IGX.Model.FlatPanel 1.4

IG.Model.Processor (2025-10-21)

Intelligentgraphics CAD Services

Version Requirement: `IG.Model.Processor` $\geq$ `1.4.0.100`

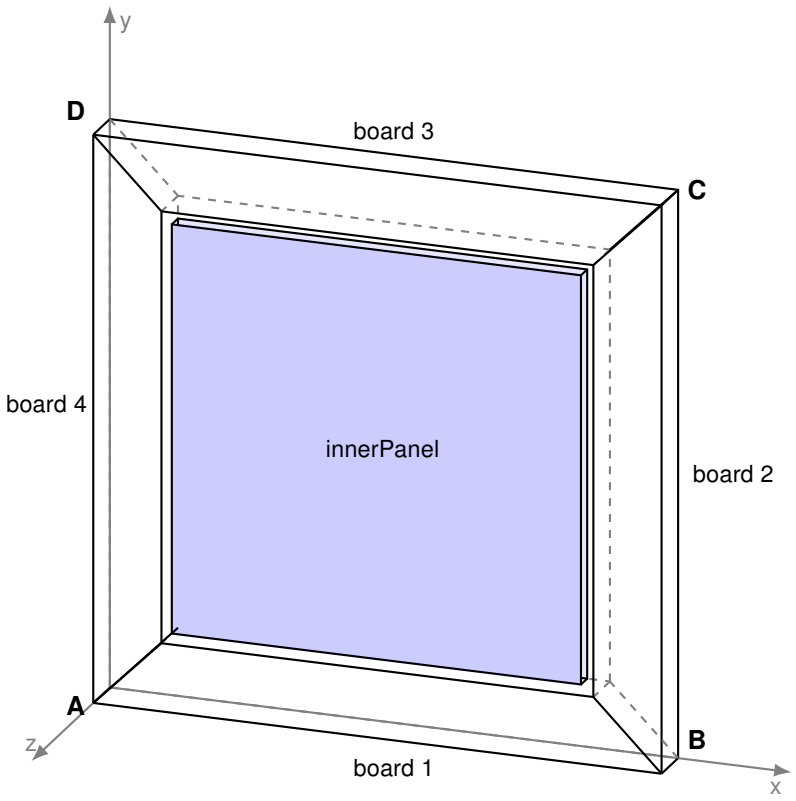

Figure 1: FlatPanel frame with innerPanel in blue.

1 intersection

Type: `string` **Enum:** HORIZONTAL, VERTICAL, SOLID, TRIANGLE **Default:** VERTICAL **Required:** Yes

Controls how the individual frame boards meet at their corners.

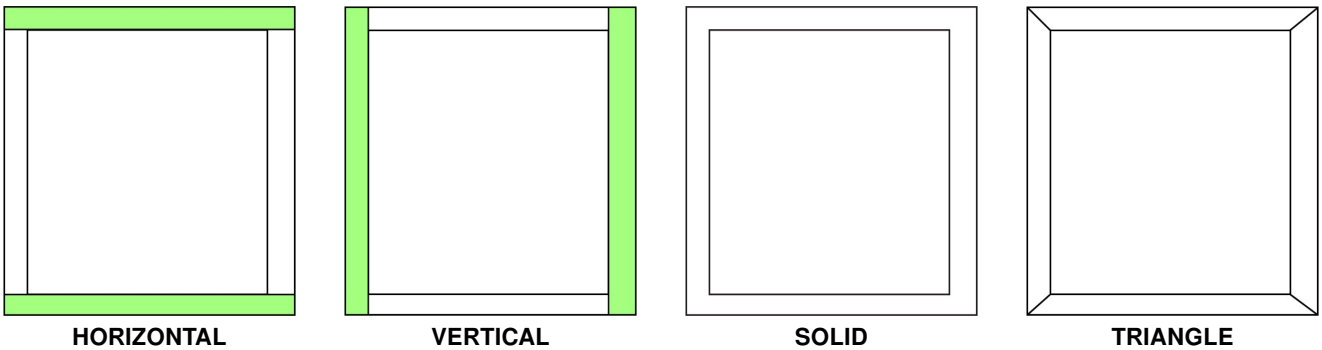

Figure 2: *
Illustration of the four intersection modes

2 quality

Type: `integer` **Range:** 1–100 **Default:** 25 **Required:** No
Specifies the detail level of the model; higher values yield finer tessellation in bevels and curves. Can be global or overwrite per board or innerPanel shape.

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3 uv

Type: `object` **Required:** No

Defines how a 2D texture is mapped onto the solid model. These parameters are available in version 1.1 and higher. All of these values can also be used as top-level parameters.

- **patchSize**
  Type: `number` **Default:** `150`
  Size of each UV tile in mm.
- **uvOrigin**
  Type: `string` **Enum:** CENTER, ORIGIN **Default:** `CENTER`
  Anchor point for the UV map.
- **uOffset**, **vOffset**
  Type: `number` **Default:** `0.0`
  Translates the UV grid along the U and V axes after the origin is applied.
- **rotation**
  Type: `number` **Default:** `0`
  Rotation of the UV grid in degrees.
- **uvType**
  Type: `string` **Enum:** CUBIC, AUTO **Default:** `CUBIC`
  Specifies how the UV mapping is applied to the panel. Use `CUBIC` for cubic projection or `AUTO` for automatic mapping.

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4 paths

Type: `array of #/definitions/path` **Required:** Yes
Each entry defines a named 2D sketch (shown in gray) using an `"id"` label. These profiles are referenced by frame boards or by the inner panel when using the `SOLID1_3` model.

Note: A default path named `"placeholder_SOLID1_3"` is provided. It supports expressions and serves as a fallback or as a place where the `SOLID1_3` shape can be defined using expressions, when no other custom path is specified.

- **quality**
  Type: `integer` **Range:** 1–100 **Default:** Same as the global `quality` parameter, if not set; overwrites the global parameter if set. Defines the subdivision of path.
  Required: No.

  Defines the profile quality used for extrusion of the shape. The default value matches the global `quality`.
- **mirrorAxis**
  Type: `string` **Enum:** X, Y **Required:** No.
  Defines the optional axis along which the path is mirrored. When set to `X`, the path is mirrored across the vertical plane (YZ); when set to `Y`, the path is mirrored across the horizontal plane (XZ).

Figure 3: Cross-sectional profile of board with referenced path.

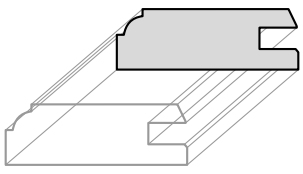

Figure 4: Extruded `board` in flatPanel used same path.

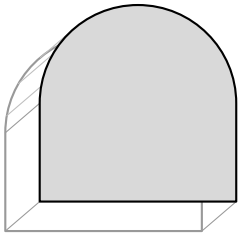

Figure 5: Extruded arched panel `SOLID1_3` in isometric view. Extrusion is taken from profile dimensions

```
"paths": [
{ "id": "OuterFrame", "path": [ ... ] } ]
```

5 frame

Type: `array of #/definitions/board` **Required:** Yes
Each board object in the array defines a frame component and has the following properties:

- **board**
  Type: `string` **Required:** Yes
  The name of the board.
- **position**
  Type: `object` **Required:** Yes
  Defines the two-dimensional placement and lengths of each board using their `x` and `y` coordinates (in mm). This points are labeled A–D in Figure 1.
- **profile**
  Type: `string` **Required:** Yes
  References a path `"id"` to be used as the specific board's cross-section.
- **fuseToInnerPanel**
  Type: `boolean` **Default:** `false` **Required:** No.
  Optional flag to make the chosen board(s) a single compound shape with the inner panel.
- **trimWithInnerPanel**
  Type: `boolean` **Default:** `false` **Required:** No.
  Optional flag that trims the chosen board(s) with the 'frameWire' for `SOLID1_3` models. The innerPanel shape should overlap the chosen board.

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6 subframes

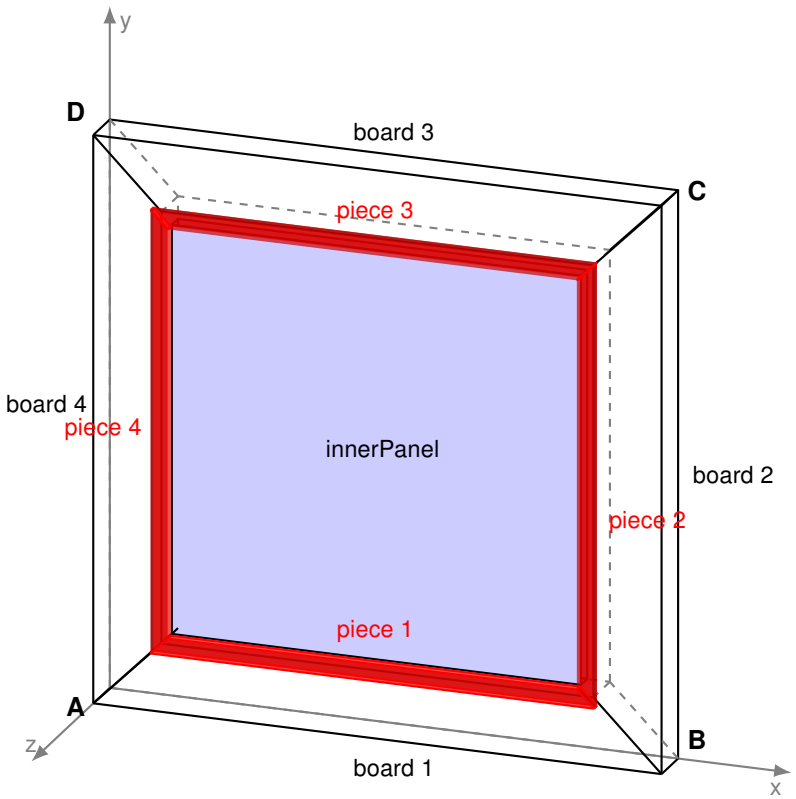

Figure 6: FlatPanel frame with generated subframe in red.

Type: `array of objects` **Required:** No
Defines one or more subframes attached to the main model. Each subframe entry references a specific model type,

intersection mode, profile path, and an identifier. Typically, four subframe pieces are defined per subframe.

- **model**
  Type: `string` **Enum:** FLATPANEL1_0 **Default:** `FLATPANEL1_0`
  Specifies the model type used for the subframe.
- **intersection**
  Type: `string` **Enum:** TRIANGLE, SOLID **Default:** `TRIANGLE`
  Defines how the subframe boards are intersecting each with one another.
- **profile**
  Type: `string`
  References a path ID defined in the global `paths` array used to generate the subframe profile.
- **id**
  Type: `string`
  Unique identifier for the subframe. This value is used to reference and name generated subframe elements.
- **offset**
  Type: `object` **Required:** No
  Defines an optional translation offset of the subframe in millimeters.
  - **x** — horizontal offset (width) in mm.
  - **y** — vertical offset (height) in mm.
  - **z** — depth position offset in mm.
- **pieces**
  Type: `array of 4 objects` **Required:** Yes
  Contains exactly four subframe pieces(see ilustration above), each defined by a unique ID. Optional UV parameters overwrites may be provided for individual pieces.
  - **id**
    Type: `string`
    Unique global identifier for the subframe piece (also used as the output mesh name).
  - **uv**
    Type: `object` **Required:** No
    Optional UV mapping settings for the piece.
    * **rotation** — Rotation of UV map in degrees.
    * **patchSize** — Size of UV patch in millimeters.
    * **uvorigin** — **Enum:** ORIGIN, CENTER. Defines UV anchor point. Default: `ORIGIN`.
    * **uOffset**, **vOffset** — UV translation offsets in millimeters.

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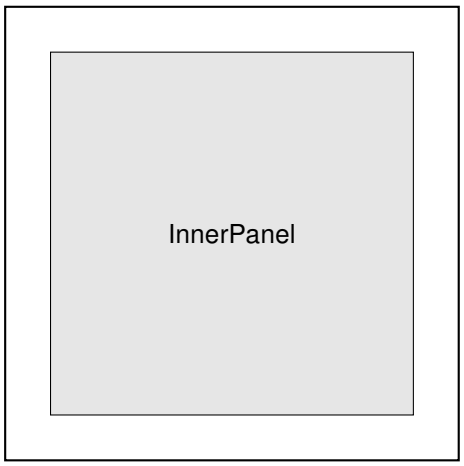
7 innerPanel

Type: `object (#/definitions/innerPanel)` **Required:** Yes

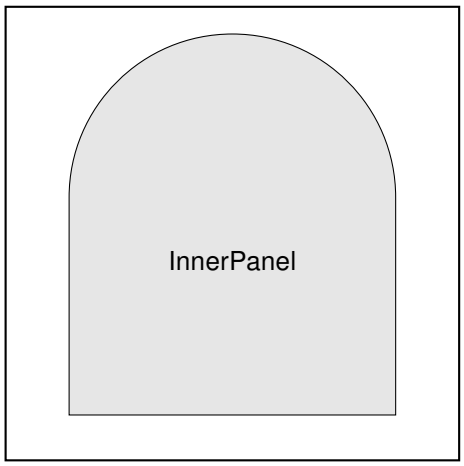
Defines the central panel of the model.

- **model**
  Type: `string` **Enum:** SOLID1_1, SOLID1_3, EMPTY **Default:** `SOLID1_1` **Required:** Yes
  Defines the type of inner panel. Accepted values are:
  - `SOLID1_1`: A solid rectangular panel with a fixed shape and optional milled profile.
  - `SOLID1_3`: A complex shaped panel defined by a custom path.
  - `EMPTY`: No panel is created; used when only the frame is needed.

SOLID1_1 inner panel



SOLID1_3 inner panel



- **depth**
  Type: `number`
  Required: Yes, if `SOLID1_1` **model** is used and no **profile** is specified. Describes the Z-axis dimension (in mm) if the model is `SOLID1_1` and has no profile.

- **profile**
  Type: `string`
  Required: Yes, if `SOLID1_1` or `SOLID1_3` **model** is used and no **depth** for `SOLID1_1` is specified.
  Defines the milled profile; optional for `SOLID1_1`, required for `SOLID1_3`.

- **path**
  Type: `string` **Default:** `placeholder_SOLID1_3`
  Required: Yes, if `SOLID1_3` **model** is used. Required for `SOLID1_3`; defines the shape via a path "id" reference. The default "id" supports additional expressions.

- **trimProfile**
  Type: `string`
  Required: Yes, if `SOLID1_1` or `SOLID1_3` **model** is used and no **depth** for `SOLID1_1` is specified.
  Defines the milled profile; optional for `SOLID1_1`, required for `SOLID1_3`.

- **trimPath**
  Type: `string` **Required:** No (used when `SOLID1_3` model is selected and no **depth** is specified for `SOLID1_1`)
  Defines the trimming path used to cut out or mill the board profile. This property is optional for `SOLID1_1` panels but could be used only for `SOLID1_3` panels.

- **outputTrimWire**
  Type: `boolean` **Default:** `false`
  Required: No
  Used only for designers during development. When set to `true`, the trimming wire shape is generated and included in the output for visual debugging or verification purposes.

- **centering**
  Type: `string`
  Default: `CAVITY`
  Required: No
  Describes how `innerPanel` is centered relative to the frame before any offsets. Valid options are `FRAME` or `CAVITY`.

- **offset**
  Type: `object` **Required:** No, but highly recommended.
  Defines positioning and range extension of the inner panel and trim with the following properties:
  - **panel**
    Type: `object`
    Structured offset for the main panel, including:
    - **translation**
      Type: `object`
      Translation in millimeters along the X, Y, and Z axes. This translates the inner panel relative to the center of the frame.
    - **dimensions**
      Type: `object`
      Dimension offset factors (in mm) along the X, Y, and Z axes. Applies only to `SOLID1_1` panels that already have automatic dimension adjustments.
  - **trim**
    Type: `object`
    Structured offset for the trim geometry, including:
    - **translation**
      Type: `object`
      Translation of the trim along the X, Y, and Z axes (in mm), offset from the center of the flat panel frame.
    - **scale**
      Type: `object`
      Additive scale applied along the Z-axis (e.g., 0.1 means scaling by 1.1). Used to add overlap for trimming boards when necessary.
  - **x, y, z**
    Type: `number` Legacy top-level scale and position offsets along the respective axes (in mm). Legacy top-level scale and position offsets along the respective axes (in mm). Not recommended to be used with `SOLID1_1` panel type.

8 transformation

Type: `object` **Required:** No

Defines a global translation applied to the entire model. When used, all `x`, `y`, and `z` fields are required.

- **x**, **y**, **z**
  Type: `number`
  Translation values in millimeters applied along the X, Y, and Z axes.

9 shading

Type: `object` **Required:** No

Defines the shading style applied to the model. Available in version 1.4 and higher.

- **mode**
  Type: `string` **Enum:** AUTO, FLAT, SOFT **Default:** `FLAT`
  Determines the shading mode of the surfaces.
  - `AUTO` – automatic shading based on vertex normals of geometry.
  - `FLAT` – flat shading for each polygon.
  - `SOFT` – smooth shading across polygons.

- **angle**
  Type: `number` **Default:** 30
  Angle in degrees used for calculating smoothing angle threshold for sharp edges of shading.