

Graphics Programmer's Guide



Version 0.25.0 (Beta)

Component Layouts and Templating

Template system general overview

Template input data is used within the graphics template editor to populate dynamic content using a templating language called Handlebars.

Template input data

Each graphic, depending on the category of meeting data that it consumes and the data types contained within each category, will have distinct visual elements that will represent each of those data types. The following is a list of the meeting data categories that the Zoom Graphics Toolkit currently supports and the graphic types that consume them:

- **Meeting Chat Data:** Chat Scroll Graphic, Chat Highlight Graphic
- **Meeting QA Data:** QA Scroll Graphic, QA Highlight Graphic
- **Meeting Poll Data:** Poll Result Graphic
- **Meeting Emoji Reaction Data:** Emoji Reaction Graphic
- **Meeting Caption Data:** Closed Caption Graphic

As stated above, the Chat Scroll Graphic consumes the Meeting Chat Data category. Composed in the meeting chat data is a list of ``chat_message`` and ``chat_reply`` objects. These are similar but distinct data types with different attributes. A ``chat_reply`` object in this case has all the properties of a ``chat_message`` object and an additional property called "parentMessage". The value of the "parentMessage" property is a reference to the chat message that

started the thread that the chat reply belongs to.

All meeting data are JSON-serializable JavaScript objects under the hood. Therefore, we can define the data types of each graphic type more formally using the TypeScript syntax. The type definitions for each graphic type are as follows:

- [Chat scroll graphic template input](#)
- [Chat highlight graphic template input](#)
- [Closed captions graphic](#)
- [Emoji reaction graphic](#)
- [Poll result graphic](#)
- [QA highlight graphic](#)
- [QA scroll graphic](#)

Chat scroll graphic template input

chat_message

```
1 type ChatMessageData = {
2   messageID: string
3   threadID: string
4   timestamp: number
5   chatMessageType: number
6   senderUserID: string
7   senderDisplayName: string
8   senderAvatarPath: string | undefined
9   msgContent: string
10  isComment: boolean
11  isChatToWaitingRoom: boolean
12  isThread: boolean
13  isEmphasized: boolean
14  textStyleItemList: any[]
15 }
```

chat_reply

```
1 type ChatReplyData = {
2   messageID: string
3   threadID: string
4   timestamp: number
5   chatMessageType: number
```

```
6   senderUserID: string
7   senderDisplayName: string
8   senderAvatarPath: string | undefined
9   msgContent: string
10  isComment: boolean
11  isChatToWaitingRoom: boolean
12  isThread: boolean
13  isEmphasized: boolean
14  textStyleItemList: any[]
15  parentMessage:
16    | {
17      messageID: string
18      threadID: string
19      timestamp: number
20      chatMessageType: number
21      senderUserID: string
22      senderDisplayName: string
23      senderAvatarPath?: string
24      msgContent: string
25      isComment: boolean
26      isChatToWaitingRoom: boolean
27      isThread: boolean
28      isEmphasized: boolean
29      textStyleItemList: any[]
30    }
31    | undefined
32 }
```

Chat highlight graphic template input

chat_message

```
1 type ChatMessageData = {
2   messageID: string
3   threadID: string
4   timestamp: number
5   chatMessageType: number
6   senderUserID: string
7   senderDisplayName: string
8   senderAvatarPath: string | undefined
9   msgContent: string
10  isComment: boolean
11  isChatToWaitingRoom: boolean
12  isThread: boolean
13  isEmphasized: boolean
14  textStyleItemList: any[]
15 }
```

chat_reply

```
1 type ChatReplyData = {
2   messageID: string
3   threadID: string
4   timestamp: number
5   chatMessageType: number
6   senderUserID: string
7   senderDisplayName: string
8   senderAvatarPath: string | undefined
9   msgContent: string
10  isComment: boolean
11  isChatToWaitingRoom: boolean
12  isThread: boolean
13  isEmphasized: boolean
14  textStyleItemList: any[]
15  parentMessage:
16    | {
17      messageID: string
18      threadID: string
19      timestamp: number
20      chatMessageType: number
21      senderUserID: string
22      senderDisplayName: string
23      senderAvatarPath: string | undefined
24      msgContent: string
25      isComment: boolean
26      isChatToWaitingRoom: boolean
27      isThread: boolean
28      isEmphasized: boolean
29      textStyleItemList: any[]
30    }
31    | undefined
32 }
```

Closed captions graphic

```
1 type ClosedCaptionData = {
2   messageID: string
3   speakerID: number
4   speakerName: string
5   messageContent: string
6   timeStamp: number
7   messageType: number
8   senderAvatarPath?: string
9 }
```

Emoji reaction graphic

The emoji graphic currently does not expose any meeting data to the templates.

Poll result graphic

question_title

```

1 type PollQuestionItemData = {
2   pollingID: string
3   pollingQuestionID: string
4   pollingQuestionName: string
5   pollingQuestionType: 1 /* SingleSelect */ | 2 /* MultiSelect */
6   answeredCount: number
7   isRequired: boolean
8   pollingSubQuestionItemList: {
9     pollingParentQuestionID: string
10    pollingSubQuestionID: string
11    pollingQuestionName: string
12  }[]
13  questionImagePath: string | undefined
14  visMethod: 'pie-chart' | 'bar-chart'
15  graphicStatus: { showingResults: boolean; showingQuestion: boolean }
16  result: {
17    totalResponseCount: number | undefined
18    questionResults:
19      | {
20        [answerID: string]: {
21          answerID: string
22          answerValue: string | undefined
23          frequency: number
24          isCorrect: boolean | undefined
25        }
26      }
27      | undefined
28    subQuestionResults:
29      | {
30        [pollingSubQuestionID: string]: {
31          [answerID: string]: {
32            answerID: string
33            answerValue: string | undefined
34            frequency: number
35            isCorrect: boolean | undefined
36          }
37        }
38      }
39      | undefined
40  }
41 }

```

bar_chart

```

1 type PollQuestionItemData = {
2   pollingID: string
3   pollingQuestionID: string
4   pollingQuestionName: string

```

```

5  pollingQuestionType: 1 /* SingleSelect */ | 2 /* MultiSelect */
6  answeredCount: number
7  isRequired: boolean
8  pollingSubQuestionItemList: {
9      pollingParentQuestionID: string
10     pollingSubQuestionID: string
11     pollingQuestionName: string
12 }[]
13 questionImagePath: string | undefined
14 visMethod: 'pie-chart' | 'bar-chart'
15 graphicStatus: { showingResults: boolean; showingQuestion: boolean }
16 result: {
17     totalResponseCount: number | undefined
18     questionResults:
19         | {
20             [answerID: string]: {
21                 answerID: string
22                 answerValue: string | undefined
23                 frequency: number
24                 isCorrect: boolean | undefined
25             }
26         }
27         | undefined
28     subQuestionResults:
29         | {
30             [pollingSubQuestionID: string]: {
31                 [answerID: string]: {
32                     answerID: string
33                     answerValue: string | undefined
34                     frequency: number
35                     isCorrect: boolean | undefined
36                 }
37             }
38         }
39         | undefined
40     }
41 }

```

pie_chart

```

1  type PollQuestionItemData = {
2      pollingID: string
3      pollingQuestionID: string
4      pollingQuestionName: string
5      pollingQuestionType: 1 /* SingleSelect */ | 2 /* MultiSelect */
6      answeredCount: number
7      isRequired: boolean
8      pollingSubQuestionItemList: {
9          pollingParentQuestionID: string
10         pollingSubQuestionID: string
11         pollingQuestionName: string
12     }[]
13     questionImagePath: string | undefined
14     visMethod: 'pie-chart' | 'bar-chart'

```

```

15  graphicStatus: { showingResults: boolean; showingQuestion: boolean }
16  result: {
17    totalResponseCount: number | undefined
18    questionResults:
19      | {
20        [answerID: string]: {
21          answerID: string
22          answerValue: string | undefined
23          frequency: number
24          isCorrect: boolean | undefined
25        }
26      }
27    | undefined
28    subQuestionResults:
29      | {
30        [pollingSubQuestionID: string]: {
31          [answerID: string]: {
32            answerID: string
33            answerValue: string | undefined
34            frequency: number
35            isCorrect: boolean | undefined
36          }
37        }
38      }
39    | undefined
40  }
41 }

```

QA highlight graphic

question

```

1  type QuestionData = {
2    questionID: string
3    timestamp: number
4    senderName: string | undefined
5    questionContent: string
6    isAnonymous: boolean
7    upvoteNum: number
8    liveAnsweringUserName: string | undefined
9    isBeingLiveAnswered: boolean
10   isMarkedAsAnswered: boolean
11 }

```

answer

```

1  type AnswerData = {
2    questionID: string
3    answerID: string
4    timestamp: number

```

```
5  answerContent: string
6  senderName: string | undefined
7  isLiveAnswer: boolean
8 }
```

QA scroll graphic

question

```
1 type QuestionData = {
2   questionID: string
3   timestamp: number
4   senderName: string | undefined
5   questionContent: string
6   isAnonymous: boolean
7   upvoteNum: number
8   liveAnsweringUserName: string | undefined
9   isBeingLiveAnswered: boolean
10  isMarkedAsAnswered: boolean
11 }
```

answer

```
1 type AnswerData = {
2   questionID: string
3   answerID: string
4   timestamp: number
5   answerContent: string
6   senderName: string | undefined
7   isLiveAnswer: boolean
8 }
```

Active Speaker Name Tag

name_tag

```
1 <div class='name-tag-container-inner'>
2   <div class='display-name-wrapper'>
3     <span class='display-name'>{{Titlecase activeSpeakerName}}</span>
4   </div>
5 </div>
6 <div class='backdrop'></div>
```

Chat scroll

chat_message example

```

1 <div class='template-chat-message-container'>
2   {{#if senderAvatarPath}}
3     <img class='sender-avatar' src='{{senderAvatarPath}}' />
4   {{/if}}
5   <div>
6     <div>
7       <span class='sender-display-name'>{{Titlecase (
8         ShortenLastName senderDisplayName)}}</span>
9       <time class='chat-timestamp'>{{FormattedTime timestamp 'p'}}</time>
10      </div>
11      <p class='msg-content'>{{msgContent}}</p>
12    </div>
13  </div>

```

Chat highlight

chat_reply example

```

1 <div class='template-chat-comment-container'>
2   <div class='parent-thread-reference-container'>
3     <span class='replying-to-info'>
4       Replying to thread by
5       <span class='replying-to-display-name'>{{
6         parentMessage.senderDisplayName}}</span>
7     </span>
8     <p class='parent-thread-msg-quote'>{{parentMessage.msgContent}}</p>
9   </div>
10  <div class='comment-msg-container'>
11    {{#if senderAvatarPath}}
12      <img class='sender-avatar' src='{{senderAvatarPath}}' />
13    {{/if}}
14    <div>
15      <div>
16        <span class='sender-display-name'>{{Titlecase (
17          ShortenLastName senderDisplayName)}}</span>
18        <time class='chat-timestamp'>{{FormattedTime timestamp 'p'}}</time>
19      </div>
20      <p class='msg-content'>{{msgContent}}</p>
21    </div>
22  </div>

```

Closed Captions

caption_box

```

1 <div class='template-caption-container'>
2   <div>
3     <div>
4       <span class='sender-display-name'>{{translation.speakerName}}</span>
5       <time class='caption-timestamp'>{{FormattedTime timeStamp 'p'}}</time>
6     >
7   </div>
8   <div>
9     {{#if isOriginal}}
10      <div class='msg-content'>{{messageContent}}</div>
11    {{else}}
12      <div class='msg-content'>{{messageContent}}</div>
13    {{/if}}
14  </div>
15 </div>

```

Emoji Reactions

fountain_box

```

1 <div class='emoji-page'>
2   <div class='row emoji-box' id='emoji-box'>
3     <div class='wrapper'>
4       <div id='spawn-clap' class='clap emoji-icon'></div>
5     </div>
6     <div class='wrapper'>
7       <div id='spawn-thumb' class='thumb emoji-icon'></div>
8     </div>
9     <div class='wrapper'>
10      <div id='spawn-heart' class='heart emoji-icon'></div>
11    </div>
12    <div class='wrapper'>
13      <div id='spawn-joy' class='joy emoji-icon'></div>
14    </div>
15    <div class='wrapper'>
16      <div id='spawn-openmouth' class='openmouth emoji-icon'></div>
17    </div>
18    <div class='wrapper'>
19      <div id='spawn-tada' class='tada emoji-icon'></div>
20    </div>
21  </div>
22 </div>

```

Poll result

question_title

```

1 <div class='poll-question-title-container'>
2   <div class='title'>{{pollingQuestionName}}</div>
3 </div>

```

bar_chart

```

1 <div class="bar-chart-container">
2   <div class="category-label-list-container">
3     {{#each result.questionResults}}
4     <div class="category-label">{{this.answerValue}}</div>
5     {{/each}}
6   </div>
7   <div
8     class="bar-list-container"
9     style="--answer-item-count:
10      {{Measurable-GetLength result.questionResults}}"
11   >
12     {{#each result.questionResults}}
13     <div
14       class="bar"
15       style="--scale: calc(100%*({{this.frequency}})/max({{#each
16        ../result.questionResults}}{{this.frequency}}, {{/each}}0));"
17     ></div>
18     {{/each}}
19   </div>
20 </div>

```

pie_chart

```

1 <div class="pie-chart-container">
2   <div class="pie-chart-result-container">
3     {{#each result.questionResults}}
4     <div class="pie-chart-slice" style="...">
5       {{#if this.frequency}}
6       <svg viewBox="0 0 200 200" style="...">
7         <circle
8           cx="100"
9           cy="100"
10          r="50"
11          fill="none"
12          stroke-width="100px"
13          stroke-dasharray="314"
14          stroke-dashoffset="calc(314 * (1 - {{this.frequency}}/
15            {{../result.totalResponseCount}}))"
16        />
17      </svg>
18      {{/if}}
19    </div>
20    {{/each}}
21    {{#each result.questionResults}}
22    <div class="percentage-label" style="...">
23      <span style="...">{{Math-Multiply (
24        Math-Divide this.frequency ../result.totalResponseCount 6) '100' 1}}%

```

```

23     </div>
24     {{/each}}
25 </div>
26 </div>
27 </div>

```

QA Highlight

answer example

```

1 <div class='template-answer-container'>
2   {{#if senderAvatarPath}}
3     <img class='sender-avatar' src='{{senderAvatarPath}}' />
4   {{/if}}
5   <div class='answer-text-container'>
6     <p>Sender name: {{senderName}}</p>
7     <p>Answer content: {{answerContent}}</p>
8     <p>Timestamp: {{timestamp}}</p>
9     <p>isLiveAnswer: {{isLiveAnswer}}</p>
10  </div>
11 </div>

```

QA Scroll

question example

```

1 <div class='template-question-container'>
2   <div>
3     <div>
4       {{#if senderName}}
5         <span class='sender-display-name'>{{Titlecase senderName}}</span>
6       {{else}}
7         <span class='sender-display-name'>Anonymous</span>
8       {{/if}}
9       <time class='question-timestamp'>{{FormattedTime timestamp 'p'}}</
time>
10    </div>
11    <p class='question-content'>{{questionContent}}</p>
12  </div>
13 </div>

```

Handlebars

Overview

Meeting data is consumed using Handlebars. Handlebars provide built-in helpers that are used in the graphic templates. By leveraging these built-in Handlebars helpers, graphic templates can efficiently process and present meeting data in a variety of ways to meet different visualization needs.

Details of the Handlebars templating language documentation can be found [here](#)

Custom helpers

The Zoom Graphic Toolkit provides defined helper functions to manipulate data. These helper functions include string manipulation, math operations, and other utility functions such as formatting timestamps.

ConvertNameToInitials

Convert the name into its first and last initials

```
1 function (text)
```

text - string

return - string

```
1 {{ConvertNameToInitials 'John Doe'}}
2
3 // Results: JD
```

Eq

Check if two arguments are equal

```
1 function (arg1, arg2)
```

arg1 - First argument of type any

arg2 - Second argument of type any

return - boolean

```
1 {{Eq 'option_1' 'option_2'}}
2
3 // Results: false
```

FormattedTime

Format the epoch timestamp to a long localized time in the format of HH:MM AM/PM using the pattern "p"

FormattedTime is a wrapper of the format() method from the [date-fns](#) library.

The user can specify the format of the timestamp based on the formatStr pattern passed in. Refer to the date-fns library for a list of format patterns.

```
1 function (timestampStr, formatStr)
```

timestampStr - string (epoch time)

formatStr - string (a pattern from the date-fns library)

return - string

```
1 {{FormattedTime '1744399255000' 'p'}}
2 // Results: "12:20 PM"
3
4 {{FormattedTime '1744399255000' 'pp'}}
5 // Results: "12:20:55 PM"
```

Math-Add

Return the sum of two numbers while specifying the number of decimals to round

```
1 function (numAStr, numBStr, roundToDecimal)
```

numAStr - string

numBStr - string

roundToDecimal - number

return - string

```
1 {{Math-Add '4' '1' 0}}
2
3 // Results: "5"
```

Math-Compare

Compare if numAstr is greater than numBstr

```
1 function (numAStr, numBStr)
```

numAStr - string

numBStr - string

return - boolean

```
1 {{Math-Compare '4' '1'}}
2
3 // Results: true
```

Math-Cos

Return the cosine of a number while specifying the number of decimals to round

```
1 function (numStr, roundToDecimal)
```

numAStr - string (in radians)

roundToDecimal - number

return - string

```
1 {{Math-Cos '.4089' 4}}
2
3 // Results: "0.9176"
```

Math-Divide

Divide two numbers while specifying the number of decimals to round

```
1 function (numAStr, numBStr, roundToDecimal)
```

numAStr - string

numBStr - string

roundToDecimal - number

return - string

```
1 {{Math-Divide '7' '3' 1}}
2
3 // Results: "2.3"
```

Math-Multiply

Multiply two numbers while specifying the number of decimals to round

```
1 function (numAStr, numBStr, roundToDecimal)
```

numAStr - string

numBStr - string

roundToDecimal - number

return - string

```
1 {{Math-Multiply '10' '.75' 1}}
2 // Results: 7.5
```

Math-Sin

Return the sine of a number while specifying the number of decimals to round

```
1 function (numStr, roundToDecimal)
```

numAStr - string (in radians)

roundToDecimal - number

return - string

```
1 {{Math-Sin '.4089' 4}}
2
3 // Results: "0.3976"
```

Math-Subtract

Return the difference of two numbers while specifying the number of decimals to round

```
1 function (numAStr, numBStr, roundToDecimal)
```

numAStr - string

numBStr - string

roundToDecimal - number

return - string

```
1 {{Math-Subtract '4' '1' 0}}
2
3 // Results: "3"
```

Measurable-GetLength

Get the length of a string or the number of keys in an object or the length of an array

```
1 function (obj)
```

obj - object or array or string

return - string

SelectPseudoRandomly

Randomly select an item from the passed in arguments

```
1 function (...args)
```

args - All of the arguments passed in using the handler bar helper (see example). The first argument is a string that is used to generate a random seed.

The random seed is then used to randomly select the rest of the arguments

return - string

```
1 {{SelectPseudoRandomly 'TestSeed' 'foo' 'bar' 'baz'}}
2
3 // Result: "bar"
```

ShortenLastName

Shorten the string of names to only the first full name and last name initial

```
1 function (text)
```

text - string

return - string

String-Split

Split a string into substrings using the specified separator and return them as an array

```
1 function (str, separator)
```

str - string

separator - string. It identifies character or characters to use in separating the string

return - array of strings

```
1 {{String-Split 'Hello World' ' ' }}
2
3 // Results: ["Hello", "World"]
```

Titlecase

Uppercase the beginning of every word of the string

```
1 function (text)
```

text - string

return - string

Framer Motion Presence Animation CSS Hooks

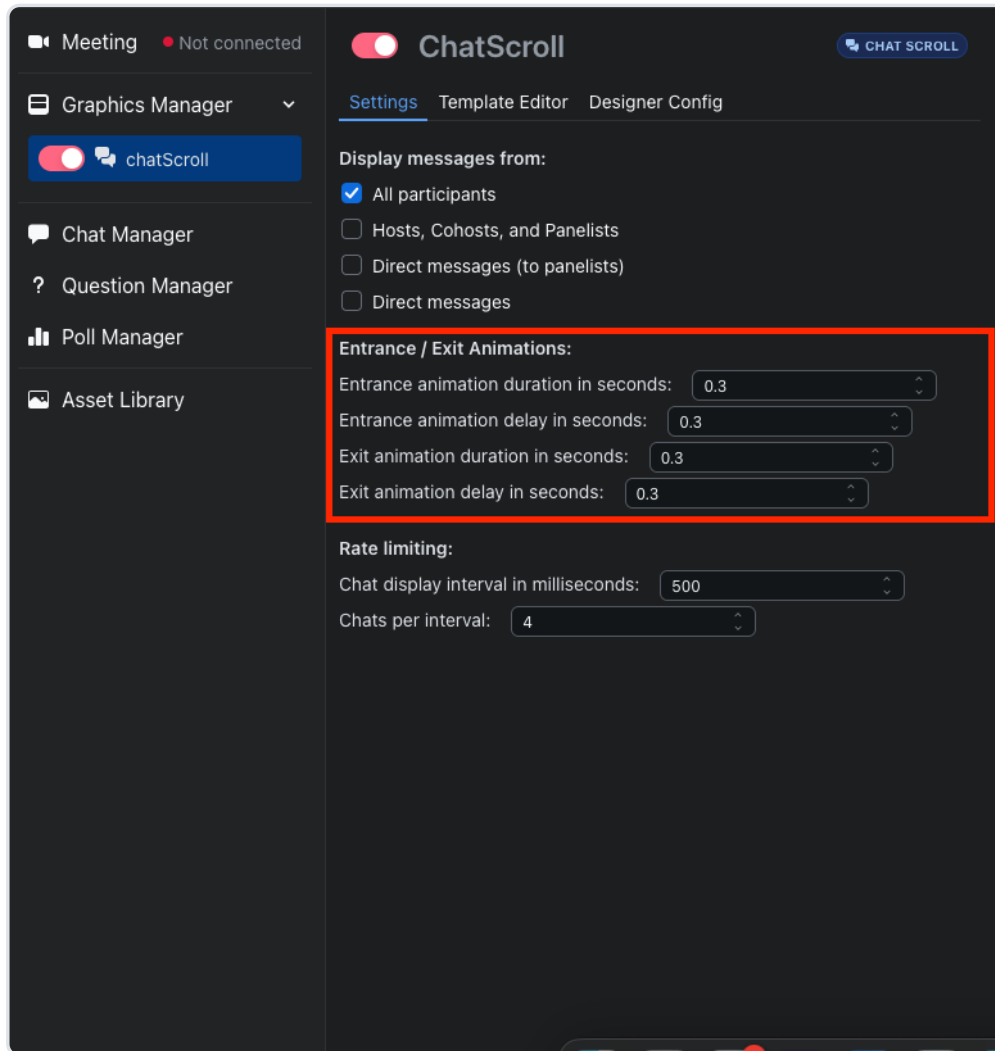
The Zoom Graphics Toolkit uses Framer Motion's **AnimatePresence** to animate components in and out of view across different graphic types.

This means that every time a graphic is:

- **Rendered** → an **entrance animation** runs.
- **Removed** → an **exit animation** runs.

Timing Configuration and Constraints

- You can customize the entrance/exit timing in the graphic designer's settings panel:



- Duration constraints: 0.0 seconds to 10.0 seconds
- Delay constraints: 0.0 seconds to 10.0 seconds

Parent Containers

All HTML written by the user in the *Template Editor* tab exists within a parent div of:

- **chat-message-container** or **chat-reply-container** (for Chat Scroll and Chat Highlight graphics)
- **answer-message-container** or **question-message-container** (for QA Scroll and QA Highlight graphics)

Those divs also exist within a parent div of **content-area** (regardless of graphic

type). It is important to implement styling in the CSS for the automatically injected divs in order for animations to apply.

The following is an example of a chat highlight graphic that manipulates these parent containers.

```

1 <div class='chat-highlight-lower-third'>
2   {{#if senderAvatarPath}}
3     <img class='chat-avatar' src='{{senderAvatarPath}}' alt='Avatar' />
4   {{/if}}
5   <div class='chat-content'>
6     <div class='chat-header'>
7       <span class='sender-name'>{{Titlecase senderDisplayName}}</span>
8       <time class='chat-time'>{{FormattedTime timestamp 'p'}}</time>
9     </div>
10    <p class='chat-message'>{{msgContent}}</p>
11  </div>
12 </div>

```

```

1 .content-area {
2   height: 100%;
3 }
4
5 .chat-message-container {
6   position: relative;
7   height: 100%;
8   width: 100%;
9 }
10
11 .chat-reply-container {
12   position: relative;
13   height: 100%;
14   width: 100%;
15 }
16
17 .chat-highlight-lower-third {
18   position: absolute;
19   bottom: 10%;
20   left: 50%;
21   transform: translateX(-50%);
22   background-color: var(--background-color, #000000aa);
23   color: var(--text-color, #ffffff);
24   padding: var(--padding, 10px);
25   border-radius: var(--border-radius, 5px);
26   font-family: var(--font-family, 'Almaden Sans'), sans-serif;
27   font-size: var(--font-size, 14px);
28   display: flex;
29   align-items: center;
30   max-width: 80%;
31   box-shadow: 0 2px 10px rgba(0, 0, 0, 0.3);
32 }

```

Note that in the above example, it is critical that the CSS addresses style for ``.content-area``, ``.chat-message-container`` and ``.chat-reply-container`` in order for the Motion animations to apply.

CSS Hooks

Users can add additional animation styling using the *framer-animate-presence-exiting* class which is applied to an element that is about to be removed.

The following is an example of how a poll graphic type might use this class.

```
1 .question-title-container.framer-animate-presence-exiting {
2   animation-name: slide-out;
3   animation-delay: 0s;
4   animation-duration: 0.5s;
5   animation-timing-function: ease-in;
6   animation-fill-mode: both;
7   animation-direction: normal;
8 }
```

Here's another example, this time with a chat scroll graphic type with a custom animation.

```
1 .template-chat-message-container.framer-animate-presence-exiting {
2   animation-name: fade-slide-out;
3   animation-duration: 0.5s;
4   animation-fill-mode: both;
5   animation-timing-function: ease-in;
6 }
7
8 @keyframes fade-slide-out {
9   0% {
10    transform: translateX(0);
11    opacity: 1;
12  }
13  100% {
14    transform: translateX(100%);
15    opacity: 0;
16  }
17 }
```

Syntax

Graphic designer form generation

Syntax

Since the graphic designer form configuration is represented as a JSON format, users must adhere to JSON syntax rules.

- keys and values must be enclosed with double quotes NOT single quotes
- The version number must be a semantic version number. An example would be "1.0.0". (see <https://semver.org/> for more information).

```

1 // This is correct ✓
2 "version": "1.0.0"
3 "form-checkbox": "true"
4 "max": "40"
5
6 // This is wrong ✗
7 "version": 1.0.0
8 "version": "v1.0"
9 version: "1.0.0"
10 'version': "1.0.0"
11 'version': '1.0.0'
12 "form-checkbox": true
13 "max": 40

```

- JSON data must be followed by a comma when there is more data after it, otherwise you will encounter an error that prevents saving your changes

```

1 // This is correct ✓
2 {
3   "version": "0.0.1",
4   "form": [...]
5 }
6
7 // This is correct ✓
8 {
9   "version": "0.0.1",
10  "form": [...],
11  "sectionMacros": {...}
12 }
13
14 // This is wrong ✗
15 {
16   "version": "0.0.1",
17   "form": [...],
18   // There is no data after "form" so this comma will cause an error
19 }

```



- Escape the quotation character `"` using the backslash `\` if you want to include it part of your string

```
1 // This is correct ✓  
2 "css-image": "url(\"\\\")"  
3  
4 // This is wrong ✗  
5 "css-image": "url("")"
```

Configuration property references

- The code snippets and tables below serve as references for the properties that can be utilized in the designer form configuration
- Form vs Macro
 - **Form:** The general layout of what the design form will include
 - **Macro:** The pre-programmed pieces of the design form that allows you to adjust the designs of your graphic. With these macros, you can easily update colors, sizes, layouts, and other design properties without rebuilding the entire graphic from scratch.
 - The benefit of setting `parameterMacros` and `sectionMacros` is that they are re-usable. The macros can be used multiple times without having to re-create a `GraphicDesignerFormSection` object or

GraphicDesignerParameter inside the form

Design form configuration

Typescript definition

```
1 type GraphicDesignerFormConfig = {
2   version: string
3   parameterMacros?: { [macroName: string]: GraphicDesignerParameter }
4   // optional
5   sectionMacros?: { [macroName: string]: GraphicDesignerFormSection }
6   // optional
7   form: (GraphicDesignerFormSection | SectionMacroReference)[]
8 }
```

JSON example

```
1 {
2   "version": "1.0.0",
3   "form": ["BACKGROUND"]
4 }
```

Table reference

Property	Type	Required
version	string	
parameterMacros	`{ [ macroName: string ]: GraphicDesignerParameter }`	optional
sectionMacros	`{ [ macroName: string ]: GraphicDesignerFormSection }`	optional
form	Array of <u>GraphicDesignerFormSection</u> and <u>SectionMacroReference</u>	

Default macro sections

The following list are names (macroName) for default macro presets that the user can choose from. Each of the presets follows the syntax of the GraphicDesignerFormSection object.

- BOUNDS

```
1 {
```

```

2   "label": "Bounds",
3   "slug": "bounds",
4   "subSectionsPresentation": "column",
5   "subsections": [
6     {
7       "slug": "vertical",
8       "parametersPresentation": "row",
9       "parameters": [
10        {
11          "label": "Vertical Anchor",
12          "slug": "anchor",
13          "types": ["gfx-global-variable", "form-select"],
14          "defaults": {
15            "form-select": "top"
16          },
17          "defaultType": "form-select",
18          "parameterTypeBasedOptions": {
19            "form-select": {
20              "options": [
21                {
22                  "label": "Top & Bottom",
23                  "value": "top-and-bottom"
24                },
25                {
26                  "label": "Top",
27                  "value": "top"
28                },
29                {
30                  "label": "Bottom",
31                  "value": "bottom"
32                },
33                {
34                  "label": "Center",
35                  "value": "center"
36                }
37              ]
38            }
39          }
40        },
41        {
42          "label": "Top",
43          "slug": "top",
44          "types": ["gfx-global-variable", "css-length", "css-percentage"]
45        },
46        {
47          "defaults": {
48            "css-length": "0px",
49            "css-percentage": "0%"
50          },
51          "defaultType": "css-length",
52          "dependencies": [
53            {
54              "accessor": "./anchor",
55              "values": ["top", "top-and-bottom"]
56            }
57          ]
58        }
59      ]
60    }
61  ],
62  "dependencies": [
63    {
64      "accessor": "./anchor",
65      "values": ["top", "top-and-bottom"]
66    }
67  ]
68 }

```

```

57     {
58         "label": "Translate-y",
59         "slug": "translate_y",
60         "types": ["gfx-global-variable", "css-length", "css-percentage"]
61     },
62     {
63         "defaults": {
64             "css-length": "0px",
65             "css-percentage": "0%"
66         },
67         "defaultType": "css-length",
68         "dependencies": [
69             {
70                 "accessor": "./anchor",
71                 "values": ["center"]
72             }
73         ],
74     },
75     {
76         "label": "Bottom",
77         "slug": "bottom",
78         "types": ["gfx-global-variable", "css-length", "css-percentage"]
79     },
80     {
81         "defaults": {
82             "css-length": "0px",
83             "css-percentage": "0%"
84         },
85         "defaultType": "css-length",
86         "dependencies": [
87             {
88                 "accessor": "./anchor",
89                 "values": ["bottom", "top-and-bottom"]
90             }
91         ],
92     },
93     {
94         "label": "Height",
95         "slug": "height",
96         "types": ["gfx-global-variable", "css-length", "css-percentage"],
97         "form-select",
98     },
99     {
100         "defaults": {
101             "css-length": "0px",
102             "css-percentage": "0%"
103         },
104         "defaultType": "css-length",
105         "dependencies": [
106             {
107                 "accessor": "./anchor",
108                 "values": ["top", "bottom", "center"]
109             }
110         ],
111     },
112     {
113         "parameterTypeBasedOptions": {
114             "form-select": {
115                 "options": ["auto", "max-content", "min-content",
116                     "fit-content", "stretch"]
117             }
118         }
119     }

```

```

109     }
110   ]
111 },
112 {
113   "slug": "horizontal",
114   "parametersPresentation": "row",
115   "parameters": [
116     {
117       "label": "Horizontal Anchor",
118       "slug": "anchor",
119       "types": ["gfx-global-variable", "form-select"],
120       "defaults": {
121         "form-select": "left"
122       },
123       "defaultType": "form-select",
124       "parameterTypeBasedOptions": {
125         "form-select": {
126           "options": [
127             {
128               "label": "Left & Right",
129               "value": "left-and-right"
130             },
131             {
132               "label": "Left",
133               "value": "left"
134             },
135             {
136               "label": "Right",
137               "value": "right"
138             },
139             {
140               "label": "Center",
141               "value": "center"
142             }
143           ]
144         }
145       }
146     },
147     {
148       "label": "Left",
149       "slug": "left",
150       "types": ["gfx-global-variable", "css-length", "css-percentage"],
151       "defaults": {
152         "css-length": "0px",
153         "css-percentage": "0%"
154       },
155       "defaultType": "css-length",
156       "dependencies": [
157         {
158           "accessor": "./anchor",
159           "values": ["left", "left-and-right"]
160         }
161       ]
162     },
163     {

```

```

164         "label": "Right",
165         "slug": "right",
166         "types": ["gfx-global-variable", "css-length", "css-percentage"
167     ],
168     "defaults": {
169         "css-length": "0px",
170         "css-percentage": "0%"
171     },
172     "defaultType": "css-length",
173     "dependencies": [
174         {
175             "accessor": "./anchor",
176             "values": ["right", "left-and-right"]
177         }
178     ],
179     {
180         "label": "Translate-x",
181         "slug": "translate_x",
182         "types": ["gfx-global-variable", "css-length", "css-percentage"
183     ],
184     "defaults": {
185         "css-length": "0px",
186         "css-percentage": "0%"
187     },
188     "defaultType": "css-length",
189     "dependencies": [
190         {
191             "accessor": "./anchor",
192             "values": ["center"]
193         }
194     ],
195     {
196         "label": "Width",
197         "slug": "width",
198         "types": ["gfx-global-variable", "css-length", "css-percentage",
199     "form-select"],
200     "defaults": {
201         "css-length": "0px",
202         "css-percentage": "0%"
203     },
204     "defaultType": "css-length",
205     "dependencies": [
206         {
207             "accessor": "./anchor",
208             "values": ["left", "right", "center"]
209         }
210     ],
211     "parameterTypeBasedOptions": {
212         "form-select": {
213             "options": ["auto", "max-content", "min-content",
214     "fit-content", "stretch"]
215         }
216     }

```

```

216     ]
217   }
218 ]
219 }

```

- SIZE_CONSTRAINTS

```

1 {
2   "label": "Size Constraints",
3   "slug": "size_constraint",
4   "parametersPresentation": "row",
5   "parameters": [
6     {
7       "label": "Min-Width",
8       "slug": "min_width",
9       "types": ["gfx-global-variable", "css-length", "css-percentage"],
10      "defaults": {
11        "css-length": "0px",
12        "css-percentage": "0%"
13      },
14      "defaultType": "css-length"
15    },
16    {
17      "label": "Max-Width",
18      "slug": "max_width",
19      "types": ["gfx-global-variable", "css-length", "css-percentage"],
20      "defaults": {
21        "css-length": "0px",
22        "css-percentage": "100%"
23      },
24      "defaultType": "css-percentage"
25    },
26    {
27      "label": "Min-Height",
28      "slug": "min_height",
29      "types": ["gfx-global-variable", "css-length", "css-percentage"],
30      "defaults": {
31        "css-length": "0px",
32        "css-percentage": "0%"
33      },
34      "defaultType": "css-length"
35    },
36    {
37      "label": "Max-Height",
38      "slug": "max_height",
39      "types": ["gfx-global-variable", "css-length", "css-percentage"],
40      "defaults": {
41        "css-length": "0px",
42        "css-percentage": "100%"
43      },
44      "defaultType": "css-percentage"
45    }
46  ]
47 }

```

- PADDING

```

1 {
2   "label": "Paddding",
3   "slug": "padding",
4   "parametersPresentation": "row",
5   "parameters": [
6     {
7       "label": "Top",
8       "slug": "top",
9       "types": ["gfx-global-variable", "css-length", "css-percentage"],
10      "defaults": {
11        "css-length": "0px",
12        "css-percentage": "0%"
13      },
14      "defaultType": "css-length"
15    },
16    {
17      "label": "Right",
18      "slug": "right",
19      "types": ["gfx-global-variable", "css-length", "css-percentage"],
20      "defaults": {
21        "css-length": "0px",
22        "css-percentage": "0%"
23      },
24      "defaultType": "css-length"
25    },
26    {
27      "label": "Bottom",
28      "slug": "bottom",
29      "types": ["gfx-global-variable", "css-length", "css-percentage"],
30      "defaults": {
31        "css-length": "0px",
32        "css-percentage": "0%"
33      },
34      "defaultType": "css-length"
35    },
36    {
37      "label": "Left",
38      "slug": "left",
39      "types": ["gfx-global-variable", "css-length", "css-percentage"],
40      "defaults": {
41        "css-length": "0px",
42        "css-percentage": "0%"
43      },
44      "defaultType": "css-length"
45    }
46  ]
47 }

```

- MARGIN

```

1 {

```

```

2   "label": "Margin",
3   "slug": "margin",
4   "parametersPresentation": "row",
5   "parameters": [
6     {
7       "label": "Top",
8       "slug": "top",
9       "types": ["gfx-global-variable", "css-length", "css-percentage"],
10      "defaults": {
11        "css-length": "0px",
12        "css-percentage": "0%"
13      },
14      "defaultType": "css-length"
15    },
16    {
17      "label": "Right",
18      "slug": "right",
19      "types": ["gfx-global-variable", "css-length", "css-percentage"],
20      "defaults": {
21        "css-length": "0px",
22        "css-percentage": "0%"
23      },
24      "defaultType": "css-length"
25    },
26    {
27      "label": "Bottom",
28      "slug": "bottom",
29      "types": ["gfx-global-variable", "css-length", "css-percentage"],
30      "defaults": {
31        "css-length": "0px",
32        "css-percentage": "0%"
33      },
34      "defaultType": "css-length"
35    },
36    {
37      "label": "Left",
38      "slug": "left",
39      "types": ["gfx-global-variable", "css-length", "css-percentage"],
40      "defaults": {
41        "css-length": "0px",
42        "css-percentage": "0%"
43      },
44      "defaultType": "css-length"
45    }
46  ]
47 }

```

- TEXT_STYLING

```

1 {
2   "label": "Text Styling",
3   "slug": "text_style",
4   "subSectionsPresentation": "column",
5   "subsections": [

```

```

6      {
7        "slug": "font",
8        "parametersPresentation": "row",
9        "parameters": [
10         {
11           "slug": "family",
12           "label": "Font Family",
13           "types": ["gfx-global-variable", "css-font-family"],
14           "defaults": {
15             "css-font-family": "system-ui"
16           }
17         },
18         {
19           "slug": "size",
20           "label": "Font Size",
21           "types": ["gfx-global-variable", "css-length", "css-percentage"]
22         },
23         {
24           "defaults": {
25             "css-length": "14px",
26             "css-percentage": "0%"
27           },
28           "defaultType": "css-length"
29         },
30         {
31           "slug": "weight",
32           "label": "Font Weight",
33           "types": ["gfx-global-variable", "form-select", "form-number"],
34           "defaults": {
35             "form-select": "400",
36             "form-number": "400"
37           },
38           "defaultType": "form-select",
39           "parameterTypeBasedOptions": {
40             "form-select": {
41               "options": [
42                 {
43                   "label": "Thin",
44                   "value": "100"
45                 },
46                 {
47                   "label": "Extra Light",
48                   "value": "200"
49                 },
50                 {
51                   "label": "Light",
52                   "value": "300"
53                 },
54                 {
55                   "label": "Normal",
56                   "value": "400"
57                 },
58                 {
59                   "label": "Medium",
60                   "value": "500"

```

```

61         "label": "Semi Bold",
62         "value": "600"
63     },
64     {
65         "label": "Bold",
66         "value": "700"
67     },
68     {
69         "label": "Extra Bold",
70         "value": "800"
71     },
72     {
73         "label": "Black",
74         "value": "900"
75     }
76 ]
77 }
78 }
79 }
80 ]
81 },
82 {
83     "slug": "format",
84     "parametersPresentation": "row",
85     "parameters": [
86         {
87             "slug": "is_italicized",
88             "label": "Italicize",
89             "types": ["gfx-global-variable", "form-checkbox"],
90             "defaults": {
91                 "form-checkbox": "true"
92             }
93         },
94         {
95             "slug": "is_underlined",
96             "label": "Underline",
97             "types": ["gfx-global-variable", "form-checkbox"],
98             "defaults": {
99                 "form-checkbox": "true"
100         }
101     },
102     {
103         "slug": "color",
104         "label": "color",
105         "types": ["gfx-global-variable", "css-color"],
106         "defaults": {
107             "form-checkbox": "#000000FF"
108         }
109     }
110 ]
111 }
112 ]
113 }

```

- BORDER_STYLING

```

1 {
2   "slug": "border",
3   "label": "Border Styling",
4   "parametersPresentation": "row",
5   "parameters": [
6     {
7       "label": "Border Thickness",
8       "slug": "thickness",
9       "types": ["gfx-global-variable", "css-length"],
10      "defaults": {
11        "css-length": "0px"
12      }
13    },
14    {
15      "label": "Border Radius",
16      "slug": "radius",
17      "types": ["gfx-global-variable", "css-length"],
18      "defaults": {
19        "css-length": "0px"
20      }
21    },
22    {
23      "label": "Border Color",
24      "slug": "color",
25      "types": ["gfx-global-variable", "css-color"],
26      "defaults": {
27        "css-color": "#000000FF"
28      }
29    }
30  ]
31 }

```

- SHADOW_STYLING

```

1 {
2   "slug": "shadow",
3   "label": "Shadow Styling",
4   "subSectionsPresentation": "column",
5   "subsections": [
6     {
7       "slug": "",
8       "parametersPresentation": "row",
9       "parameters": [
10        {
11          "slug": "is_visible",
12          "label": "Show Shadow",
13          "types": ["gfx-global-variable", "form-checkbox"],
14          "defaults": {
15            "form-checkbox": "false"
16          }
17        },
18        {
19          "slug": "color",
20          "label": "Shadow Color",

```

```

21         "types": ["gfx-global-variable", "css-color"],
22         "defaults": {
23             "css-color": "#000000FF"
24         }
25     }
26 ]
27 },
28 {
29     "slug": "",
30     "parametersPresentation": "row",
31     "parameters": [
32         {
33             "slug": "x_offset",
34             "label": "X Offset",
35             "types": ["gfx-global-variable", "css-length"],
36             "defaults": {
37                 "css-length": "0px"
38             }
39         },
40         {
41             "slug": "y_offset",
42             "label": "Y Offset",
43             "types": ["gfx-global-variable", "css-length"],
44             "defaults": {
45                 "css-length": "0px"
46             }
47         },
48         {
49             "slug": "blur_radius",
50             "label": "Blur Radius",
51             "types": ["gfx-global-variable", "css-length"],
52             "defaults": {
53                 "css-length": "0px"
54             }
55         }
56     ]
57 }
58 ]
59 }

```

- BACKGROUND

```

1 {
2     "label": "Background",
3     "slug": "background",
4     "parameters": [
5         {
6             "label": "Fill",
7             "slug": "fill",
8             "types": ["gfx-global-variable", "css-color", "css-image"],
9             "defaults": {
10                 "css-color": "#000000FF",
11                 "css-image": "url(\" \")"
12             },

```

```

13     "defaultType": "css-color"
14   }
15 ],
16 "parametersPresentation": "row",
17 "subSectionsPresentation": "column",
18 "subsections": [
19   {
20     "slug": "",
21     "parametersPresentation": "row",
22     "parameters": [
23       {
24         "label": "Background Size",
25         "slug": "size",
26         "types": ["gfx-global-variable", "form-select", "css-length",
27 "css-percentage"],
28         "parameterTypeBasedOptions": {
29           "form-select": {
30             "options": ["cover", "contain", "auto"]
31           }
32         },
33         "defaults": {
34           "form-select": "contain"
35         },
36         "defaultType": "form-select"
37       },
38       {
39         "label": "Background Repeat",
40         "slug": "repeat",
41         "types": ["gfx-global-variable", "form-select"],
42         "parameterTypeBasedOptions": {
43           "form-select": {
44             "options": ["repeat", "no-repeat", "space", "round",
45 "repeat-x", "repeat-y"]
46           }
47         },
48         "defaults": {
49           "form-select": "repeat"
50         },
51         "defaultType": "form-select"
52       }
53     ]
54   }

```

If a user wanted to, they can create a custom macro with the macroName of CUSTOM10 and they can copy the value of BOUNDS and paste for the value of CUSTOM10 inside the sectionMacros property.

GraphicDesignerParameter object

Typescript definition

```
1 type GraphicDesignerParameter = {
2   label?: string // optional
3   slug: string
4   description?: string // optional
5   types: GraphicDesignerParameterType[]
6   defaultType?: GraphicDesignerParameterType // optional
7   defaults?: {
8     [type in GraphicDesignerParameterType]?: string // optional
9   } // optional
10  parameterTypeBasedOptions?: {
11    'css-length'?: CssLengthParamOptions // optional
12    'css-percentage'?: CssPercentageOptions // optional
13    'css-angle'?: CssAngleOptions // optional
14    'css-color'?: CssColorOptions // optional
15    'css-image'?: CssImageOptions // optional
16    'form-text'?: FormTextOptions // optional
17    'form-number'?: FormNumberOptions // optional
18    'form-select'?: FormSelectOptions // optional
19    'form-checkbox'?: FormCheckboxOptions // optional
20    'form-toggle'?: FormToggleOptions // optional
21  } // optional
22  dependencies?: {
23    accessor: string
24    values: string[] // or
25  }[] // optional // and
26 }
```

JSON example

```
1 {
2   "label": "Fill",
3   "slug": "fill",
4   "types": ["css-color", "css-image"],
5   "defaults": {
6     "css-color": "#000000FF",
7     "css-image": "url(\"\")"
8   },
9   "defaultType": "css-color"
10 }
```

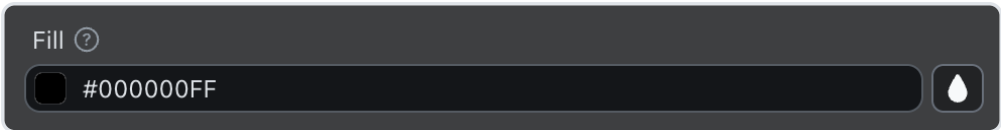


Table reference

Property	Type	Required
label	string	optional
slug	string	

description	string	optional
types	Array of <u>GraphicDesignerParameterType</u>	
defaultType	<u>GraphicDesignerParameterType</u>	optional
defaults	<i>Refer to code snippet</i>	optional
parameterTypeBasedOptions	<i>Refer to code snippet</i>	optional
dependencies	<i>Refer to code snippet</i>	optional

GraphicDesignerFormSection object

Typescript definition

```

1 type GraphicDesignerFormSection = {
2   label?: string // optional
3   slug: string
4   description?: string // optional
5   parametersPresentation?: 'flex-grid' | 'column' | 'row' // optional
6   parameters?: (GraphicDesignerParameter | ParameterMacroReference)[]
  // optional
7   subSectionsPresentation?: 'accordion' | 'tabs' | 'column' | 'row'
  // optional
8   subsections?: (GraphicDesignerFormSection | SectionMacroReference)[]
  // optional
9 }

```

JSON example

```

1 {
2   "label": "Test container 1",
3   "slug": "tc_1",
4   "description": "This is a test GraphicDesignerFormSection",
5   "parametersPresentation": "column",
6   "parameters": [
7     {
8       "label": "Fill",
9       "slug": "fill",
10      "types": ["css-color", "css-image"],
11      "defaults": {
12        "css-color": "#000000FF",
13        "css-image": "url(\"\\\")"
14      },
15      "defaultType": "css-color"
16    }
17  ],
18   "subSectionsPresentation": "tabs",
19   "subsections": ["PADDING", "MARGIN"]

```

20 }

Test container 1

Fill

#000000FF

Padding

Margin

Top

0px

Right

0px

Bottom

0px

Left

0px

Table Reference

Property	Type	Required
label	string	optional
slug	string	
description	string	optional
parametersPresentation	"flex-grid"	"column" "row" optional
parameters	Array of <u>GraphicDesignerParameter</u> and <u>ParameterMacroReference</u>	optional
subSectionsPresentation	"accordion"	"tabs" "column" "row" optional
subsections	Array of <u>GraphicDesignerFormSection</u> and <u>SectionMacroReference</u>	optional

SectionMacroReference type

This is a reference to either a default **section** macro preset or a custom section macro created by the user. The user can either provide the macro name as a simple string or supply an object to overwrite both the label and slug.

Typescript definition

```
1 type SectionMacroReference =
2   | string
```

```
3 | {  
4   macroName: string  
5   label?: string  
6   slug?: string  
7 }
```

Table reference

Property	Type	Required
macroName	string	"BOUNDS" "SIZE_CONSTRAINT" "PADDING" "MARGIN" "TEXT_STYLING" "BORDER_STYLING" "SHADOW_STYLING" "BACKGROUND"
label	string	optional
slug	string	optional

ParameterMacroReference object

This is a reference to a custom **parameter** macro created by the user. The user can either provide the macro name as a simple string or supply an object to overwrite both the label and slug.

Typescript definition

```
1 type ParameterMacroReference =  
2 | string  
3 | {  
4   macroName: string  
5   label?: string  
6   slug: string // optional  
7 }
```

Table reference

Property	Type	Required
macroName	string	
label	string	optional
slug	string	optional

Reference

GraphicDesignerParameterType options

Table reference

Option name	Type
css-length	string
css-percentage	string
css-angle	string
css-color	string
css-image	string
css-font-family	string
form-text	string
form-number	string
form-select	string
form-checkbox	string
form-toggle	string
gfx-global-variable	string

CSS Parameter options

CssLengthParamOptions

Typescript definition

```
1 type CssLengthParamOptions = {
2   units: ('px' | 'em' | 'vh' | 'vw' | 'cqw' | 'cqh' | 'cqi')[]
3   // empty means all
4   constraints?: {
5     [unit in 'px' | 'em' | 'vh' | 'vw' | 'cqw' | 'cqh' | 'cqi']: {
6       min?: number // optional
7       max?: number // optional
8     }
9   }[] // optional
10 }
```

Table reference

Property	Type	Required
units	Array of "px" "em" "vh" "vw" "cqw" "cqh" "cqi"	
constraints	<i>Refer to code snippet</i>	optional

CssPercentageOptions

Typescript definition

```
1 type CssPercentageOptions = {
2   constraints?: {
3     min?: number
4     max?: number
5   }
6 }
```

Table reference

Property	Type	Required
constraints	<i>Refer to code snippet</i>	optional

CssAngleOptions

No support yet

CssColorOptions

Typescript definition

```
1 undefined
```

CssImageOptions

Typescript definition

```
1 undefined
```

CssFontFamily

Typescript definition

```
1 undefined
```

Form parameter options

FormTextOptions

Typescript definition

```
1 undefined
```

FormNumberOptions

Typescript definition

```
1 undefined
```

FormSelectOptions

Typescript definition

```
1 type FormSelectOptions = {
2   options:
3     | {
4       value: string
5       label: string
6     }[]
7   | string[]
8 }
```

JSON example

```
1 {
2   "options": [
3     {
4       "value": "500",
5       "label": "Medium"
6     }
7   ]
8 }
```

Table reference

Property	Type	Required
options	Array of string or Array of <code>`{"value": string, "label": string}`</code>	

FormCheckboxOptions

Typescript definition

```
1 undefined
```

FormToggleOptions

Typescript definition

```
1 undefined
```

Special Gfx parameter options

GfxGlobalVariableOptions

Typescript definition

```
1 undefined
```