



Aluminum Frame Structure Design Software

MISUMI
FRAMES Master Book

[Before using Frames]

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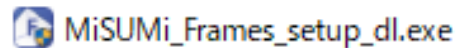
To use Frames, you will need to install software.

*Please refer to the details for the recommended environment (⇒ P28)

Operating Procedure

Run Misumi_Frames_setup_dl.exe

*Administrative privileges may be required.



Proceed with the installation according to the screen.

-Attention.

- If you are not up-to-date with Windows Update,
- you may not be able to install the software correctly.
- Please do so while connected to the Internet.
- You will need to download the necessary files during installation.
- Do not execute any files other than the installer during installation. It may not be installed correctly.

Header menu

There are File, Tool, Help, Intermediate File Output, Drawing Creation, and Parts List Output/Quotation menus.

Parts Selection List

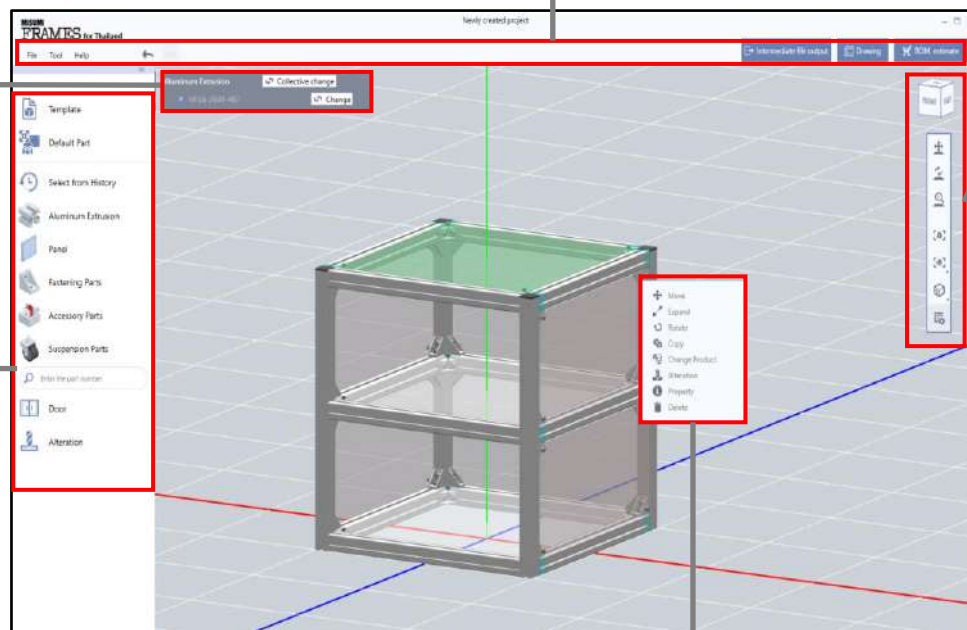
You can check and change the products you have placed. You can also adjust the display size of the frame.

Insert Menu

Select and insert a template or component from the list. Model number search is also available.

Part Edit Tool

Used when editing a selected part. It is displayed when a placed part is selected, and the display location can be moved to a right-clicked point.



Camera Control

Area used for camera operations such as viewpoint changes and movement.



View Control
Change the viewpoint with selected surface.



Pan
Switches the camera to move mode



Rotate
Switch the camera to rotate mode



zoom
Switch the camera to zoom mode



Screen Fit
All drawing objects fit Displayed to scale.



Change view
Dimensioning/fastening parts in focus
The display will be shown.



Guide shape
Use for Display and Non-Display Guide data or Grid line



Configuration
Default Part, Mouse Operation, Shortcut Key, etc.

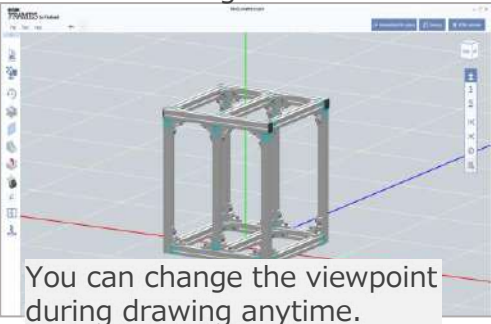
3: Mouse operation

In FRAMES, the design is displayed on the 3D screen.

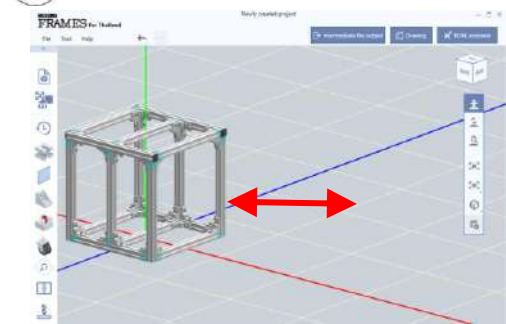
Firstly, please check basic viewpoint operations on the 3D screen.

Operating Procedure

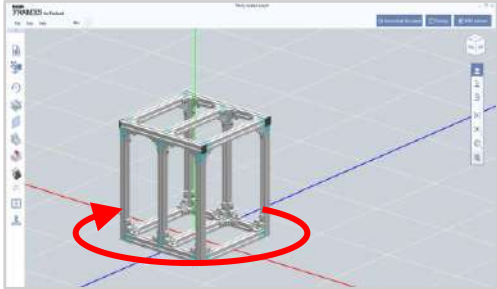
Basic screen
e.g: Frames standard



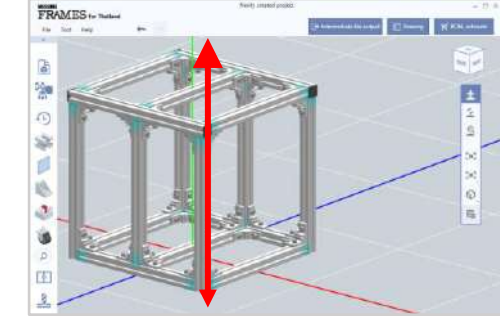
Move the viewpoint by dragging the mouse scroll wheel.



Rotate the camera by dragging the right mouse button.



Zoom in/out of the camera by using the mouse scroll wheel up and down.



- Hint -

Mouse operation settings can be changed.

[How to check/setup]
Click on "File" menu in the upper left corner of the screen
→Select Configuration.
→Select Mouse Operation.



8 mouse operation patterns are available. Please select according to your preference.

1	Frames Standard
2	SOLIDWORKS like
3	CATIA like
4	NX (NX9 or later) like
5	NX (NX10 or later) like
6	iCAD like
7	Creo (Pre Pro/E) like
8	Inventor like

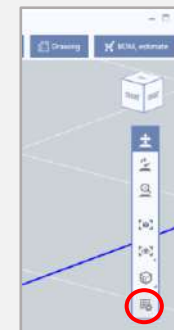
Settings can be changed in Configuration menu.

You can change mouse operation to suit your CAD system or set the default settings for frequently used components.

The default settings for the most frequently used parts will make it easier to use.

- Hint -.

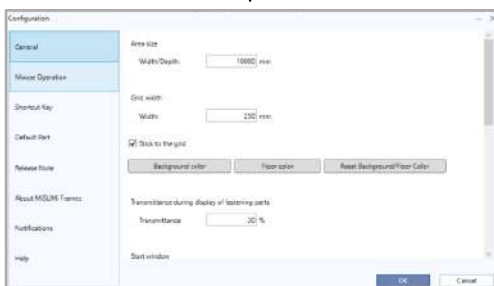
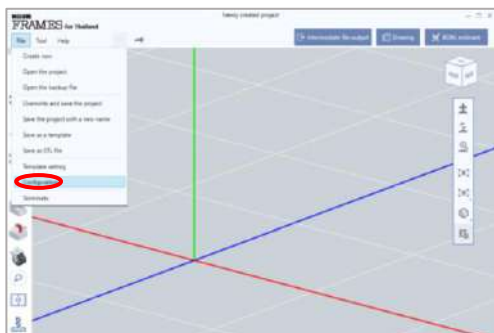
You can open the settings screen from the camera control area.



Operating Procedure

(1) Display Configuration

Select "File" menu in the upper left corner of the screen
→ Configuration
→ Select each item



(2) Change settings

<Item Summary>

General	Set the area size, grid width, projection method and other settings related to the screen display at the time of drawing and set the tutorial to be displayed again.
Mouse operation	Set the mouse operation assignments for camera control operations.
Shortcut key	Set shortcut key assignments for operations such as saving files.
Default Part	Set the parts that are inserted by default and the fastening method for panels that are inserted automatically.
Release notes	You can check release notes information.
About MiSUMi Frames	You can check notices of campaign information and maintenance information.
Help	You can check links to various types of support.

Basic operation

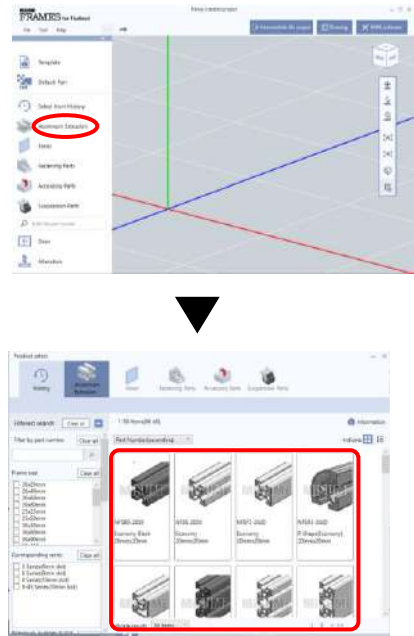
Select Aluminum Frame and easily insert on the screen by selecting and clicking on start and end points.

Brackets and other fastening parts are also automatic placement.

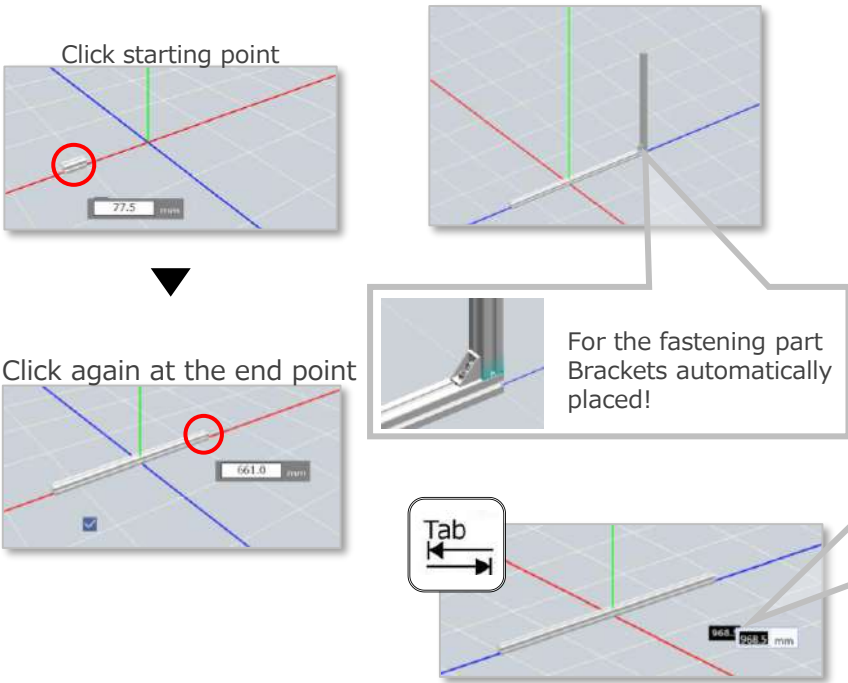
Operating Procedure

(1) Aluminum Frame Selection (2) Placement

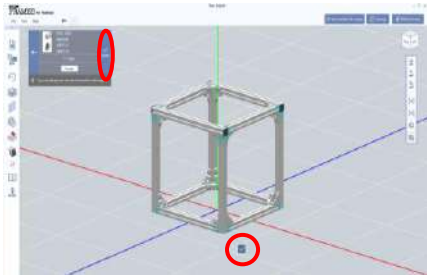
Select Frame from "Aluminum Frame" in Insert menu.



Click start and end points, then click place Aluminum Frame

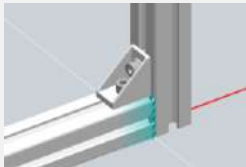


(3) Completion
Click "Finish" button to exit placement mode



- Hint -
The placement of products is supported by 3 different color displays.

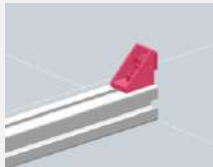
(1) Blue
Correctly fastened part



(2) Orange
Locations to be adsorbed in alignment



(3) Red
Error location



Bracket/Corner Bracket/Blind Bracket/
Joint/Sheet Metal, etc. are available.

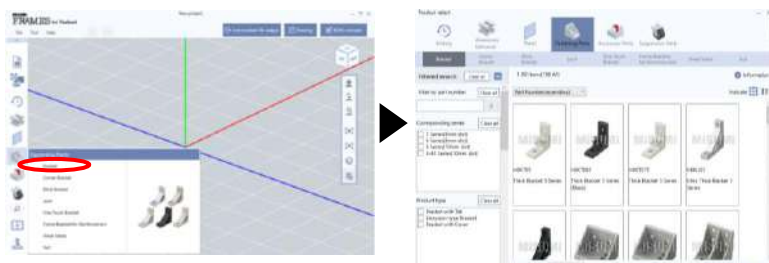
Nut can be inserted by itself.

Operating Procedure

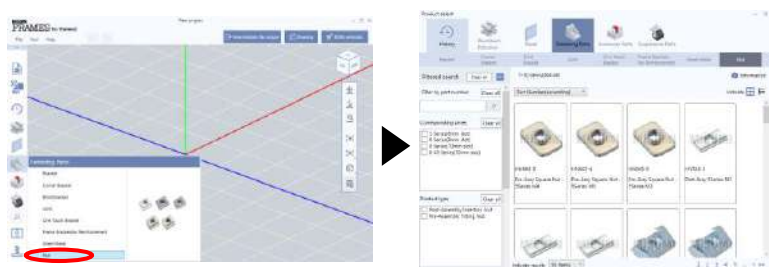
(1) Select Fastening parts

Select the product from Insert menu

Example: Bracket selection screen



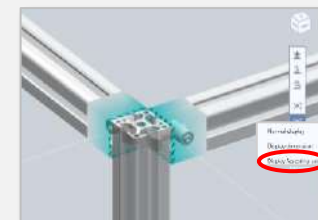
Example: Nut selection screen



- Hint -

Inserted joints, etc. can be confirmed in the "Display fastening parts" in the camera control tool.

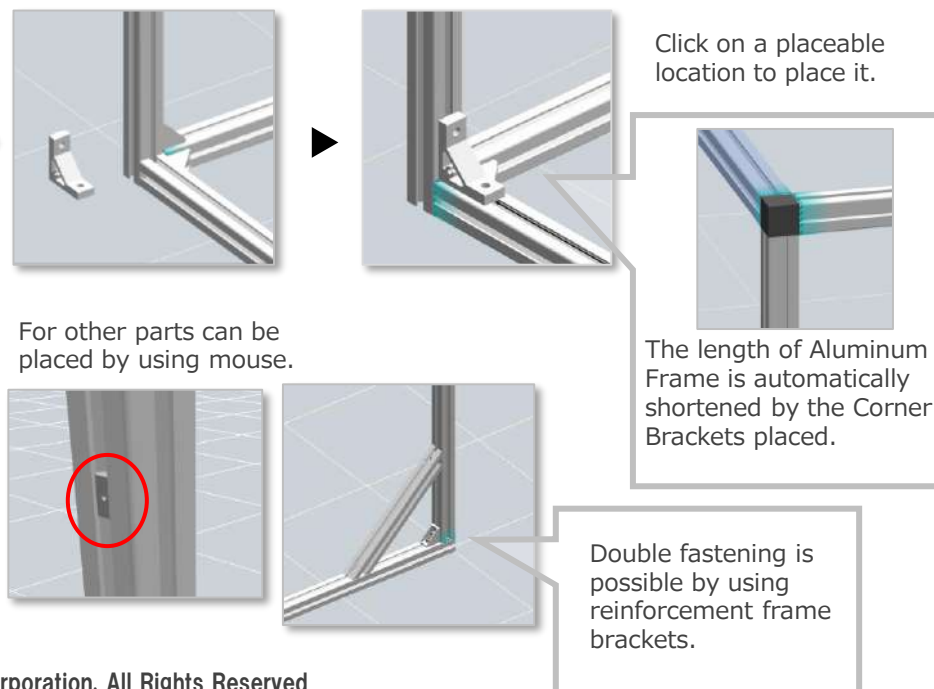
When clicked, the fastening parts are Highlighted and Other parts are transparent



(2) Placement

When mouse cursor close to Aluminum frame, it will be absorbed in the position where it can be inserted, so click at the position where you would like to place it.

*Brackets can only be placed where they are connected to 2 Aluminum frames.

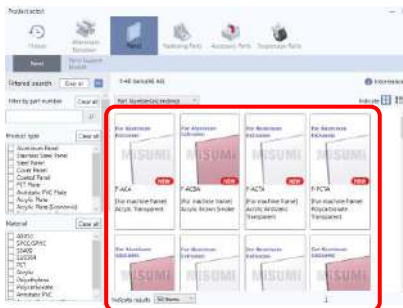
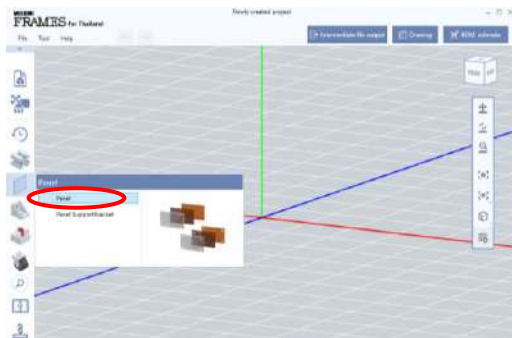


In FRAMES,
Easy to insert Panel

Operating Procedure

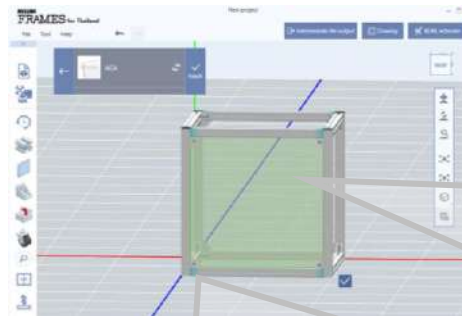
(1) Panel selection

Select Panel from Insert menu



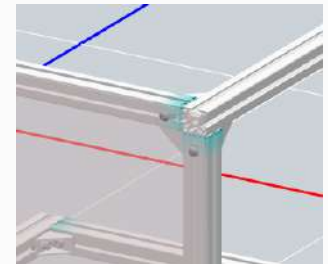
(2) Placement

Click on surface to place Panel

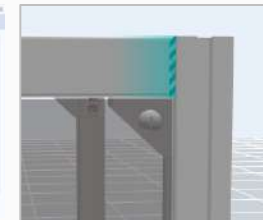
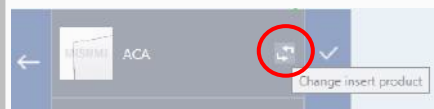


Panels can also be inserted onto end surface of Aluminum Frame.

(Bolts are placed avoiding the end surfaces.)



In placement mode, can click "Change insert product" button to change panel clearance or thickness or select bolts, nut, brackets, etc.



Once panel is in place, the additional machining on fastening parts and placement of necessary parts are also available.

This is done automatically and reflected in the BOM.

- Hint -.

You can change the fastening method from the change panel screen.

[Possible Fastening Methods]

- Bracket fastening
- Panel Clamp Fastening
- Aluminum Frame Fastening
- Door frame fastening
- Sliding door frame fastening



With FRAMES, you can quickly design door by simply selecting the minimum necessary parts.

No need to set Clearance.

You can select the type of door; One hand door, Double door, Folding door, Panel door, and Panel double door

- Hint -.

You can select how to insert door unit

Insert as an door assembly → you can edit on this function after insertion.

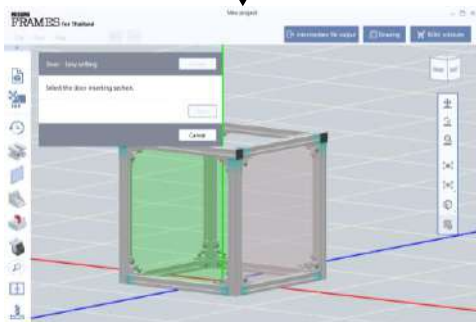
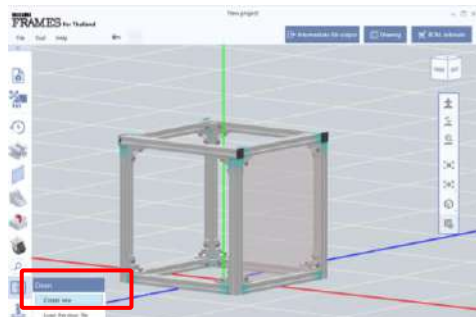
Inserted as an each parts → you cannot edit the door with this function again.

Please select according to your application

Operating Procedure

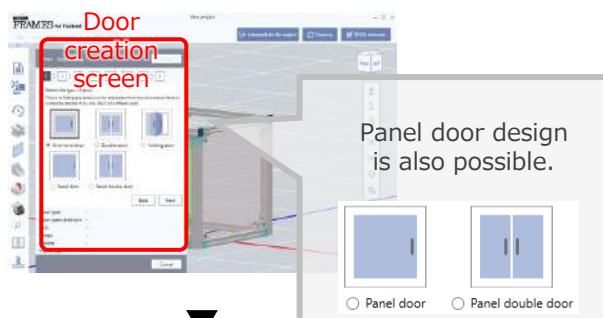
(1) Select surface to insert the door

Select "Create new" from Door in Insert menu, then select surface which the door will be placed.



(2) Select the type of door

The door creation screen is launched.
First, select the door type.

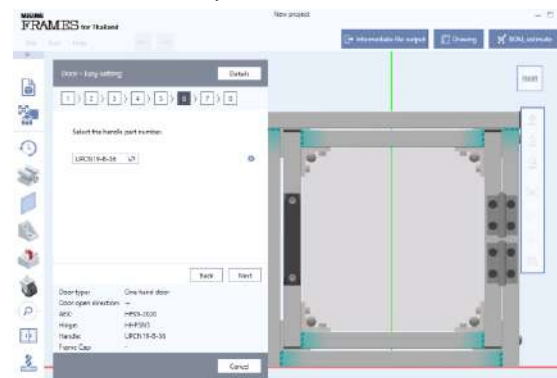


Please select the door opening direction

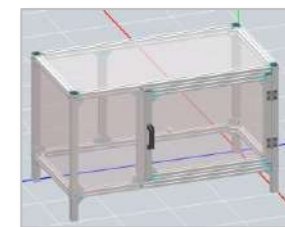


(3) Selection of essential parts

Select products such as Aluminum frames, Hinges, Handle, Frame Cap. The selected products will be placed automatically.



Check the automatically created door and if there are no problems, click "Insert". It will be placed as is in the 3D screen.



*If you would like to edit it further
See in Detailed Settings in (⇒ Advanced Operations, P.23)

Various accessory parts for design such as Frame cap/Slot cover/Handle/Hinge/Magnetic catches, etc. are available.

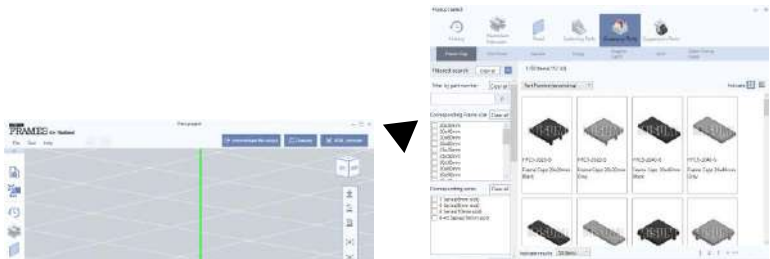
It can be selected and arranged from the screen same as Aluminum Frame placement.

Operating Procedure

(1) Accessory Parts Selection

Click on "Accessory Parts" from Insert menu, then select a desired product.

Example: Frame cap selection screen

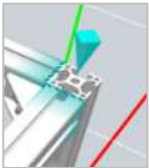
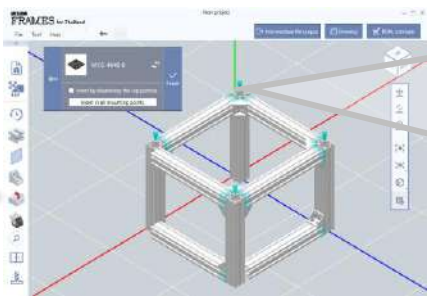


Example: Handle selection screen



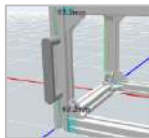
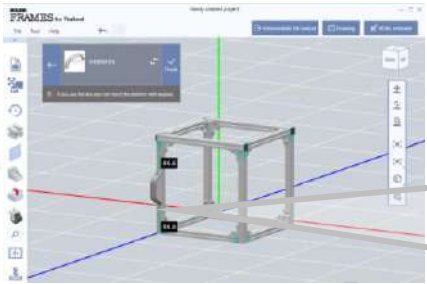
(2) Placement

Intuitive product placement is possible according to various placement methods.



Triangular pyramid mark will be shown on possible placement locations. Click on Triangular pyramid mark to place Frame cap.

Or click again to remove Frame cap.

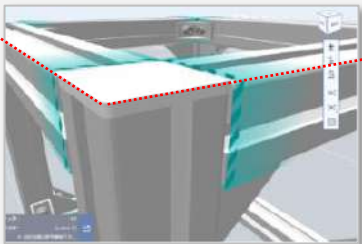


Click to place Handle where available for placement.

- Hint -

Frame caps can be installed by recessing cap thickness.

[How to change]
When placing Frame caps, tick in a box ☒ Insert by depressing the cap portion. on the upper left of screen.

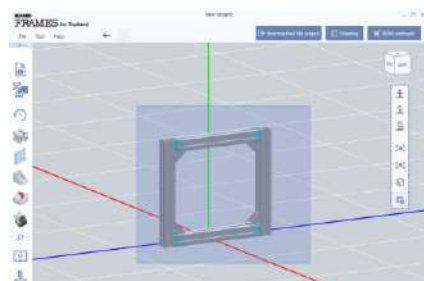


With FRAMES, the model number automatically follows as you edit the product.

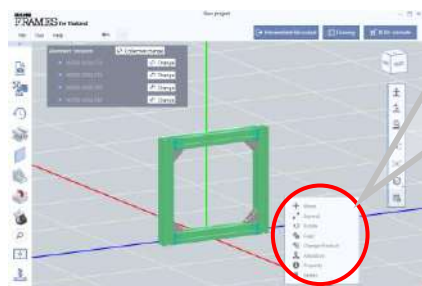
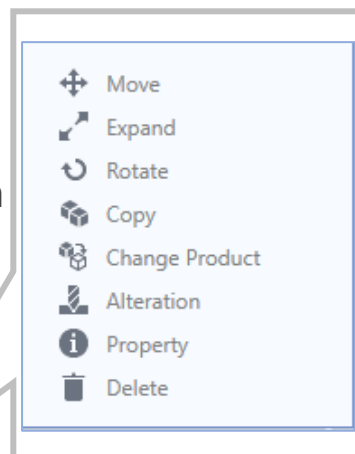
No troublesome model number management or modification work is required.

Operating Procedure

(1) Change the range of products by using mouse



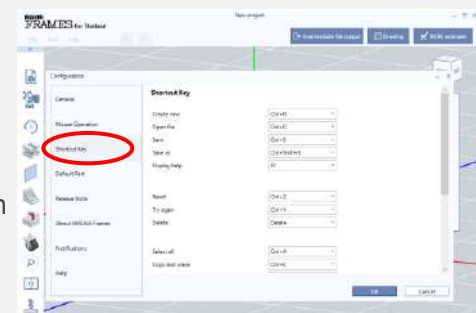
(2) Select a function from Part Edit Tool menu.



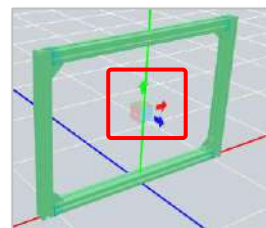
- Hint -

Various shortcut keys are also available for set up.

[How to check/setup]
Click on "File" menu in the upper left corner of the screen
→ Select Configuration
→ Select Shortcut Key

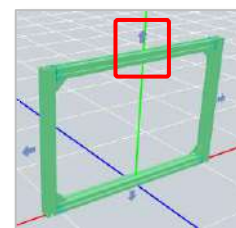


Movement



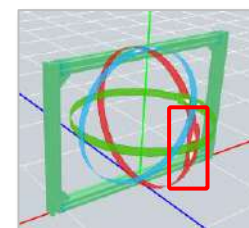
After specifying the direction of movement
Move by mouse operation

Expansion and Contraction



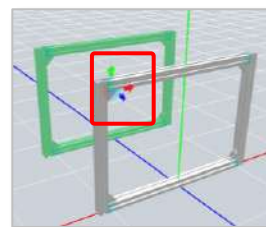
After specifying the direction of expansion and contraction
Expansion and contraction by mouse operation
(Full length and differential can be selected)

Revolution



After specifying the direction of rotation
Rotate by mouse operation

Copy and Place



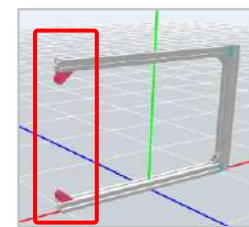
After specifying the placement direction
Placement by mouse operation

Product Information Details



Selected Product Information
Screen activated

Deletion



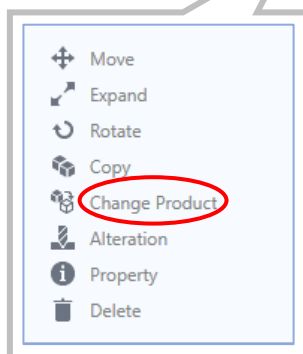
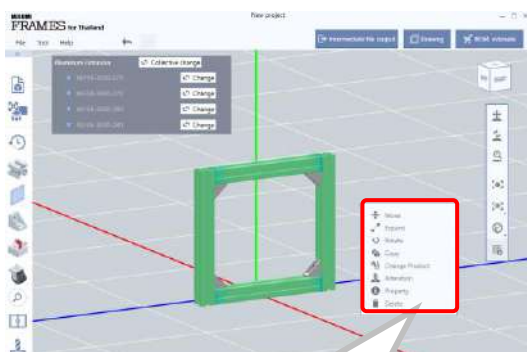
Delete selected parts

Easy to change the placed products whether single item or multiple items.

Operating Procedure

(1) Click on "Change Product"

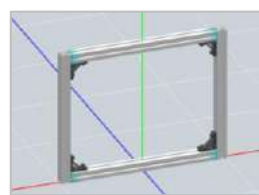
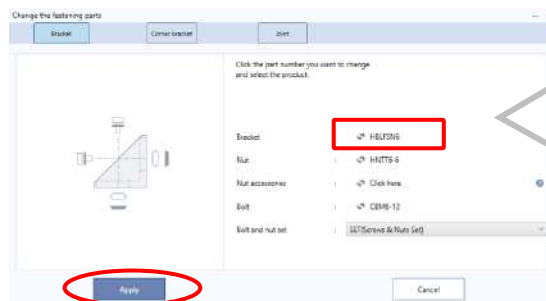
After selecting the product, click "Change Product" in the Part Edit Tool box.



(2) Select products

Select the product you would like to change, and the product selection screen will appear. After selecting the desired product, click "Apply".

Example: If you would like to change the bracket

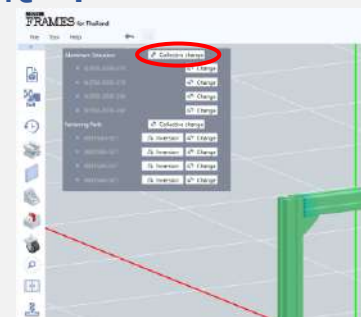


Change Complete

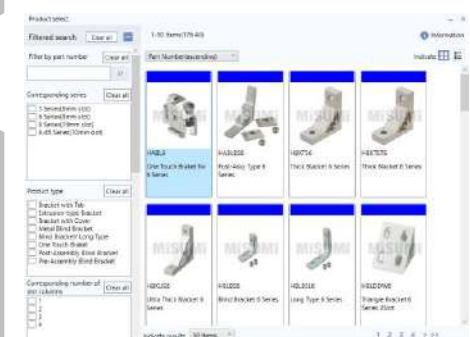
- Hint -

You can change multiple products at once if they are the same products.

After selecting a product, click on "Collective change" button on the products list screen. Then, selecting the desired product, and click "Apply".



Bracket Selection Screen



*Items that cannot be changed are displayed in red.

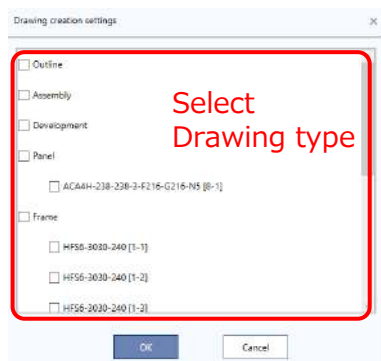
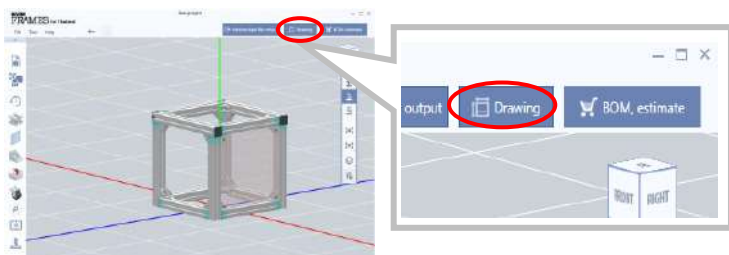
The design project is easily output to a 2D drawing.

You can select Dimensional drawings, Assembly drawings, Assembly development drawings, Panel drawings, or Frame drawings.

Operating Procedure

(1) Drawing selection

For Drawing output,
Click "Drawing" button from Header menu.
Then, select Drawing type that would like to output



Select
Drawing type

(2) Drawing creation

The specified drawing will be created.
*It takes some time to create drawing for the first time.

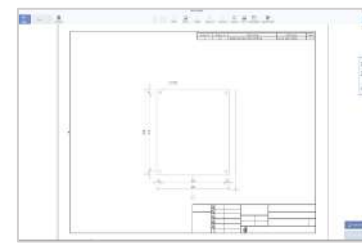
Dimensions (Outline)



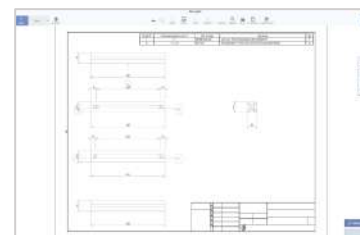
Assembly



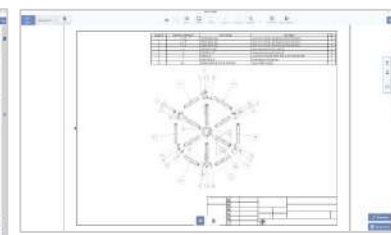
Panel



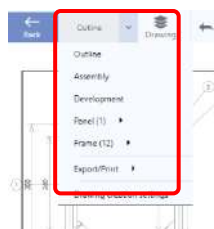
Frame



Assembly Development



You can switch to other drawings type by clicking "Outline" from Header menu.

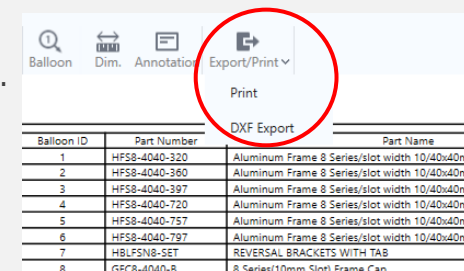


Drawing pages can be added by clicking on + button on the right side of the screen. You can also switch pages by clicking on the numbers.

- Hint -

2D Drawing can be printed or exported in DXF file format.

[Output Method]
Click Export/Print on
2D Drawing screen



You can edit Drawing by moving, changing scale or add Balloons, Dimensions, Annotations, etc.

Sectional views or Isometric Drawings can be also added.

Operating Procedure

After the Drawing is created, click on each edit function to edit the item.

Bill of Materials Editing

Change display items

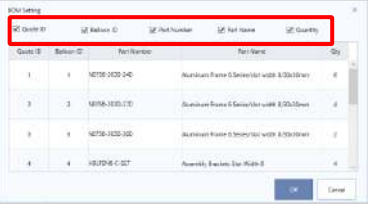
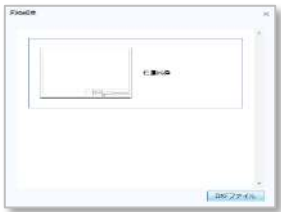


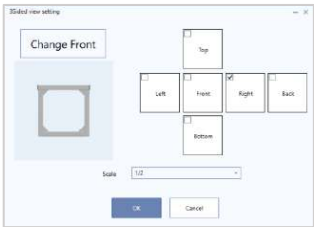
Figure Frame Editing

DXF import is also available



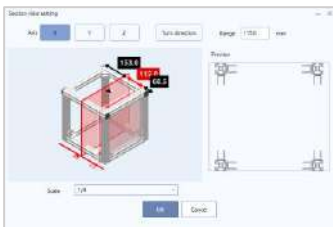
3 View Selection

Specify the view to display



Section view

View sectional 3D drawing



Isometric view

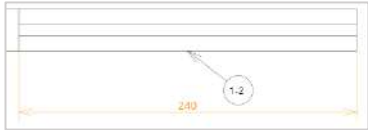
Can change side view and scale



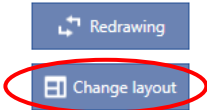
Balloons, Dimensions and Annotations

You can edit by clicking button from Header menu.

Example: Edit dimensions



You can click "Change layout" button from bottom right corner of the screen for editing Drawing size.

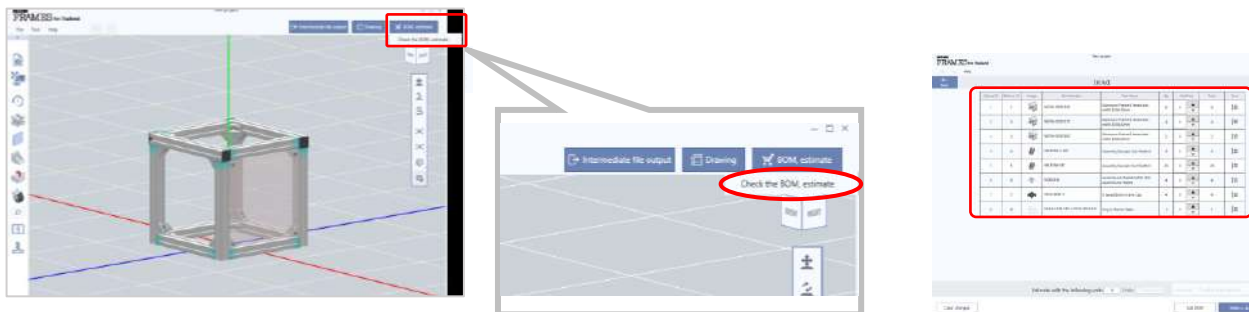


Display bill of materials for the design project.

Operating Procedure

View/Edit Bill of Materials

You can click "BOM, estimate" button from Header menu, for viewing part list.

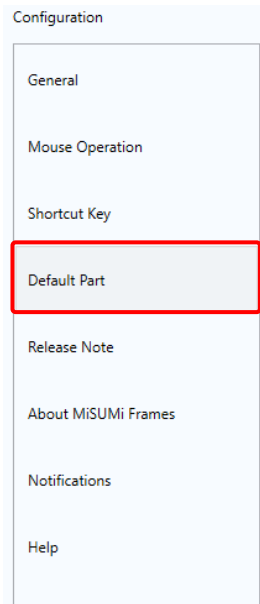
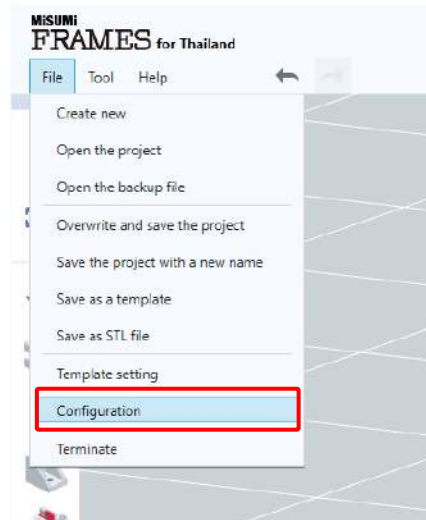


In Frames, you can set Default Part from configuration and it can be automatically inserted.

Please modify to suit your design.

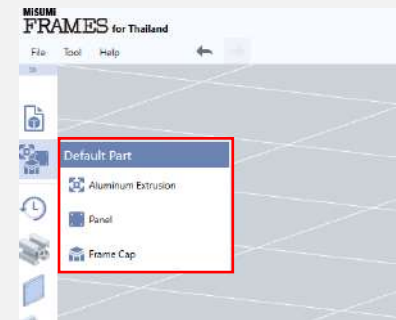
Operating Procedure

- (1) Select "Configuration" from "File" menu in the upper left corner.
- (2) Select "Default Part" in the upper left corner.



- Hint -

You can set Default Part from Insert menu.



Default part change

The following products can be set.

- Aluminum Frame
- Panel
- Frame Cap

Default Part		
Aluminum Extrusion		
Default aluminum extrusion	HFS6-3030	<input type="button" value="Search"/>
Panel		
Default panel	ACA	<input type="button" value="Search"/>
Panel fastening method	<input type="button" value="Bracket fastening"/>	
Frame Cap		
Default Frame Cap	HFC6-3030-B	<input type="button" value="Search"/>

Automatic Fastening part change

You can set parts that will be automatically fastened when placing Aluminum Frame. Please set it for each frame size.

- ① Select Aluminum Frame Series, Number of Slots and angles that you would like to set.
- ② You can set fastening parts for each placement method, and it will be saved.

Fastening parts		
① Method of setting the fastener parts		
Series	5	(1)
Number of Slot	1	
Number of angles	20	
Perpendicular placement	HBLFSN5	<input type="button" value="Search"/>
45 degree placement	-	<input type="button" value="Search"/>
Linked placement	-	<input type="button" value="Search"/>
Parallel placement	-	<input type="button" value="Search"/>
Cross placement	HBLFSN5	<input type="button" value="Search"/>
Bolt and nut set	SET(Screws & Nuts Set)	

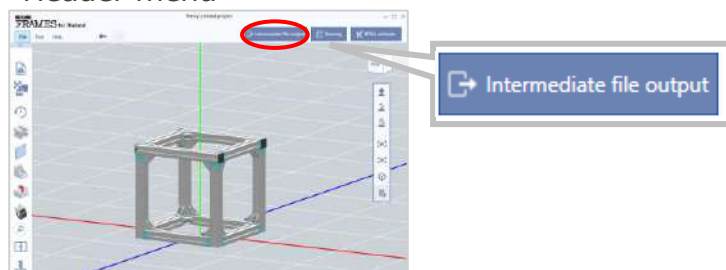
Advanced operation

With Frames, the design project can be output in Intermediate file format.

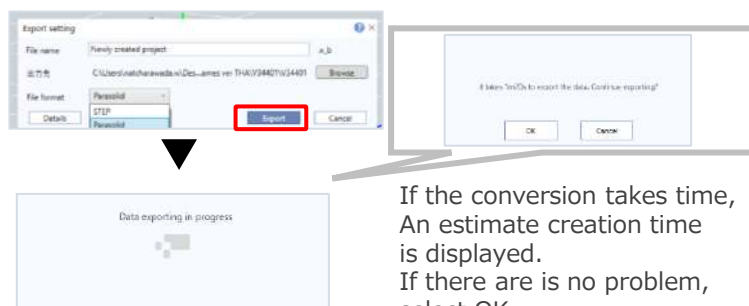
Operating Procedure

(1) Export

Click on "Intermediate File Output" in the Header menu



After selecting Output destination and File format, click "Export" button.
An intermediate file will be created.

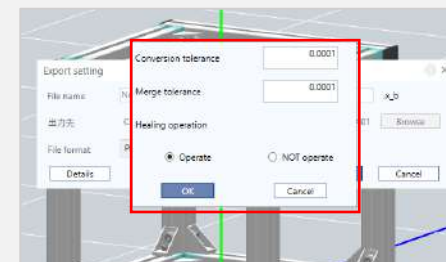


If the conversion takes time,
An estimate creation time
is displayed.
If there are is no problem,
select OK.

- Hint -

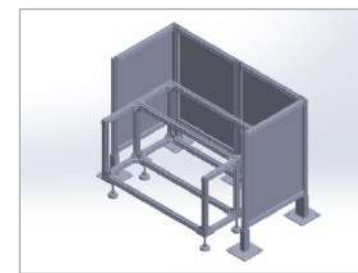
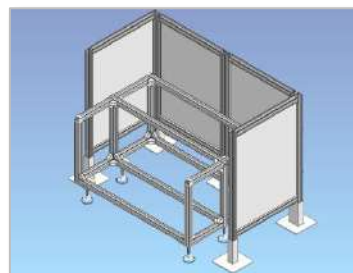
Conversion and Merge tolerance
of intermediate file can be adjusted.

*Default setting is recommended.



2) Operation with CAD

Please import the data into your CAD system



-About the specifications

■ Recommended Environment

- Same as Frames operating environment
(Excerpts from main recommended environments)
- OS : Windows 10 64bit
Windows 11 64bit
(edition: Professional , Enterprise)
- Graphics board : Quadro (NVIDIA)

FRAMES is not guaranteed to be used in virtual
environments such as Hyper-V and
VMWare. Please install the software on actual device.

■ Recommended CAD

- SolidWorks 2016/2017
- iCAD V7L5
- NX 11
- Inventor 2018

■ Output Format

- STEP format (AP214)
- Parasolid format (V9.0)
- *STEP format is recommended.

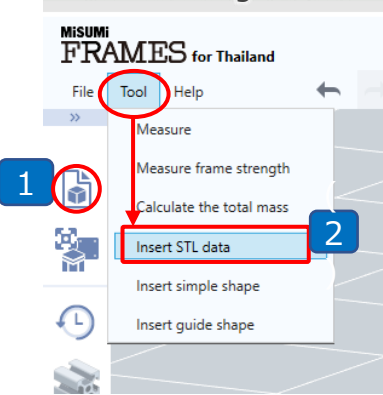
In Frames

You can insert templates and core equipment models.

Templates allow you to create your own frequently used by saving the shape as "My Units".

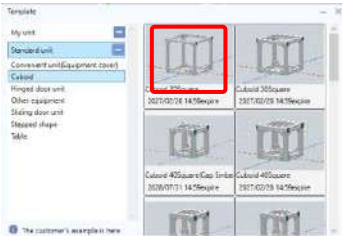
Operating Procedure

3D Drawing screen



(1) Template insertion

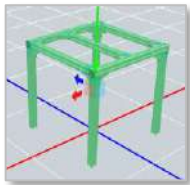
In "Template" in the Insert menu
Standard Units" or My Units. Click to select the shape.



Enter dimensions for placement

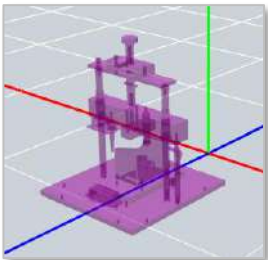


With dimensions reflected. The unit will be placed.

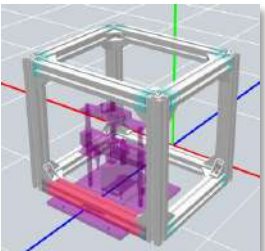


(2) Core equipment data insertion

Click "Insert STL Data" from Header menu to import STL format data and shape format.



If imported core equipment overlap with other part, it will be displayed in red.

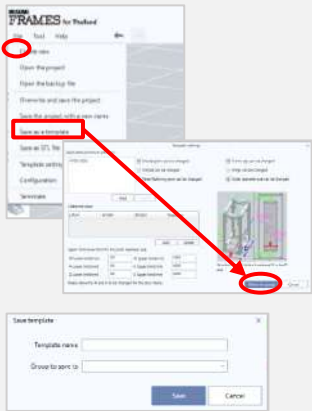


Save My Unit

Select "Save as a template" button
From File menu and click
"Save destination settings".

Input Template name and
select saved destination.

*For save destination, go to
"Group to save to" field,
You can create a new one by
directly input name.



In FRAMES, you can create a rectangle guide shape based on STL data such as equipment, and place Aluminum Frame along the guide shape.

Use for designing equipment covers and other equipment.

Operating Procedure

- Hint -

Guide shape can be displayed/hided at anytime.

[How to display/hide]

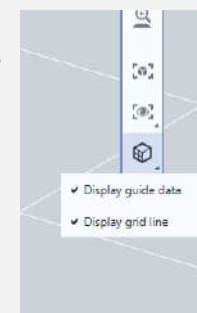
Click "Guide shape" on the right side of screen

Display guide data:.

→ Click for Display or Hide

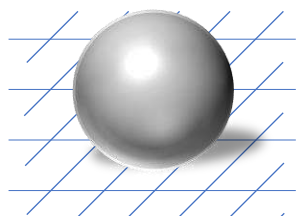
Display grid line

→ Click for Display or Hide

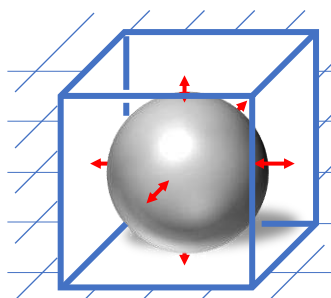


- Image of design using guide shape-

Load core equipment

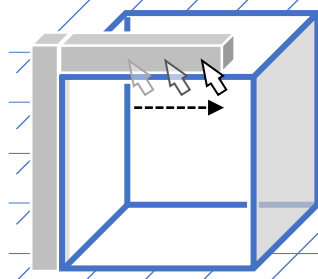


Create guide shape

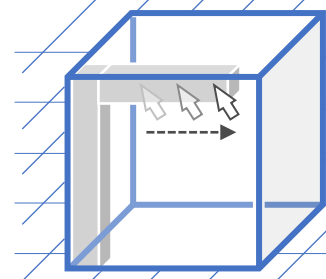


Create Aluminum Frame accordingly

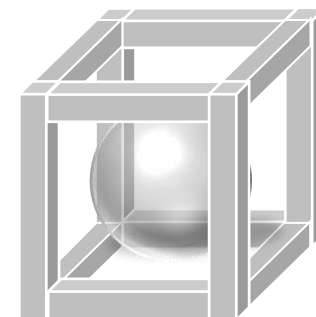
Outside stick



Inside stick



Completion image



STL format file can be read.

You can check interference and create a guide in this function.

- Create a rectangle guide shape from core equipment
- Can be created by setting clearance with core equipment

Places Aluminum frames along the created guide shape

Can be placed inside or outside

*Outside stick: Convenient when placing equipment inside
Inside stick: Convenient when equipment is installed outside

Matching equipment
Size Structure is complete!

Guide shape can be set not only from equipment data, but also possible to set numerical value.

Stick guide shape method and Grid can be also set.

Please use it according to your own design method.

- Hint -

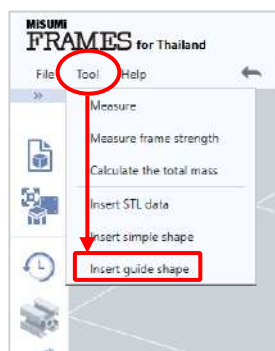
The created guide shape is saved in the project together with the designed structure. It can be viewed as indicator at any time, unless deleted

[Save method]

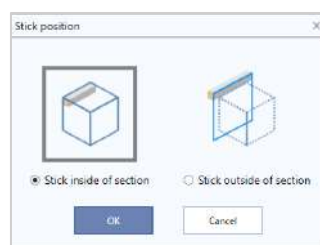
Save the project as usual *It will be saved automatically.

Operating Procedure

(1) From "Tools" in Header menu
Click on "Insert guide shape"

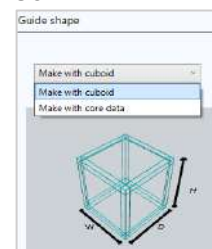


(2) Select Stick position



*For differences in stick position
see previous page

(3) Select the creation
method



- Create with a rectangular guide shape by inputting size
- Load core equipment and create guide shape on equipment data

(4) Make various settings
(please customize according to
your own design method)

Configuration setting

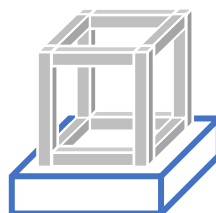
- Size
→ can be expand or reduce size after placement
- Placement position
→ can be moved after placement
- With/without grid
→ can be selected with or without grid
- Stick position
→ can be selected outside or inside stick position

-Example of customization

[Setting details]

- Size
→ Slightly wider and thinner than equipment
- With/without grid
→ Only the center line is displayed.
- Stick position
→ Outside stick

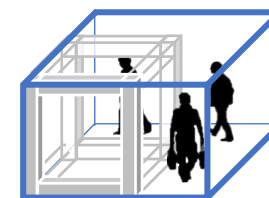
Base plate instead!



[Setting details]

- Size
→ Size of building with one person's space left empty.
- With/without grid
→ Without
- Stick position
→ Inside stick

As an indicator of
equipment placement
restrictions!



You can make detailed customization to the door you create.

Operating Procedure

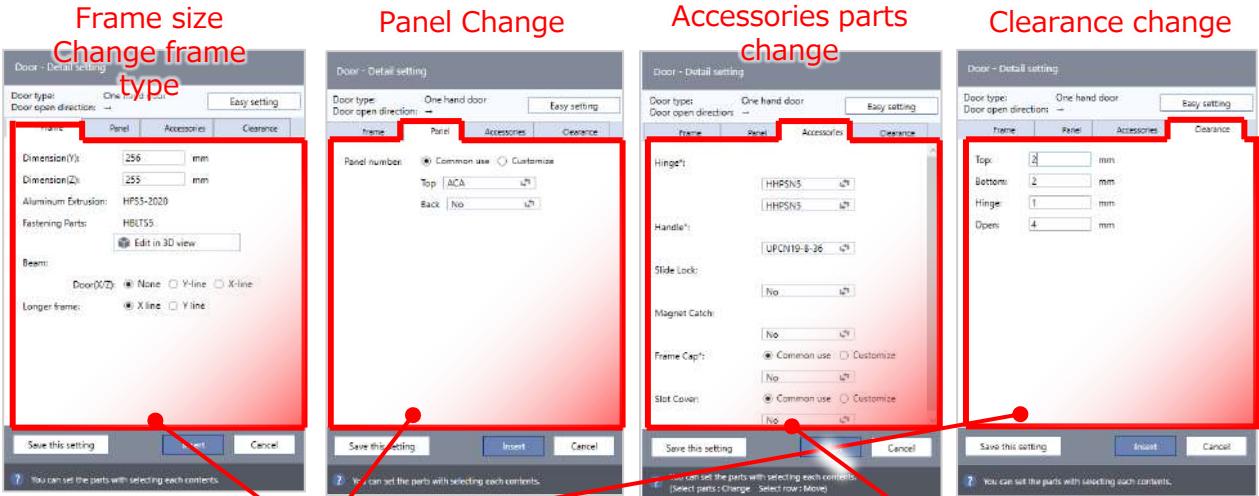
(1) Click on "Detailed" button on Door - Easy setting screen.



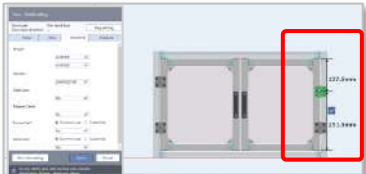
*Even you are in Easy setting, you can click "Details" button for more detailed setting.



Various editing is possible, such as changing/adding/deleting parts, changing size/clearance, etc.



When settings are changed on the various screens, the changes are reflected.



Parts can be moved and deleted directly on the 3D screen. If you want to change a part, please change it within the tab screen.

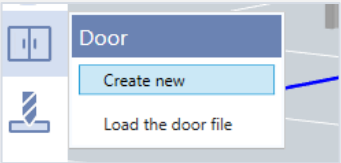


- Hint -.

Save the door settings once created and the next time you create a door. It is possible to call up.

[How to save]
On the confirmation screen before door insertion, Select "Save this setting"

[Call up method]
When creating a door, select "Load the door file"



Plate/Caster/Foot Base/
Adjuster pads are available.

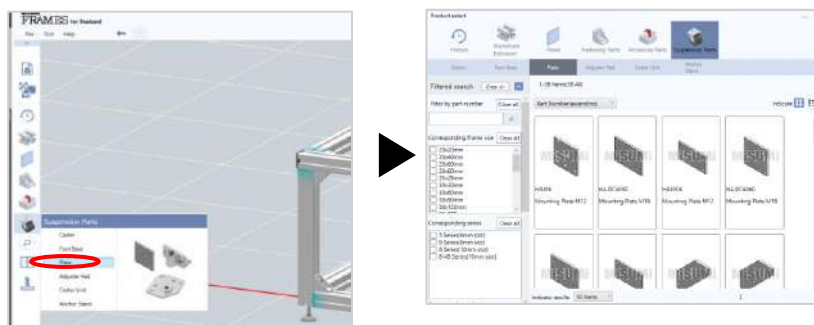
After selecting the product, insert it into
Aluminum Frame.

Operating Procedure

(1) Select Suspension parts

Click "Suspension parts" button from Insert
menu, then select a product

Example: Plate selection screen

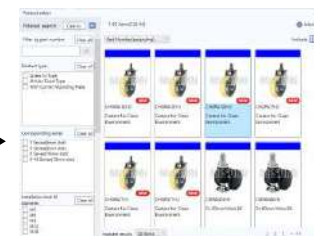
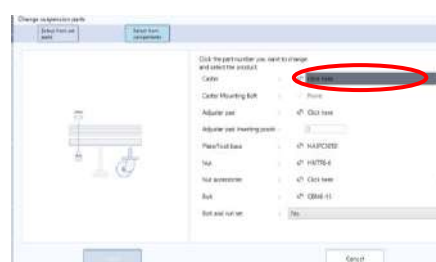


*When placing it on the bottom side, it will be easier to
insert if you look up from the bottom of the design.

(2) Select combination parts

After select plate, "change suspension part"
screen will be displayed.

Click on part number of suspension parts to open the
product selection screen.

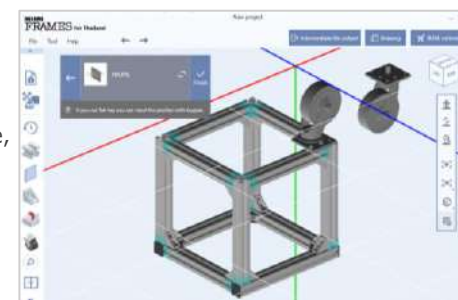


Example.)
Insert from
Caster list

(3) Placement on Aluminum frame

Move the mouse cursor close to Aluminum frame,
caster will stick to the placable position, so click
on the position you would like to place it.

You can continue placing products until you click
"Done" button.



- Hint -

Adjuster pads are designed to prevent the floor from
Height adjustment (0.5mm increments)

[How to change]
Select the adjuster pad and click "Change Product"
then, input value in "Adjustment pad Insertion position"
field.

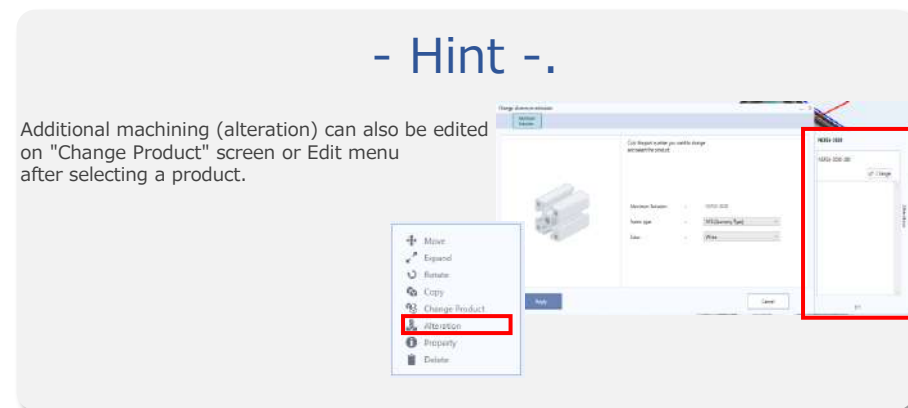


*When placing it on the bottom side, it will be easier
to insert it if you look up from the bottom of the
design.

Frames allows you to manually add alterations for Aluminum Frame and Bracket.

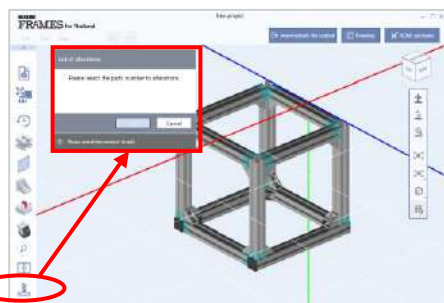
Please use it for designing holes for mounting various parts.

Operating Procedure



(1) Select product for proceed alteration.

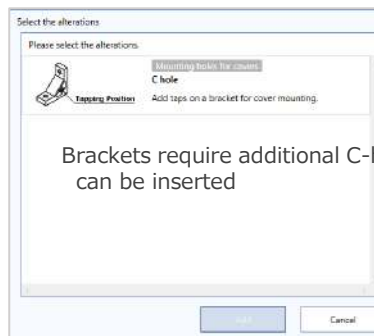
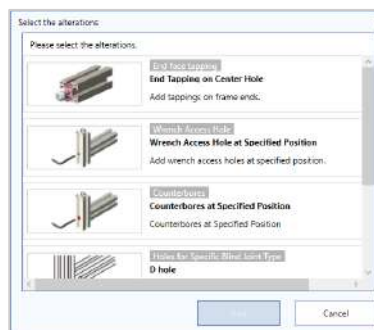
Click on "Alteration" button form Insert menu, and then select part number to alteration.



When you select a product on the 3D screen, List of alterations screen will be opened. Click "Edit" button, and then click "Add" on the next screen.

(2) Select the alterations

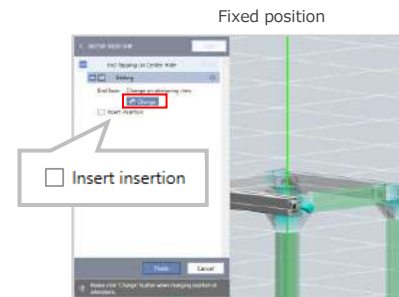
A list of additional operations that can be added will be displayed. Select the type you wish to add.



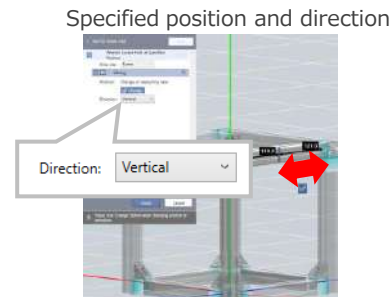
Brackets require additional C-holes can be inserted

(3) Specify the position and direction of processing

Follow the displayed guide to specify alteration position, direction, and type of machining.



Heli-coil insert can be selected by tick box "Insert insertion"



*The direction and position of hole can be changed.

(4) Reflect alteration processing

Check alteration settings and if there is no problems, click "Finish" button on screen to complete the insertion.



*Additional manual alteration setting will be highlighted in gray as shown in part number.

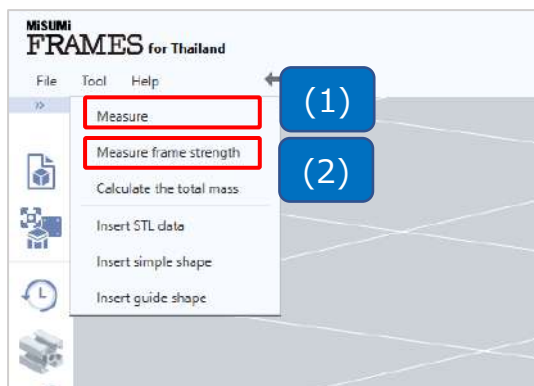
Multiple selection of parts is possible while press Shift key and select products.

In Frames,
Measure frame length and strength
are available to check.

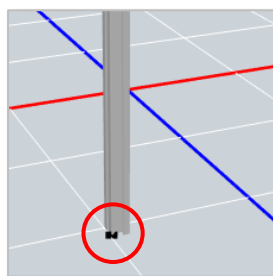
Operating Procedure

(1) Measuring function

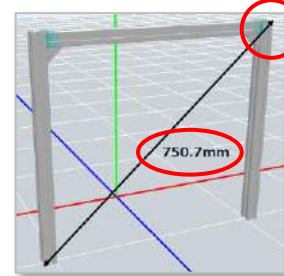
In Header menu,
Select "Measure" to activate
the measurement mode.



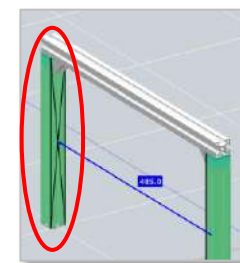
Select the starting point
or object (Frame/Part)



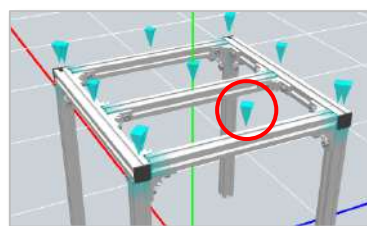
Select the ending point or
object (Frame/Part)



When measuring by selecting a surface,
the selected surface is indicated by .



Click "blue triangle" on the frame
you would like to calculate



Concentrated load and Uniform load are
displayed for checking



- Hint -

You can check length of all Aluminum frames
designed at once.

[How to check]
Select "Change view" from camera control
on the right side of screen.
Then select "Display dimension" button



(2) Frame strength calculation

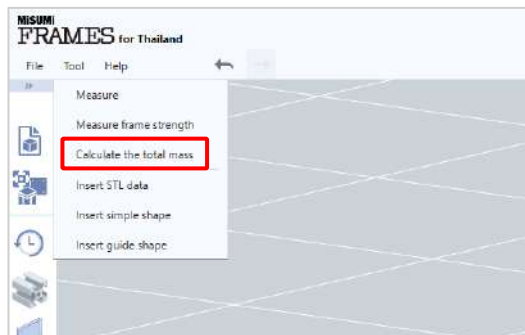
In Header menu,
Select "Measure frame strength" to
activate strength calculation mode.

In Frames,
Total mass of created design structure
are available to check.

Operating Procedure

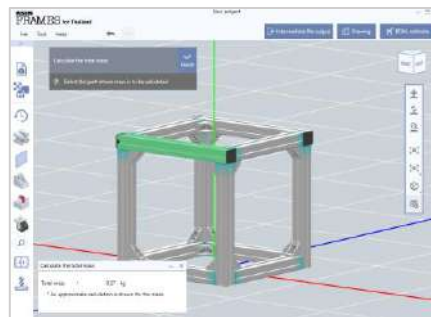
(1) Select Calculate Total mass

In Header menu,
Select "Calculate the total mass"



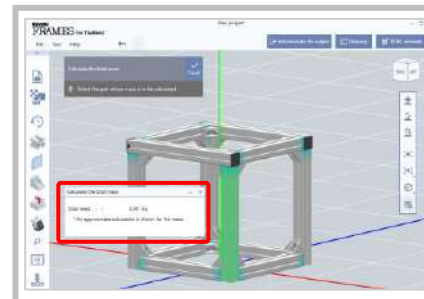
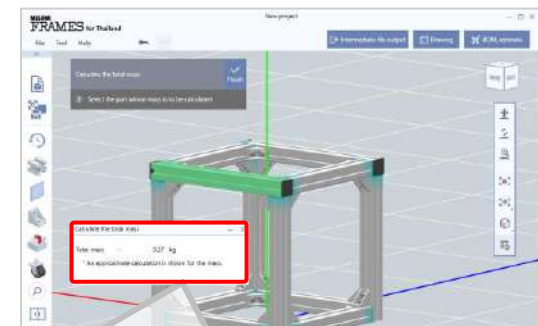
2) Parts Selection

Click on part that you would like to
check



(3) Confirmation of results

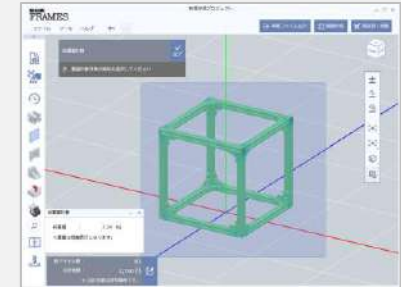
Mass of selected part will be displayed on
"Calculate the total mass" at the bottom left of
screen
Click "Finish" button to exit measurement mode.



Click on another part,
the total mass will be
updated automatically.

- Hint -

If you would like to select multiple parts
Hold down the Shift/Ctrl keys to select the part.
Click or drag the mouse to make a selection.



Recommended Specs	
OS	Windows 10 64bit Windows 11 64bit
CPU	Core i5 (2.7GHz, 4-core) or higher
memory	8GB or more
HDD free space required	5GB~
graphics board	NVIDIA recommended
Software Configuration	
application body	A set of execution modules for this system
database	SQLite