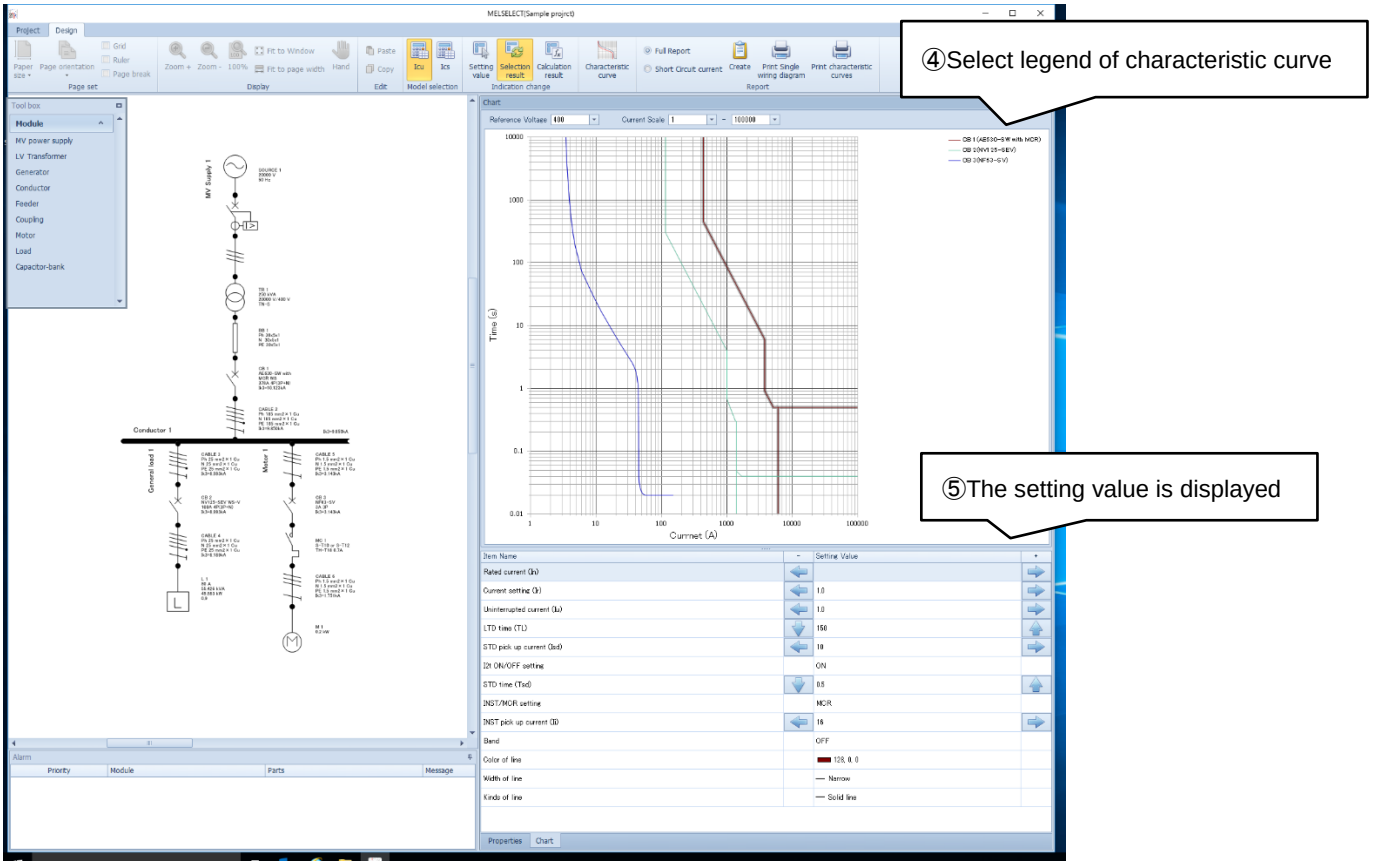
(1) MELSELECT enables to display characteristic curve of selected circuit breakers and you can check coordination between circuit breakers.

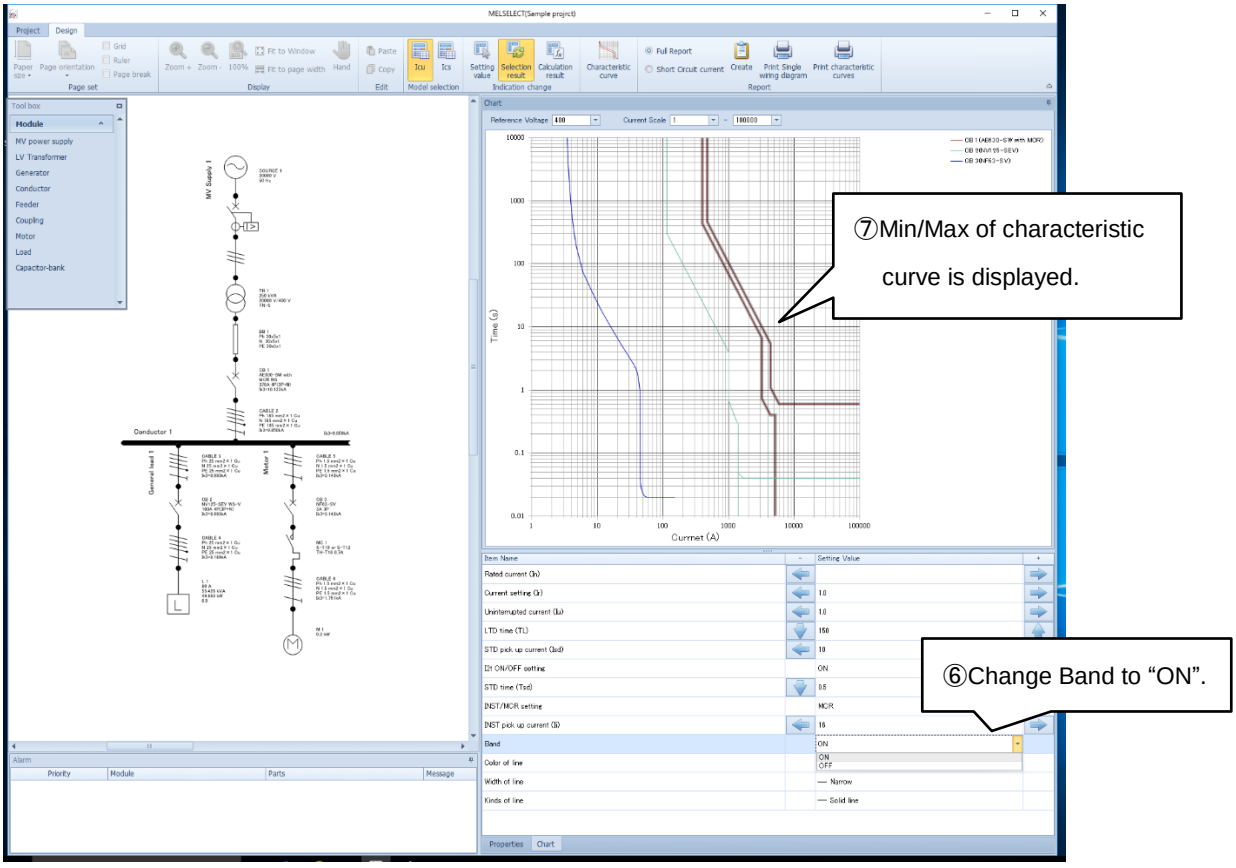
(2) According to selection results, select circuit breakers that you want to display characteristic curves by pressing [Ctrl] key and click [Characteristic curve]. Then characteristic curves are displayed on right side. （It is possible to show up to 10 characteristic curve）



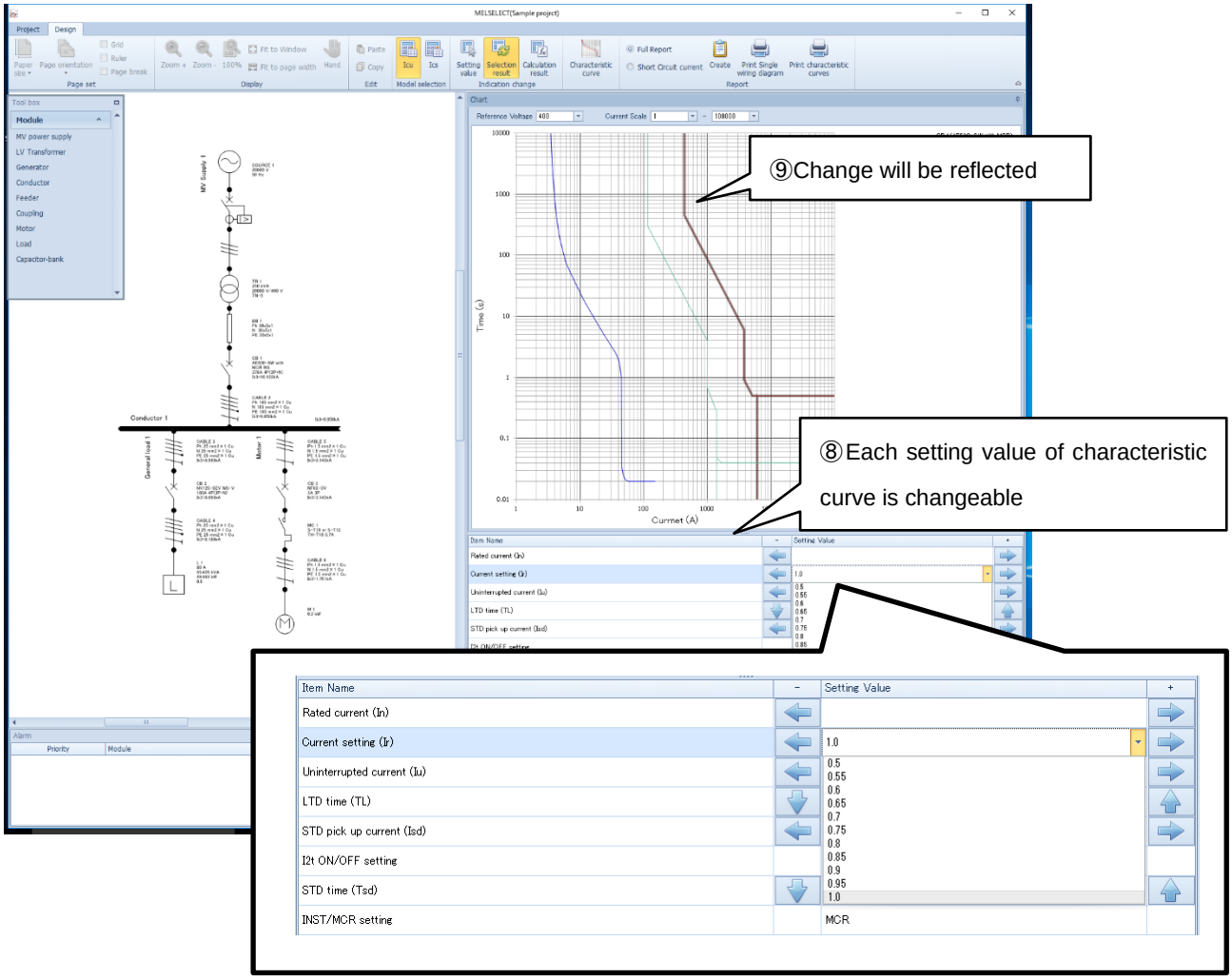


(3) The default of characteristic curve is central value. If you want to change characteristic curve to Max or Min, select the legend of characteristic curve, change Band to “ON” and change the value.





(4) When selected circuit breaker is adjustable-type, it is possible to change each setting value of characteristic curve. Change the setting value and it will be reflected to the characteristic curve.

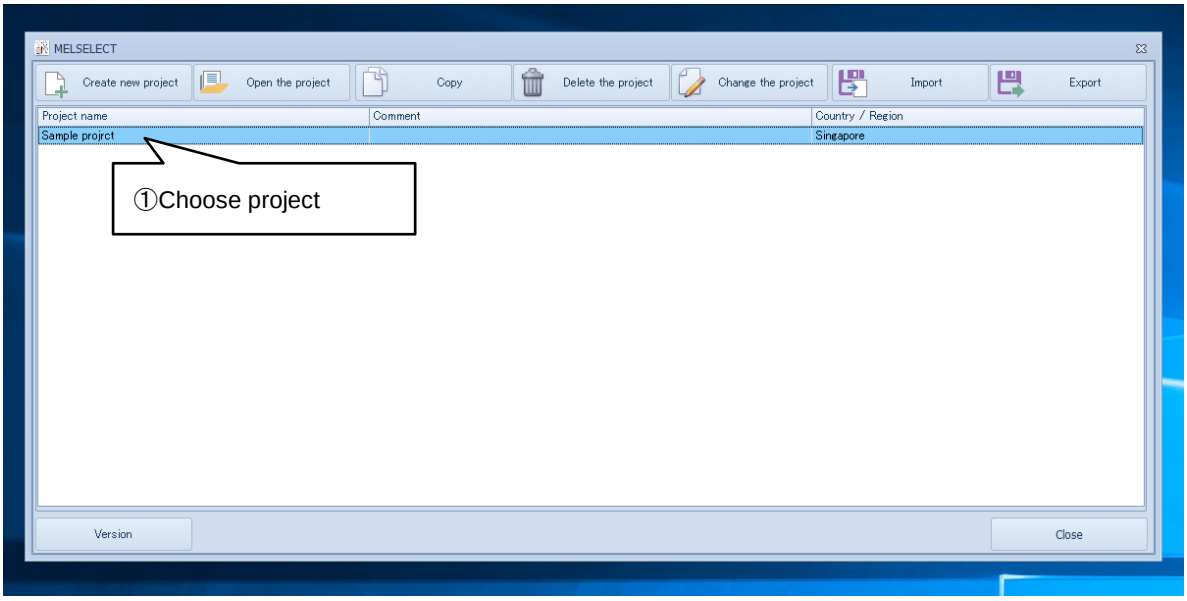


4. Generate report

4.1 Preparation for report generation

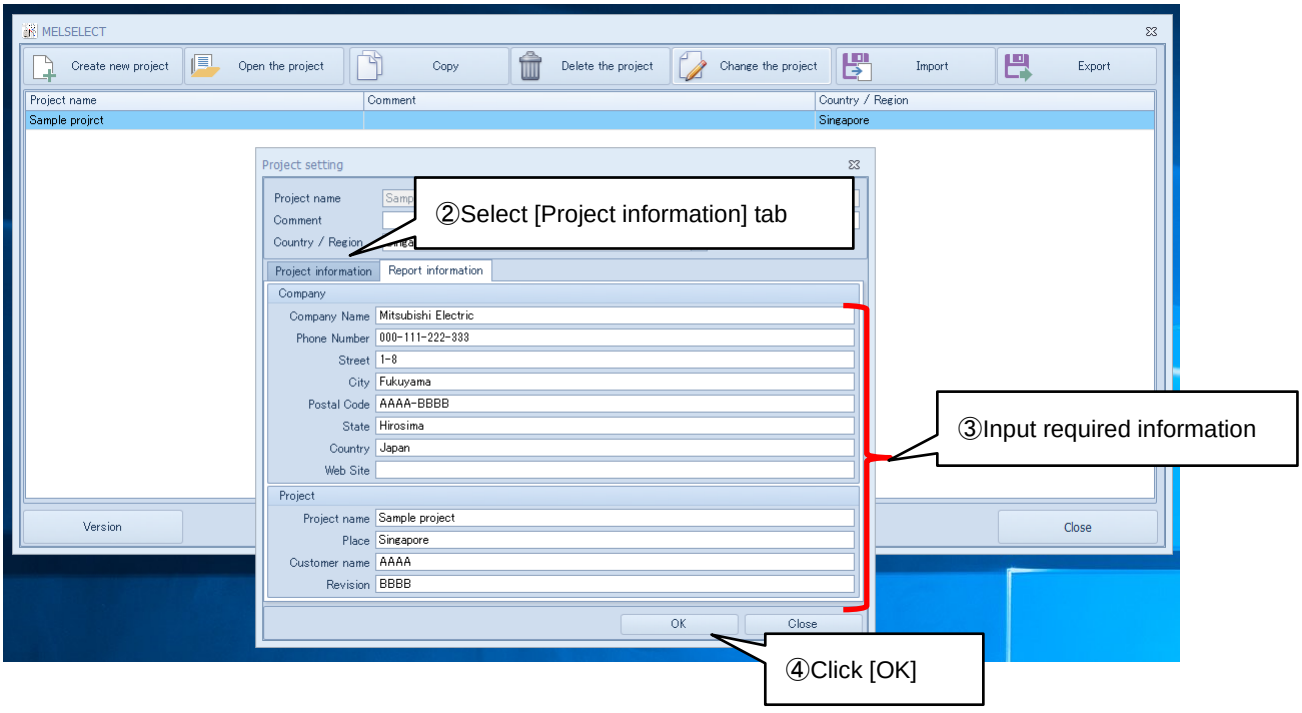
MELSELECT enables to generate report of short-circuit current calculation, model selection result and characteristic curve. For preparation, you need to enter Report information such as company name and project name.

(1) Click [Project] tab on left side, save the project and back to the project screen Chapter 2.1.



(2) Click the project and select [Report information] tab in Project setting window.

(3) Enter project information such as “Company Name” and “Project name” in Report information.



(4) Click [OK] button.

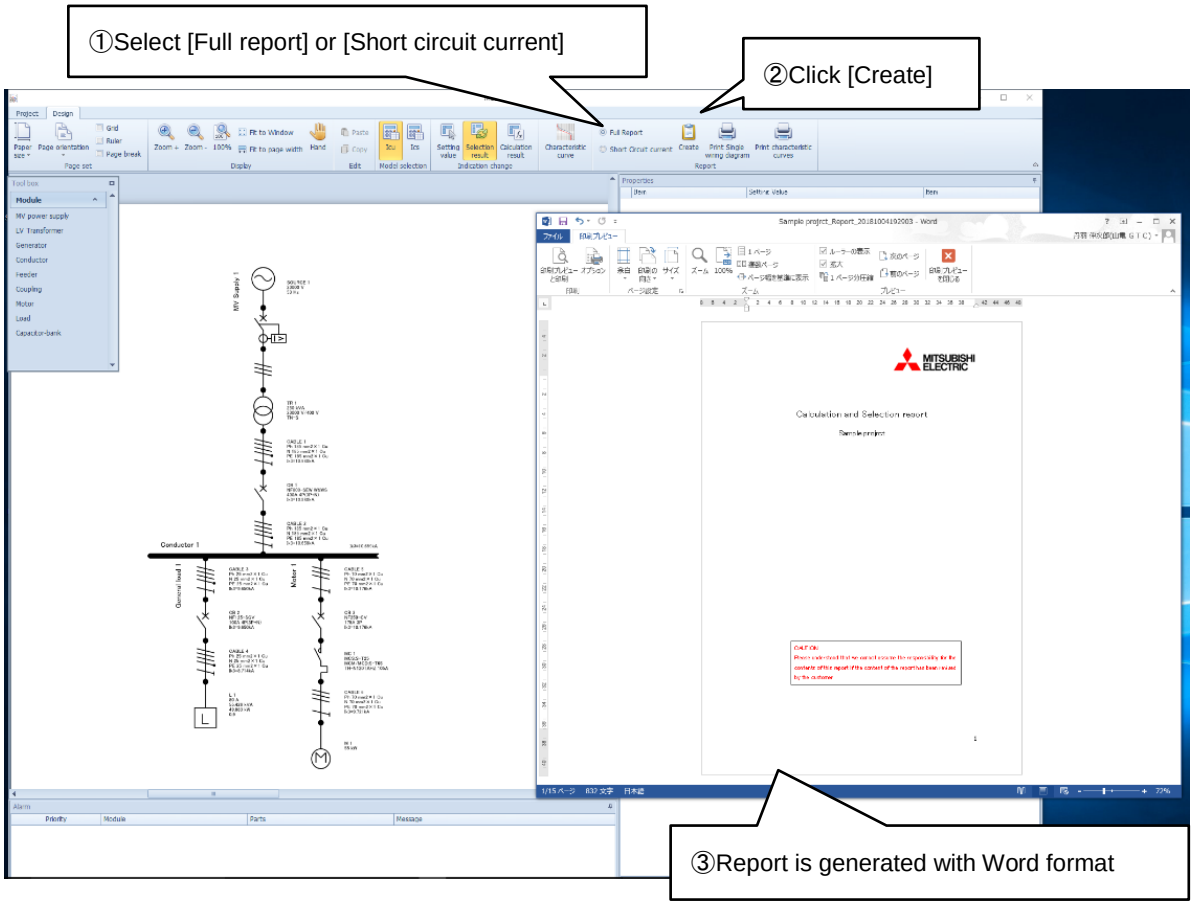
4.2 Report of calculation and selection result

(1) Check whether [Full report] or [Short circuit current].

Table 5. Report types

	Short-circuit calculation results	Model selection result
Full report	○	○
Short circuit current	○	—

(2) Click [Create] in Report section on upper side, and the report of short-circuit current calculation results and model selection results are automatically generated.



(3) Report is created as following file name

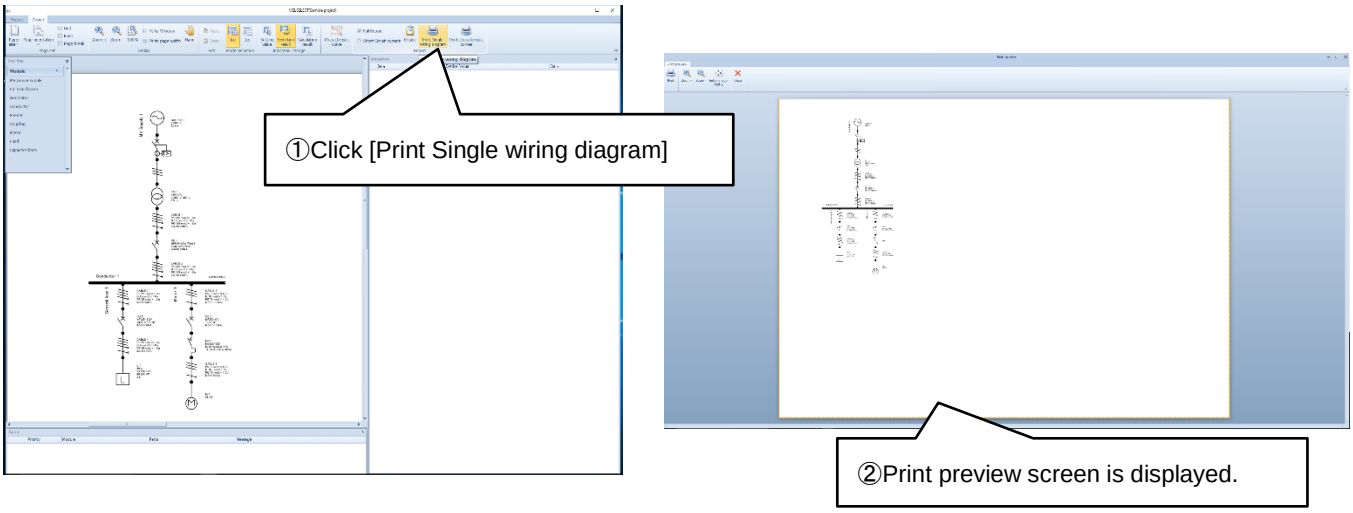
Table 6. File name of reports

	File name
Full report	[Project name]_Report_yyyyMMddHHmmss.docx
Short circuit current	[Project name]_ShortCircuit_yyyyMMddHHmmss.docx

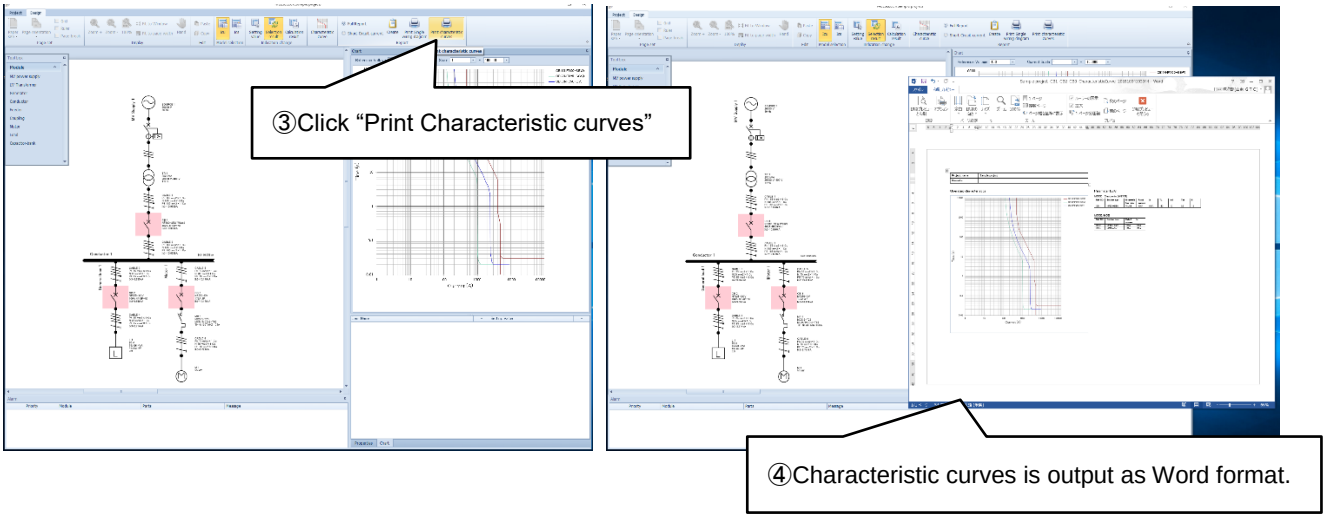
4.3 Print single-line diagram and characteristic curve

MELSELCT enables to print single-line diagram and characteristic curve as related materials.

(1) Click [Print Single wiring diagram] in Report section to print created single-line diagram and click [Print].



(2) Click [Print Characteristic curves] in Report section to print created characteristic curves as Word format and click [Print].



(3) Created characteristic curve is saved as following file name

[Project name]_CharacteristicCurve_yyyyMMddHHmmss.docx

5. Appendix

5.1 Troubleshooting

No	Contents	Cause and solution
1	MELSELECT does not work	Check if OS is Windows 10.
2		Check if it is Microsoft .NET Framework 4.6.
3		Your OS language may be incompatible. Change the language setting to English and try again.
4		The download may have failed. Download it again.
5	When calculating short-circuit current, error occurs	Change the setting condition referring to the error message.
6		Make sure each element is correctly arrange and connected.
7		There might be no suitable model. Reconsider the calculation conditions.

■Service Network

Country/Region	Corporation Name	Address	Telephone
Australia	Mitsubishi Electric Australia Pty. Ltd.	348 Victoria Road, Rydalmere, N.S.W. 2116, Australia	+61-2-9684-7777
Bangladesh	PROGRESSIVE TRADING CORPORATION	HAQUE TOWER,2ND FLOOR,610/11,JUBILEE ROAD, CHITTAGONG, BANGLADESH	+880-31-624307
	ELECTRO MECH AUTOMATION& ENGINEERING LTD.	SHATABDI CENTER, 12TH FLOOR, SUITES : 12-B, 292, INNER CIRCULAR ROAD, FAKIRA POOL, MOTIJHEEL, DHAKA-1000, BANGLADESH	+88-02-7192826
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France	Mitsubishi Electric Europe B.V.	25, Boulevard des Bouvets, F-92741 Nanterre Cedex	+33 (0) 1 / 55 68 55 68
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