

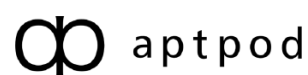


Visual M2M Data Visualizer Operation Manual

Visual M2M Data Visualizer v3.6.0



2022Q3R1



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01 Introduction (Data Visualizer)

Important:

- This document is for general informational purposes only. Specifications in this document are subject to change without notice and are not guaranteed.
- Screenshots used in descriptions are examples. Some displays or procedures might differ depending on your environment and application version.

Note: Company names, service names, and product names mentioned in this document are generally registered trademarks or trademarks of their respective owners. Trademark symbols "™" and "®" are omitted in the text, figures, and tables.

Attention: This document has been translated using machine translation services and may contain inaccuracies and translation errors. Please also refer to the official version in Japanese.

This document describes the basic operations required to display and analyze data by using Visual M2M Data Visualizer (hereinafter called Data Visualizer).

02 System requirements for Data Visualizer

A server system must be prepared to use Data Visualizer with each new project. Prepare a client personal computer (PC) with a browser installed. The recommended environment is as follows.

- OS: Windows, macOS
- CPU: Intel 3rd Generation Core i5
- Memory: At least 8 GB
- Network: Internet network environment
- Browser: Google Chrome (Latest version)

03 Data Visualizer tutorial videos

Tutorial videos on how to use the Data Visualizer are available.

To view the tutorial videos, click on the links listed at the bottom of the following page:

<https://www.aptpod.co.jp/products/data-visualization/> (available in Japanese only)

04 Sign in

1. Open the URL of your intdash domain (e.g. <https://example.intdash.jp>) in your web browser.
The URL is different for each intdash domain; if you have not received a URL, user name, or password, please contact your administrator.

2. When the sign-in screen appears, enter your user name or registered e-mail address and your password.

Depending on the environment, the [Tenant ID] box may also appear on the sign-in screen. In that case, enter the tenant ID instructed by the administrator. If you leave the [Tenant ID] box blank, you will be signed in to the default tenant.

Fig. 1 Sign in to intdash

3. Read the User Guideline, select [Accept User Guideline], and then click [Sign In].
The Project Console is displayed.
4. Click [Details] for the project you want to use.

Groups			
Name	Created At	Updated At	
example-group-1	Jul 8, 2022, 12:30:22	Oct 5, 2022, 12:01:39	Details
example-group-2	Oct 5, 2022, 12:02:27	Oct 5, 2022, 12:02:27	Details

Projects			
Name	Created At	Updated At	
example-project-1	Oct 5, 2022, 12:01:19	Oct 5, 2022, 12:01:30	Details
Global Project	Jul 6, 2022, 17:09:03	Oct 11, 2022, 14:34:32	Details

Fig. 2 List of projects

5. From the list of applications, click Data Visualizer.

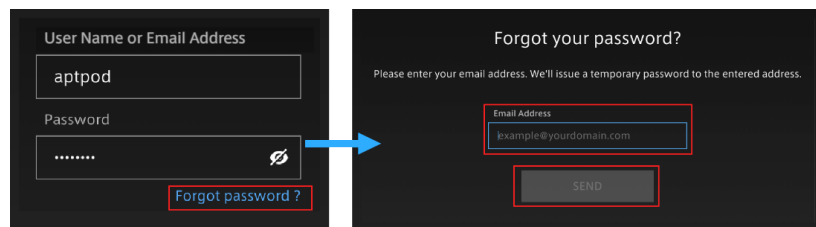
Note: When signing in for the first time

If you are signing in with a password issued by the administrator (temporary password), you will need to set a new password yourself. Please follow the on-screen instructions.

Note: If you forgot your password

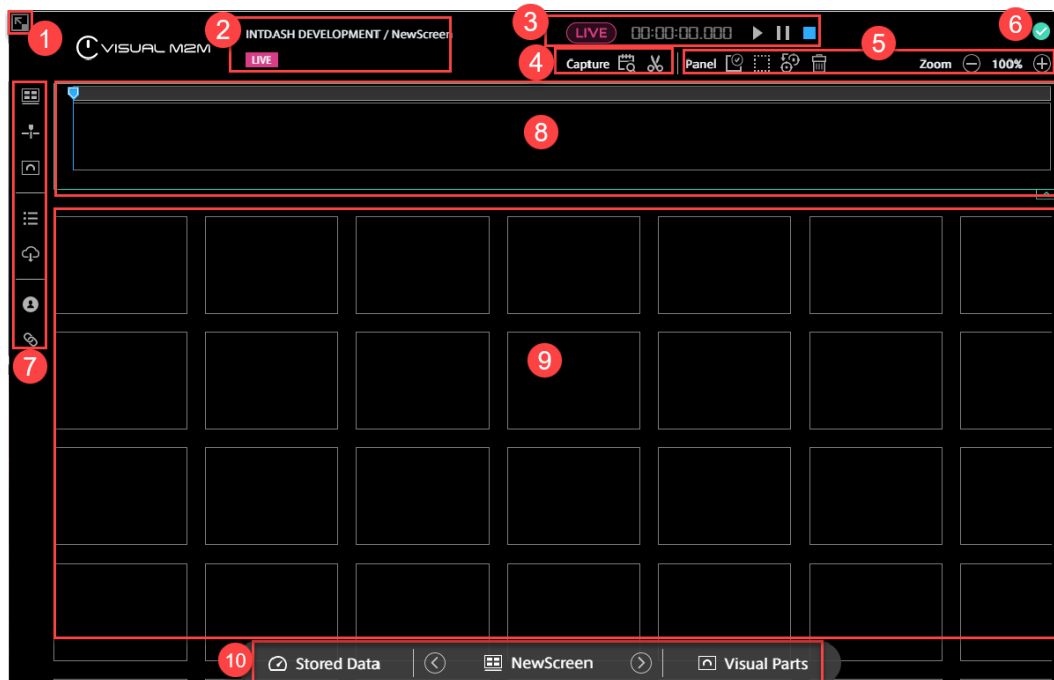
If you forgot your password, reset your password.

1. Click "Forgot password?".
2. Enter the email address of your account in the [Email Address] field.
3. Click [SEND]. An email will be sent to your email address containing a link you can use to reset your password. You can reset your password from the link.



05 Structure of the Data Visualizer window

After sign-in, the following window will appear. The parts of the window are as follows.



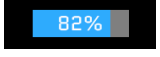


1 Full-screen button

Makes the browser full-screen. Press the [ESC] key to cancel full-screen display.

2 Data information

Displays the domain name, name of the screen being displayed, and data loading status. The display is different between live measurement and past data playback.





Icon	Name	Overview	Used in
	LIVE	Live measurement	Only live measurement
	Reload	Reloads the past data set in the screen.	Only past data playback
	Loading	Displays the collection status of past data.	Only past data playback

3 Playback control

The items are different between live measurement and past data playback.



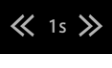

Display of live measurement



Icon	Name	Overview	Used in
	Live Mode	Live measurement mode. Select this to switch the mode to past data playback.	Only live measurement
	Play	Starts playback of measurement data.	Common
	Pause	Pauses the playback of measurement data.	Common
	Stop	Stops the playback of measurement data.	Common



Display of past data playback



Icon	Name	Overview
	Live Mode OFF	Past data playback mode. Select this to switch the mode to live measurement.
	Repeat	Replays measurement data repeatedly.
	Step Backwards/Forwards	Steps backward or forward (step length determined in "Show Forward"). For details, see Cursor operation (p. 43).
	Speed	You can specify the playback speed.

4 Timeline Control

For details, see [Specifying the playback time range](#) (p. 52).

Icon	Name	Overview
	Preview Stored Data	You can specify the playback range of measurement data.
	Create a Capture	Registers the measurement data within a specified range in [Capture] in the content menu.

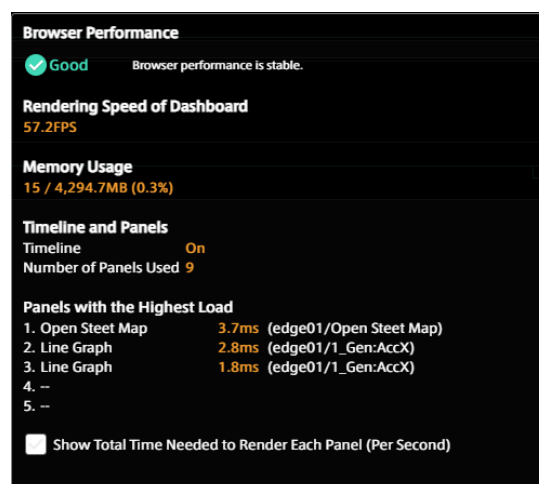
5 Panel operation tools

Icon	Name	Overview
	Select All Panel	Selects all panels.
	Select OFF Panel	Deselects panels.
	Replace Edge	Replaces the edge set in the timeline and panels with another edge.
	Delete Panel	Deletes the selected panel.
	Zoom in	Zooms in the screen panel.
	Zoom Reset	Returns the screen panel to normal magnification.
	Zoom Out	Zooms out the screen panel.

6 Browser performance








Icon	Status	Description
	Good	Normal
	Medium	Slight lag
	Bad	Lag

Click on the browser performance icon to see the details. This information will help you determine the cause of any instability in the Data Visualizer display.



Item	Description
Rendering Speed of Dashboard	Displays the number of times per second the entire dashboard is being updated. This value is the maximum rendering speed of the panels. For example, if the rendering speed is set to 60 FPS in the Panel Settings of a panel, but the rendering speed of the entire dashboard is 50 FPS, the panel will only be displayed at 50 FPS.
Memory Usage	Displays the "Memory currently in use / Memory available to Data Visualizer".
Timeline and Panels	It shows whether the timeline is displayed or not, and how many panels are displaying visual parts.
Panels with the Highest Load	Displays a list of five panels (or the timeline) that are placing significant load on the browser. The number (in milliseconds) is the amount of time the panel took up the processing power of the web browser in one second. The higher the number, the greater the load on the web browser.
Show Total Time Needed to Render Each Panel (Per Second)	When turned on, the amount of time the panel took up the processing power in one second will be displayed on the timeline and on the panels.

7 Function menu

Icon	Name	Overview
	Screen Settings	Changes the screen settings.
	Timeline Settings	Changes the timeline settings.
	Panel Settings	Changes the panel settings.
	Data Settings	Changes the data settings. For details, see Data Settings (p. 21).
	Data Download	Downloads measurement data.
	User settings	Use this function to confirm the signed-in user name, and to sign out.
	Links	Displays various links. You can check the version of Data Visualizer here .





8 Timeline

This area shows the main measurement data for analysis and the time axis. For details, see [Operate on the timeline](#) (p. 41).

9 Screen panels

This area displays measurement data. In this area, the measurement data and edge are bound. For details, see [Bind data to panel](#) (p. 29).

10 Content menu

Icon	Name	Overview
 Stored Data	Stored Data	Displays a list of past measurement data. For details, see Playback past data (p. 49).
 ScreenName 	Screen	Displays a list of screens. For details, see Screens (p. 14).
 Visual Parts	Visual Parts	Use this function to select parts to be displayed on the screen panel.

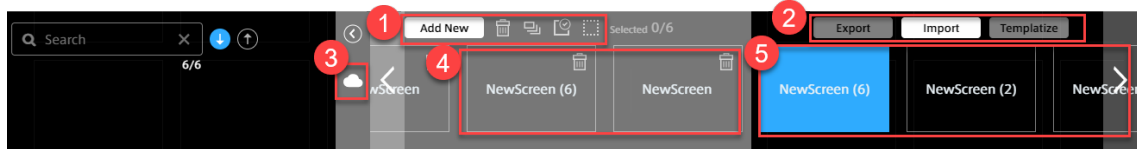
Note: Screen key shortcuts

- s: Opening/closing Screen menu
- d: Opening/closing Stored Data menu
- v: Opening/closing Visual Parts menu
- ESC: Unfocusing input, closing a pop-up message, closing a modal window

06 Screens

6.1 Screens and screen list

A list of screens is displayed. You can create, manage, and switch screens from the list.



1 Operation menu for local screens

Add New

Creates a new local screen. For details, see [Creating screens](#) (p. 15).



Deletes the selected local screen. For details, see [Deleting screens](#) (p. 15).



Copies the selected local screen.



Selects all the local screens.



Deselects the local screens.

2 Sharing function menu

[Templatize]: See [Sharing screen: Template](#) (p. 17).

[Export], [Import]: See [Sharing screen: Export, Import](#) (p. 20).

3 Button to show/hide templates

4 Template screens

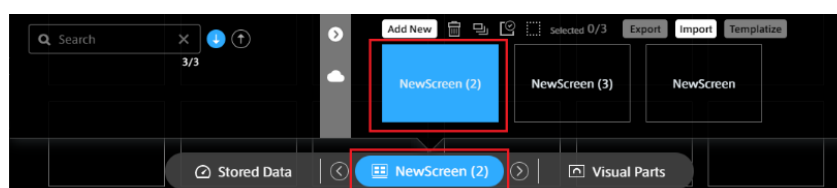
For details, see [Sharing screen: Template](#) (p. 17).

5 Local screens

For details, see [Displaying screens](#) (p. 14) and [Creating screens](#) (p. 15).

6.2 Displaying screens

Click the screen selection button in the content menu, and then select one of the screens displayed in the local screen list.



6.3 Changing displayed screens

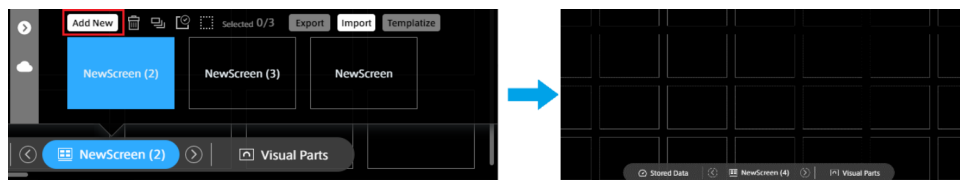
You can directly select a screen to be displayed as described in [Displaying screens](#) (p. 14).

You can also change the displayed screen to the previous or next screen by selecting the [<] and [>] buttons at both ends of the screen selection button.



6.4 Creating screens

Selecting the [Add New] button in the screen list will display a blank screen.





Place visual parts and data you want to use on the screen panel (data binding).

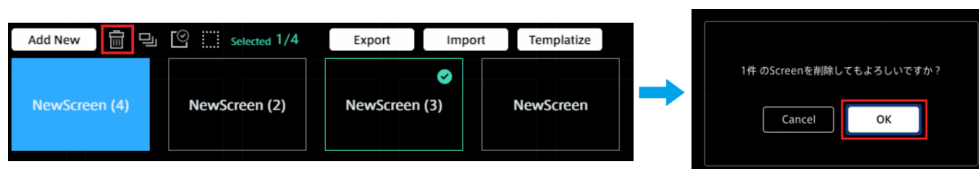
For details about how to bind data to screen panels, see [Bind data to panel](#) (p. 29).

Note: Local screens are managed for each client PC. When using another client PC, you need to create screens again. If you want to reuse screens, use [Sharing screen: Template](#) (p. 17) , or [Sharing screen: Export, Import](#) (p. 20).

6.5 Deleting screens


Mouse over the screen to be deleted and select the displayed  button.

Select  , and then click the [OK] button in the confirmation dialog box.



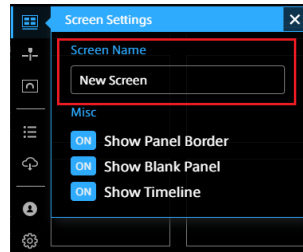
6.6 Changing the screen settings

You can change the settings of the displayed screen.

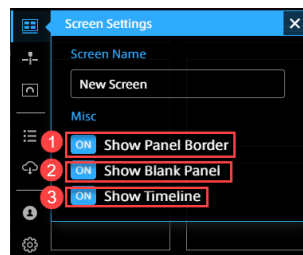
Select  (Screen Settings) from the function menu.

6.6.1 Changing the screen name

Enter the desired name in the [Screen Name] text box.

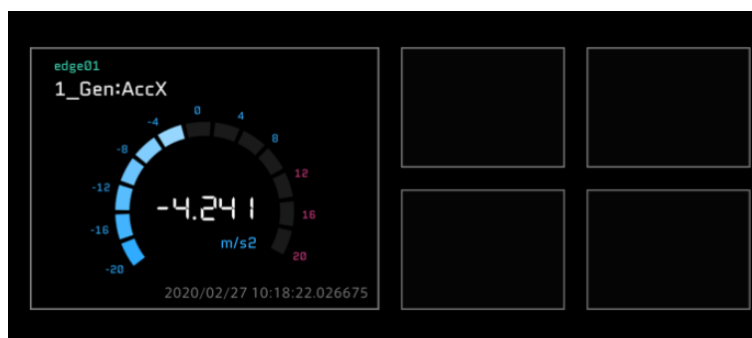


6.6.2 Changing the display of the screen panels

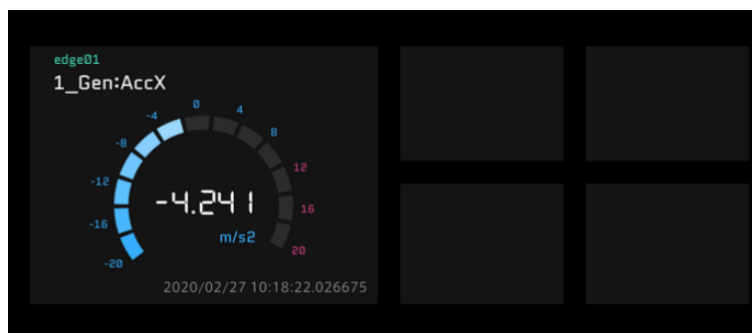


- 1 Show Panel Border**
Show or hide the panel border.
- 2 Show Blank Panel**
Show or hide blank panels.

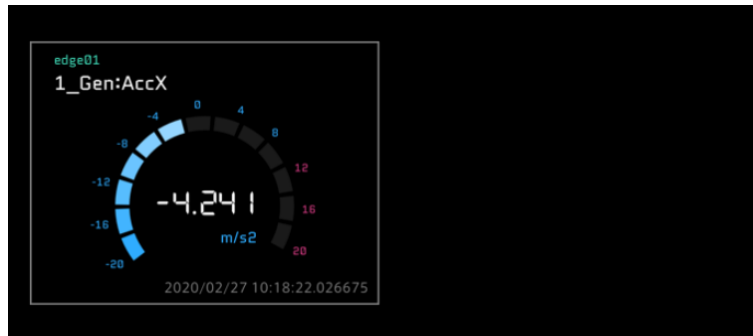
Show Panel Border: ON and Show Blank Panel: ON



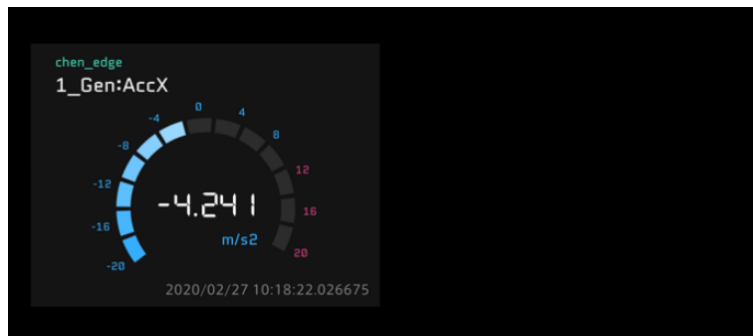
Show Panel Border: OFF and Show Blank Panel: ON



Show Panel Border: ON and Show Blank Panel: OFF

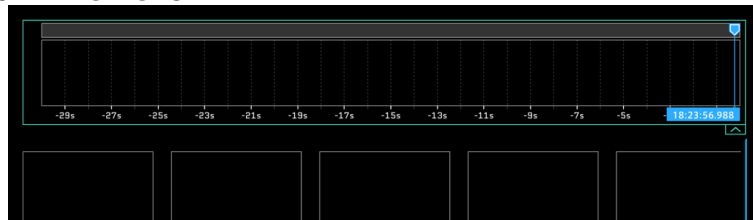


Show Panel Border: OFF and Show Blank Panel: OFF

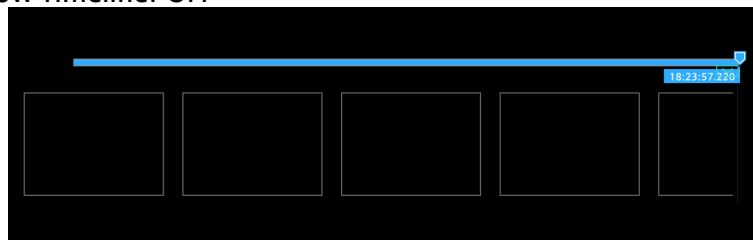


- 3 Show Timeline
Show or hide the timeline.

Show Timeline: ON



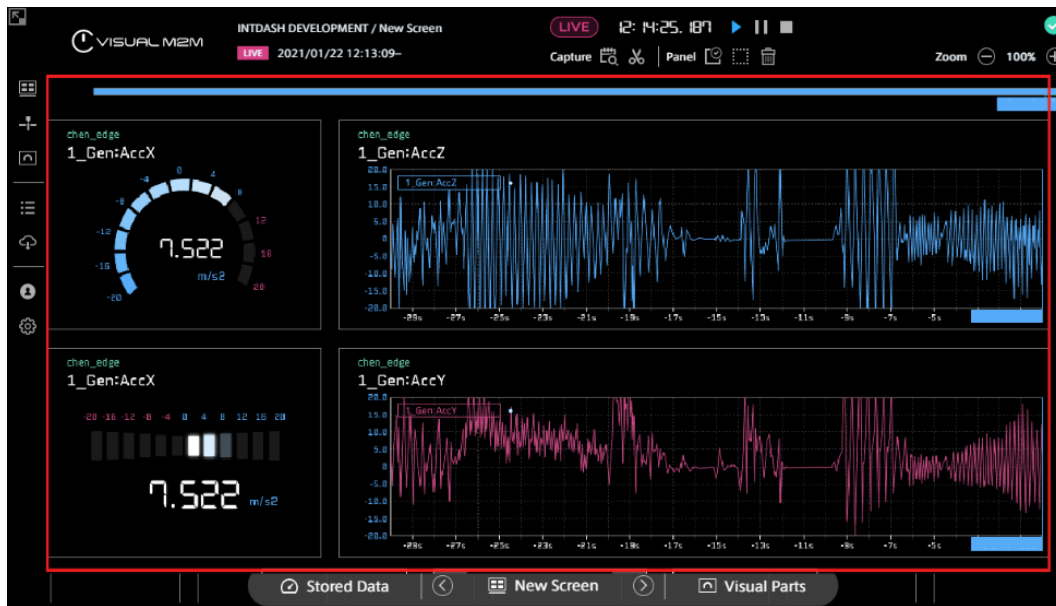
Show Timeline: OFF



6.7 Sharing screen: Template


6.7.1 Screens

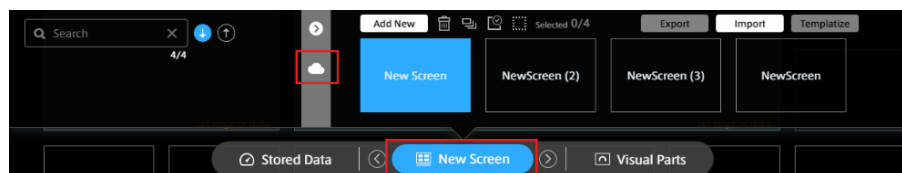
You need to create a screen to display measurement data.
A screen means a single window that displays all the panels.



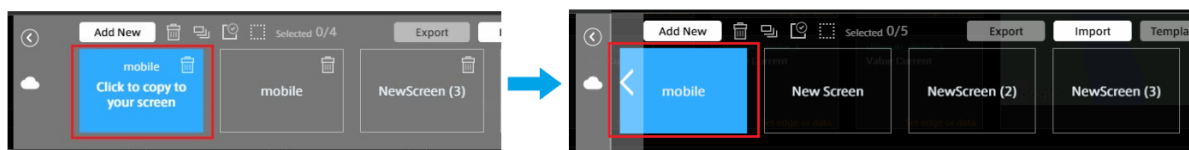
6.7.2 Using templates

You can use screen templates managed by the server for each domain.

Click the screen selection button in the content menu and click .




Select a template you want to use. The template will be added to the end of the local screen list.

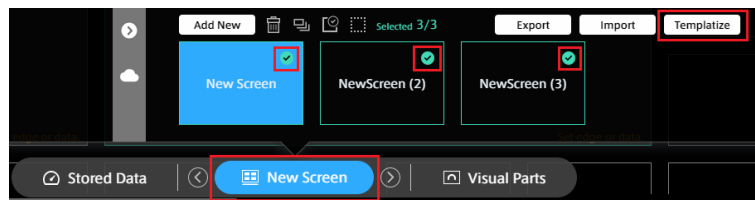



6.7.3 Creating and sharing templates

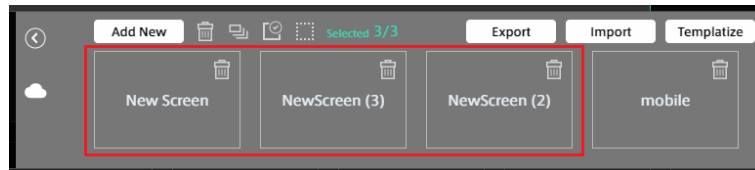
Templates created by users in the same domain can be shared.

Open the screen menu, select the  button of the screen to be shared, and then click the [Templatize] button.

* Multiple screens can be selected.

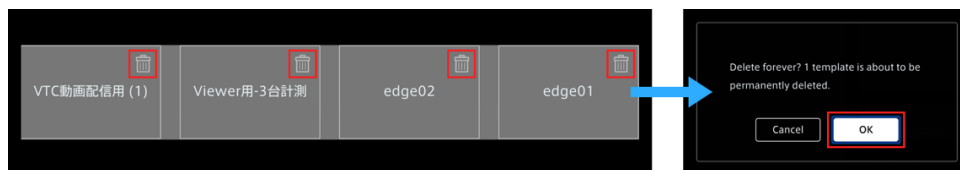


You can check the templates in the template list by selecting the  button.




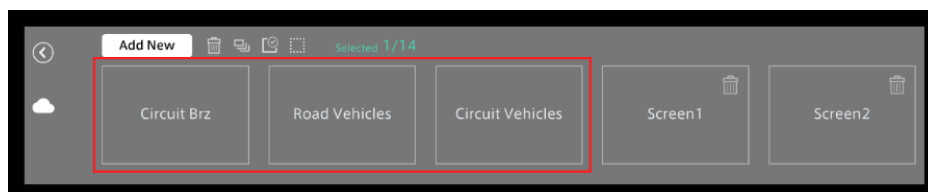
6.7.4 Deleting templates

You can delete created templates. Select  in the template, and then click the [OK] button in the confirmation dialog box.



Note: About template deletion

- You can delete templates created by other accounts in the same domain.
- Templates that have been deleted cannot be restored.
- To use the same template as the deleted one, you need to recreate it.
- The default templates (which have no  icon) cannot be deleted.




6.8 Sharing screen: Export, Import

Screens can be shared by local PCs.

Export the screen and save it locally on the PC, and then import the screen to another PC.

6.8.1 Export

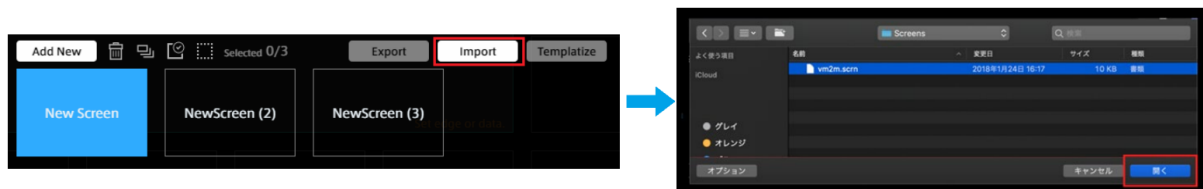
Mouse over the local screen to be shared, select the displayed  button, and then click the [Export] button. Multiple screens can be selected.

The screen definition file (.scrn) is stored in the local PC.



6.8.2 Import

1. Click the [Import] button.
2. Select the screen definition file (.scrn) from the file explorer, and then click [Open].



07 Data Settings

To display measurement data in Data Visualizer, data settings are required.


In intdash, measurement data is handled as binary data. Therefore, binary data must be parsed according to the data type and converted to physical values correctly. The settings for this parsing and conversion are called Data Settings.

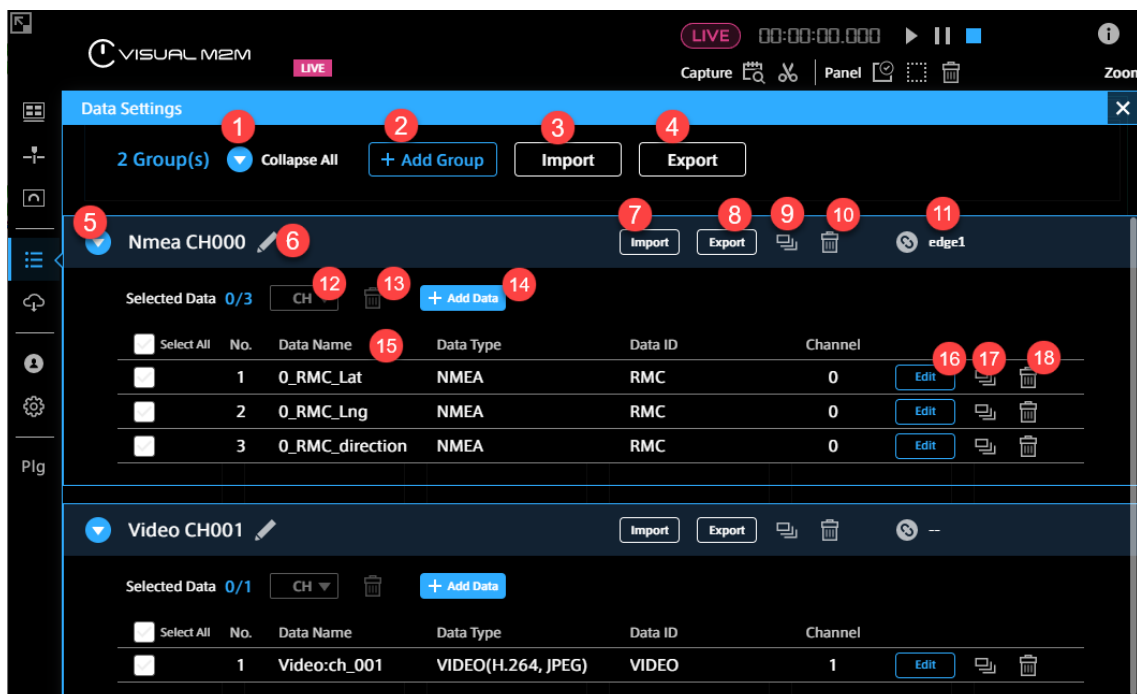
- Settings for CAN data can be created by importing a DBC file.
- Settings for General Sensor, NMEA, Video, Audio, etc. can be downloaded as settings files (DAT files in Data Visualizer's own format) from within the Data Visualizer application. You need to import this DAT file.
- It is also possible to create a new configuration and set the details in a dialog window.

Note: Data settings are stored in the web browser, not on the server.

Data Visualizer data settings are saved in the web browser of the PC, not on the server, so data settings created on other PCs will not be displayed. If you want to migrate the data settings to another PC, export the data settings as a DAT file and then import it at the destination.

7.1 List of data settings

Click  (Data Settings) to display the list of data settings currently registered in the Data Visualizer.



1 Expand All/Collapse All

Expands/collapses all groups.


2 Add Group

Adds a group of data settings.

3 Import (all)

Imports a DBC file or DAT file to create data settings. See [Create Settings for CAN Data by](#)

[Importing a DBC File](#) (p. 23) and [Importing a DAT file](#) (p. 23).

- 4 Export (all)**
Exports the settings of all groups as a single DAT file.
- 5 Expand / Collapse**
Expands or collapses a group.
- 6 Group Name**
The name of the group. You can edit it by clicking  (Edit).
- 7 Import (Group)**
Imports a DBC file or DAT file and adds settings to the group, see [Create Settings for CAN Data by Importing a DBC File](#) (p. 23) and [Importing a DAT file](#) (p. 23).
- 8 Export (Group)**
Exports the settings in a group as a single DAT file.
- 9 Duplicate (Group)**
Duplicates a group and the data settings within it.
- 10 Delete (Group)**
Deletes a group and its data settings.
- 11 Associate with Edge**
Associates this group with a specific edge. The association will allow you to narrow down the data by selecting an edge in the Panel Settings screen.
- 12 CH**
Changes the channel for the selected data. You can change the channel here at once without opening the edit screen for each data setting.
- 13 Delete (selected item)**
Deletes the selected data setting.
- 14 Add Data**
Create a new data setting and add it to this group. For details on the setting method, refer to [Create/edit new data settings](#) (p. 24).
- 15 Data Name, Data Type, Data ID, and Channel**
Displays some fields in data settings.
- 16 Edit**
Edit the data setting. For details, refer to [Create/edit new data settings](#) (p. 24).
- 17 Duplicate (1 item)**
Duplicates a data setting.
- 18 Delete (1 item)**
Deletes a data setting.

Note: DAT files created with Data Visualizer prior to version 3.2

When importing a DAT file created with Data Visualizer prior to version 3.2, the Data Type field may display a different data type than intended because the data type information is not included in the file. In this case, click [Edit] to change the settings. Even if the Data Type field displays a different data type than intended, it will not affect the data visualization.

7.2 Create Settings for CAN Data by Importing a DBC File

You can create data settings by importing a data definition file (DBC file) for CAN data.

Click [Import] at the top of the Data Settings screen and select the DBC file.

Note: Text encoding of DBC Files

The DBC file import function supports two types of text encoding, UTF-8 and Shift_JIS. The encoding is automatically detected. If the imported file contains code points that are not used by Shift_JIS, it will be imported as UTF-8.

Attention: Data Visualizer does not support Multiplexing (Multiplex message) of CAN.

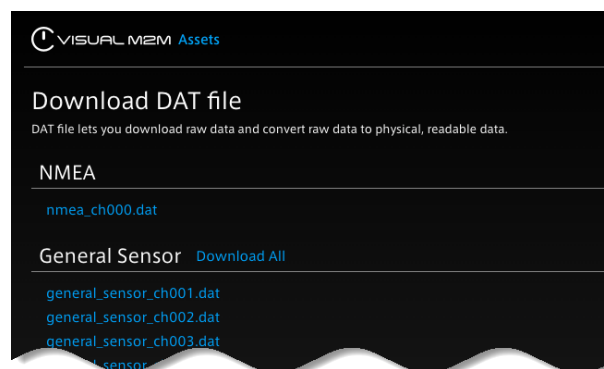
7.3 Importing a DAT file

You can import data settings exported from Data Visualizer on another PC, or data settings created in the past.

Click [Import] at the top of the Data Settings screen and select a DAT file.

Note: Settings for General Sensor, NMEA, Video, Audio, etc.

Settings for General Sensor, NMEA, Video, Audio and other data can be downloaded from the Data Visualizer application's [Config] > [Download DAT File]. By importing these files, you can easily create settings.



A number such as "ch001" in the DAT file name indicates the channel (ch001 is the settings file for channel 1).

7.4 Create/edit new data settings

Click [Add Data] or [Edit] in the Data Settings list. The setting items are as follows.

1 Data Name

The name of the data.

When the Data Type is "CANopen" and the Conversion Type is "As CANopen" , specify the first 4 bytes of the payload of the CAN data to be displayed using 8 uppercase hexadecimal characters (e.g., ABCDEF01). Only the CANopen data whose first 4 bytes of the payload match the specified value will be displayed.

2 Display Name

You can add another name for display. The name you set here will be used as the initial value for the Panel Name.

3 Target Data

Specify the data you want to display by using Data Type, Data ID, and Channel. For details, refer to [Specifying the data to be displayed \(Target Data\)](#) (p. 25).

4 Description

Set an optional description.

5 Conversion Settings

Set the conversion method to physical values, the choices displayed will differ depending on the Data Type of the Target Data. For more information, see [Setting the data conversion method \(Conversion Settings\)](#) (p. 26) .

6 Display Settings

Set how the values will be displayed. Depending on the Conversion Type, different options are displayed. For more information, see [Setting the display format \(Display Settings\)](#) (p. 28).

Note: Parsing string data in CSV or JSON format

To parse CSV or JSON data sent to the intdash server as a string, select "String" in Data Type, and then select "As CSV" or "As JSON" in Conversion Settings. For more details, refer to [Setting the data conversion method \(Conversion Settings\)](#) (p. 26).

7.4.1 Specifying the data to be displayed (Target Data)

Specify the data to be displayed by specifying the Data Type, Data ID, and Channel. Basically, Data Type, Data ID, and Channel should be the same as the settings on the sending edge. However, there are some exceptions. For details, refer to the following.

Data Type

Data Type is the data type in iSCP (intdash Stream Control Protocol). Specify the same data type as specified on the sending edge. However, please note that the following cases require a different setting from the iSCP data type.

- In the case of H.264 or JPEG, select VIDEO on Data Visualizer.
- In the case of PCM or AAC, select AUDIO on Data Visualizer.
- When handling CAN data as CANopen, select CANopen in Data Visualizer. If you use "As CANopen" as Conversion Type, specify the first 4 bytes of the payload of the CAN data in Data Name, using 8 uppercase hexadecimal characters (e.g., ABCDEF01).

Data ID

Specify the ID set by the sender. For details, follow the table below.

Data Type	How to specify the Data ID in Data Visualizer
CAN	Specify the CAN ID in decimal notation.
CANopen	Specify the CAN ID in decimal notation.
NMEA	Select the message type. Only RMC is supported in the current version.
General Sensor	Select the type of sensor.
Control Pad	Specify the value in hexadecimal notation with two uppercase letters. Only 01 is defined in the current version.
MAVLink1 Packet	Specify the ID in the format "<System ID (decimal notation)>_<Component ID (decimal notation)>_<Message ID (decimal notation)>".
String	Specify the ID as a string.
Float	Specify the ID as a string.
Int	Specify the ID as a string.
Bytes	Specify the ID as a string.
Generic	Specify the ID in hexadecimal notation, uppercase, 8 characters.
VIDEO (H.264, JPEG)	No need to specify. The data ID is fixed to "VIDEO".
AUDIO (PCM, AAC)	No need to specify. The data ID is fixed to "AUDIO".

Channel

Channel is a channel in iSCP. Specify the channel set at the sender edge.

7.4.2 Setting the data conversion method (Conversion Settings)

In Conversion Type, set how the data should be converted and displayed. The available conversion types vary depending on the Data Type.

No Conversion (As Binary)

Displays as binary (string in hexadecimal notation) without conversion.

Applicable data types: CAN, CANopen, Control Pad, MAVLink1 Packet, Bytes, Generic

No Conversion (As Number)

Displays as a number without conversion.

Applicable data types: Float, Int

No Conversion (As String)

Displays as a string without conversion.

Applicable data types: String

No Conversion (As NMEA Sentence)

Displays NMEA sentences as strings without conversion.

Example: "\$GPRMC,101020.500,A,3541.2763,N,13943.0267,E,000.0,000.0,010121,,,A*66"

- Positioning System: When a positioning system is selected, only the data for that positioning system will be displayed. If you select [Auto], all the data will be displayed.

Applicable data types: NMEA

As NMEA Field

Extracts the value of the specified field.

- Positioning System: When a positioning system is selected, only the data for that positioning system will be displayed. If you select [Auto], all the data will be displayed.
- Field Name: Specify the field for the NMEA data.

Applicable data types: NMEA

As General Sensor

Extracts the value of the specified field.

- Field Name: Specify a field in General Sensor data. The available fields differ depending on the Data ID.

Applicable data types: General Sensor

As CSV

Parses string data as CSV (comma separated value) and extracts the value of the specified field.

- Delimiter: Specify the delimiter character for CSV. Example: "," (comma) (up to 999 characters)
- Index: Specify the element number (index is 0-based) of the field to be extracted.
- Value Type: Select whether to treat the extracted value as a string or as a number.
- Offset Factor (only for Number): This value will be added to the value extracted from the CSV. The Offset Factor is applied after the Scale Factor is applied.
- Scale Factor (only for Number) : The value extracted from the CSV will be multiplied by this value.

See also the example below this table for CSV data conversion settings.

Applicable data types: String

As JSON

Parses string data as JSON and extracts the value of the specified field.

- Field Path: Specify the path of the field to be extracted, using an object key or array index.
- Value Type: Select whether to treat the extracted value as a string or as a number.
- Offset Factor (only for Number): This value will be added to the value extracted from the JSON. The Offset Factor is applied after the Scale Factor is applied.
- Scale Factor (only for Number) : The value extracted from the CSV will be multiplied by this value.

See also the example below this table for JSON data conversion settings.

Applicable data types: String

As Fixed Point Number (CAN Format)

Extracts a portion of the binary data and treats it as a fixed-point number.

- Start Bit: Specify the start position (bit offset) of the part to be extracted from the binary data (integer value from 0 to 8191). The position will change depending on your choice of endianness.
- Bit Length: Specify the bit length to be extracted from the binary data (integer value from 1 to 8192).
- Offset Factor: This value will be added to the extracted value. The Offset Factor is applied after the Scale Factor is applied.
- Scale Factor: The extracted value will be multiplied by this value.
- Sign: Specify Signed or Unsigned.
- Endian: Specify the endianness (Big Endian/Little Endian).

Applicable data types: CAN, Control Pad, MAVLink1 Packet, Bytes, Generic

As CANopen

Same as "As Fixed Point Number (CAN Format)" .

Applicable data types: CANopen

As Floating Point Number

Extracts a portion of binary data and treats it as a floating-point number.

- Start Byte: Specify the start position (byte offset) of the part to be extracted from the binary data (integer value from 0 to 511).
- Precision: Specify the bit length of the floating-point number (32bit/64bit).
- Offset Factor: This value will be added to the extracted value. The Offset Factor is applied after the Scale Factor is applied.
- Scale Factor: The extracted value will be multiplied by this value.
- Endian: Little endian only.

Applicable data types: CAN, Control Pad, MAVLink1 Packet, Bytes, Generic

As String

Extracts a part of the binary data and treats it as a string.

- Start Byte: Specify the start position (byte offset) of the portion of binary data to be extracted as a character string (integer value from 0 to 511).
- Byte Length: Specify the byte length to be extracted from the binary data (integer value from 1 to 512).

Applicable data types: CAN, Control Pad, MAVLink1 Packet, Bytes, Generic

Note: Example of CSV data conversion

As an example, consider the case where string data (Data Type: String) such as "1,2.34,5" is received and parsed as CSV.

Assume that the following data settings have been made:

- Conversion Type: As CSV
- Delimiter: , (comma)
- Index: 1
- Value Type: Number
- Offset Factor: 1
- Scale Factor: 10

In this case, the numeric value 2.34 in the comma-separated column with index 1 will be extracted. That number will be multiplied by Scale Factor 10, and then Offset Factor 1 will be added, resulting in the number 24.4.

Note: Example of JSON data conversion

As an example, consider the case where the following string data (Data Type is String) is received and parsed as JSON.

```
{
  "foo": [
    {"bar": 1.23}
  ]
}
```

Assume that the following data settings have been made:

- Conversion Type: As JSON
- Field Path: foo.0.bar
- Value Type: Number
- Offset Factor: 1
- Scale Factor: 10

In this case, the value 1.23 is taken from the path "foo.0.bar". That value will be multiplied by Scale Factor 10, and then Offset Factor 1 will be added, resulting in a value of 13.3.

7.4.3 Setting the display format (Display Settings)

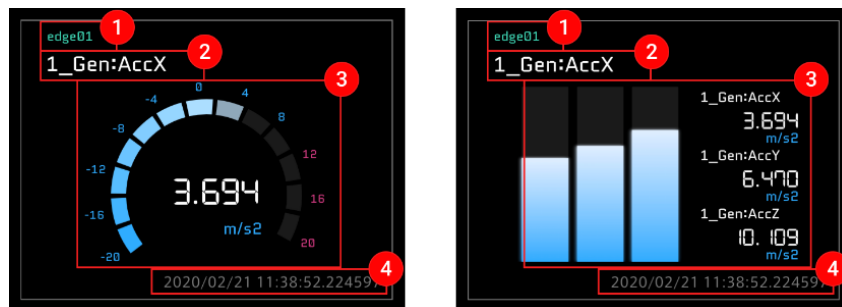
Item	Description
Display Type	Select whether to display the value as a string or as a number.
Unit	The unit to be displayed with the value.
Range	(Only when Display Type is set to Number) Specify the range of values to be displayed. This range will be the display range when displaying Meter or Line Graph (This can be changed in each panel). Negative infinity "-Infinity" and infinity "+Infinity" can also be set.
No. of Digits after Decimal Point	(Only when Display Type is set to Number) Specify the number of digits to be displayed after the decimal point (integer value from 0 to 9).
Threshold (Lower/Upper)	(Only when Display Type is set to Number) Specify the threshold value. If this threshold value is exceeded, a threshold error is displayed on the panel.

08 Bind data to panel

Data binding is the arrangement of data displayed on the panels of a screen.

8.1 Panel configuration

A panel is an area where visual parts are displayed. You can set visual parts individually and change their display size.



- 1 Edge Name**
The name of the edge bound to the panel. In projects other than Global Project, edges are displayed by their names in the project.
- 2 Panel Name**
The name of the panel. If this is not set, the first bound data name is displayed.
- 3 Display Area**
An area to display the set visual part and the numerical values of the data. The display format differs depending on the visual part type.
- 4 Timestamp**
The time of data acquisition is displayed.

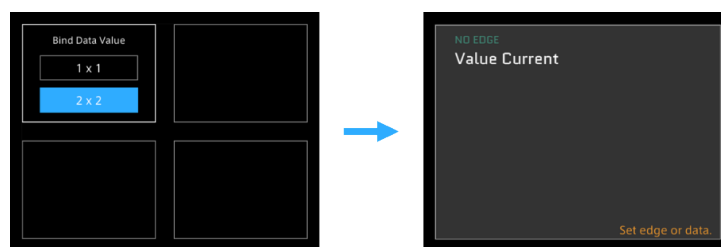
8.2 Data binding

8.2.1 Creating panels

Select the panel you want to create on the screen panel, and then select [1x1] or [2x2].



In the following example, [2x2] is selectable.

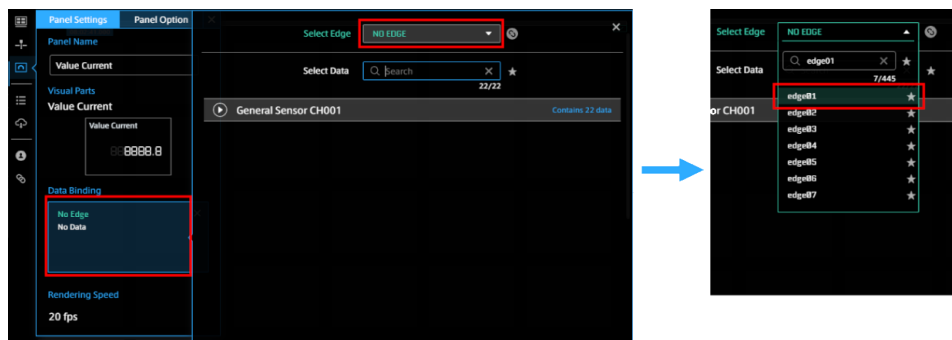


The following two images show two examples in which a "2x2" panel cannot be created.

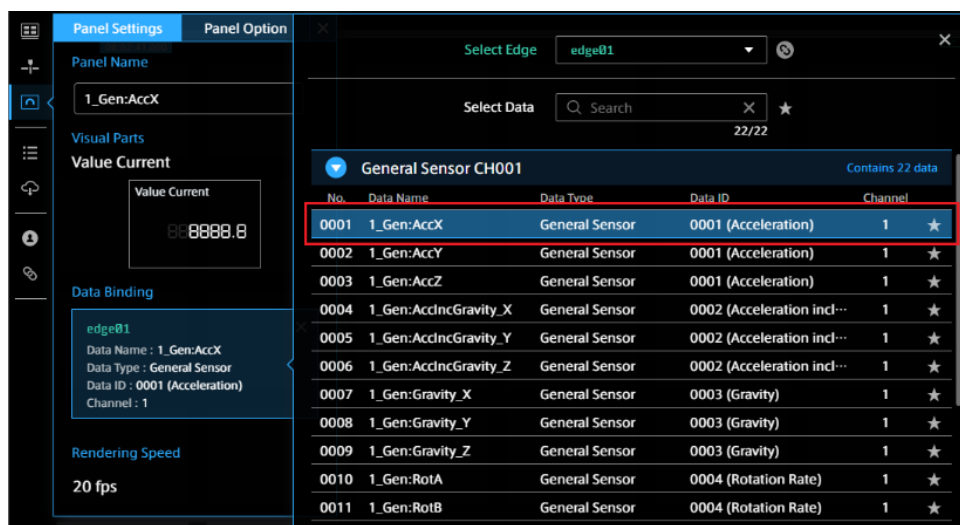


- ❶ If another panel has been set in the required space
- ❷ If there is no space for the right edge or last line of the window
 1. Click [Bind Data] in Panel Settings.
 2. Click [Select Edge] and select the edge from the list.

In projects other than Global Project, edges appear with the name set in the project.



3. Select data from the Select Data list.



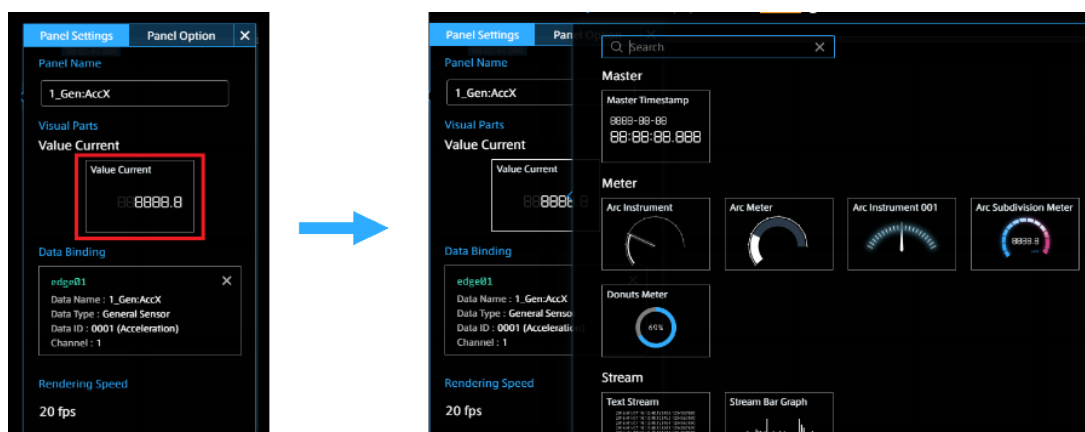
4. Once the edge and the data have been set, click [x] to close the window.

5. Click [x] to close the Panel Settings window.

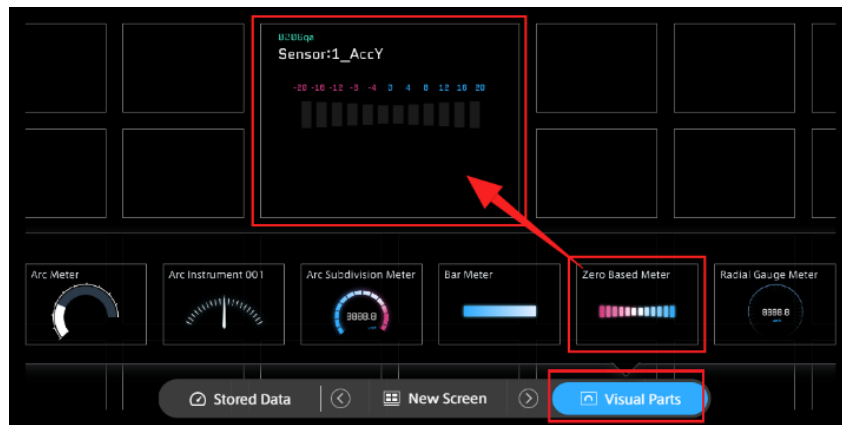
8.2.2 Setting visual parts

Next, set visual parts.

Method 1: Click the [Visual Parts] button in Panel Settings, and then select one from the Visual Parts list.



Method 2: Click [Visual Parts] from the content menu. Select a visual part from the Visual Parts list and drag and drop it on the target panel.



Note: Bind data after placing visual parts

You can also bind data directly from Visual Parts to a blank screen panel.

Click [Visual Parts] from the content menu.

Select the visual part you want to set from the list, and then drag and drop it on the screen panel.



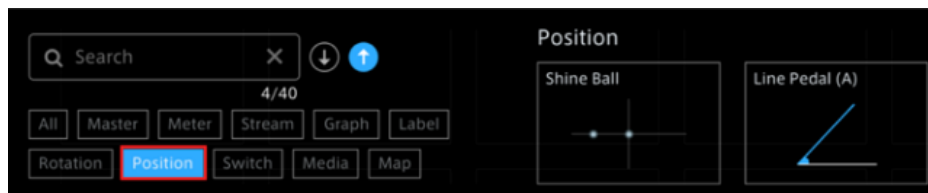
Select Panel Name, set the items displayed on the Panel Settings window, and then set the edge and data.

Note: Searching and filtering visual parts


Visual parts can be searched by using the search form or filtering by category. Searching by name

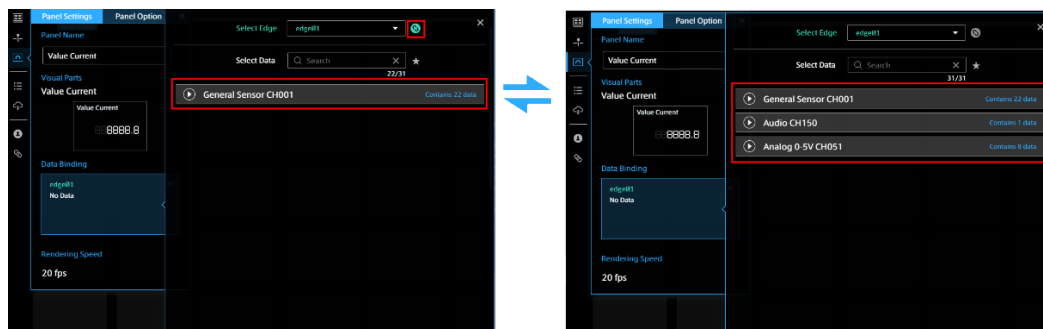



Searching by category



Note: Data associated with edges

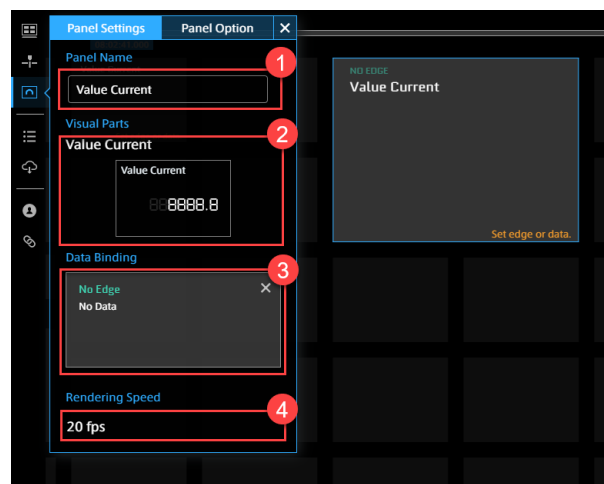
- If data is associated with an edge, only the data associated with the selected edge will be displayed. To display all data, click .



- Click  again to return to the list of associated data only.

8.3 Changing the panel settings

Click the upper left area of the panel to set the items on the Panel Settings window.



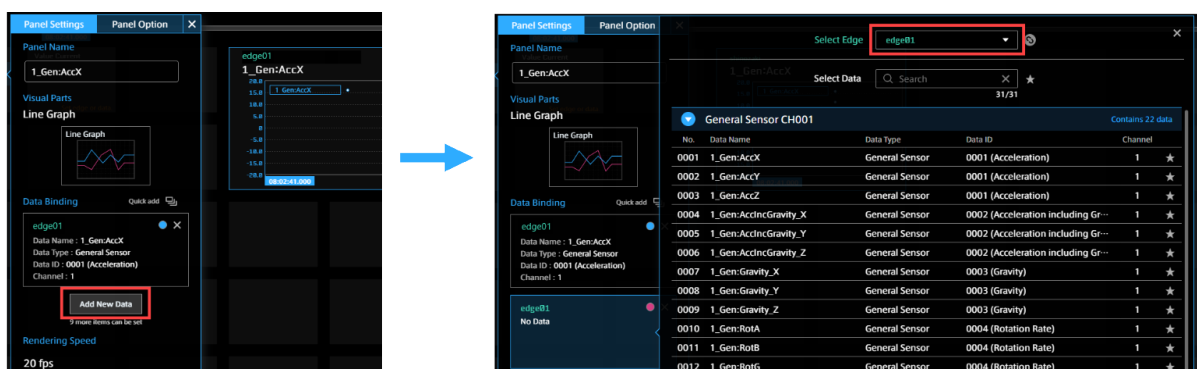
- 1 Panel Name**
Enter the name to be displayed on the panel. If this is left blank, the data name is displayed.
- 2 Visual Parts**
Select a visual part.
- 3 Bind Data**
Select an edge to be used as a data source and select data.
- 4 Rendering Speed**
You can change the interval at which the parts on each panel are drawn. Reducing rendering speed should reduce the burden on the PC.

8.4 Setting multiple pieces of data

Depending on the visual parts, multiple pieces of data can be displayed simultaneously. The maximum number of data pieces that can be bound differs depending on visual parts.

Click Panel Name of the panel for which you want to set multiple pieces of data.

Click the [Add New Data] button from Panel Settings, and then set the measurement data.

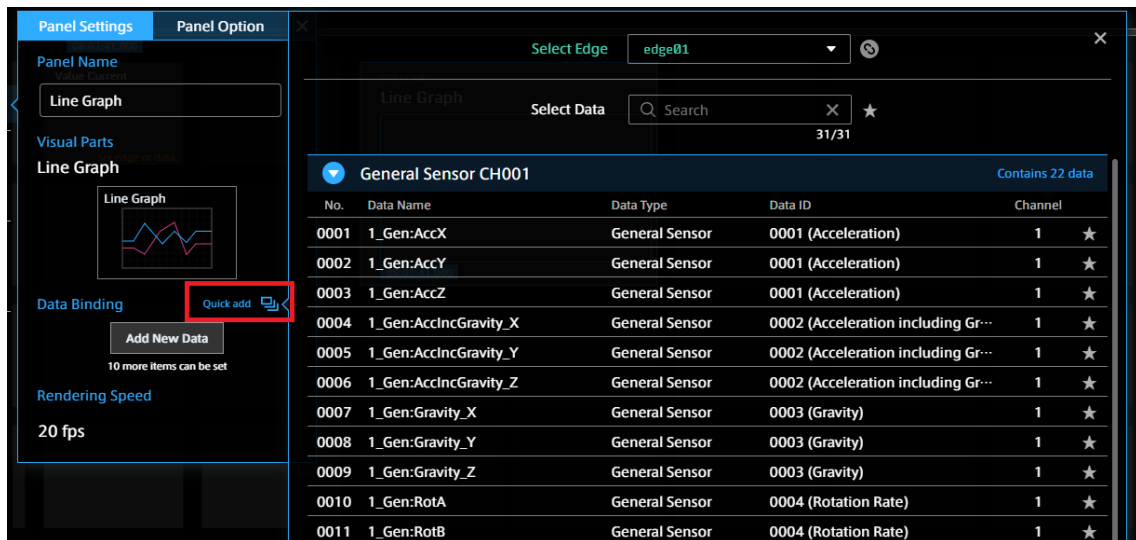


To close the Panel Settings window, select [x] on the Panel Settings window or select anywhere outside the Panel Settings window.

8.4.1 Successive setting of Bind Data

Visual parts that can display multiple pieces of measurement data can bind data successively.

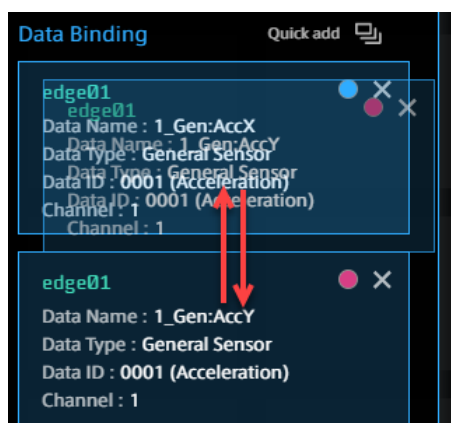
1. Click [Panel Name].
2. You can use [Quick add] to select multiple pieces of data successively with the data and edge selection window opened.



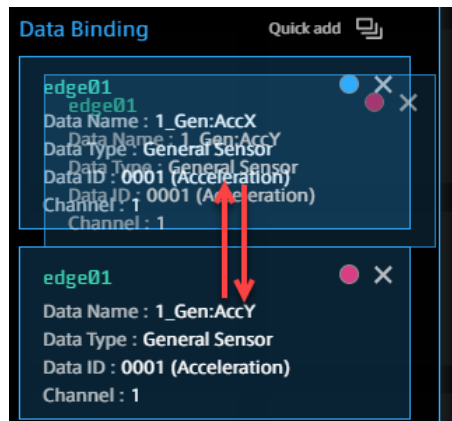
8.4.2 About data sorting

You can sort data by a drag-and-drop operation.

Replacement (Drop the target on the card)

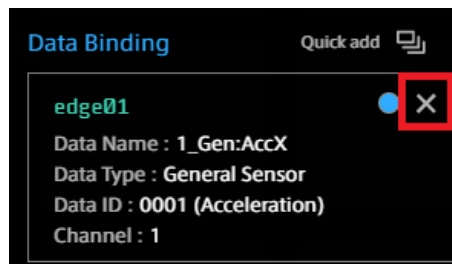


Insertion (Drop the target in the gap between the cards)



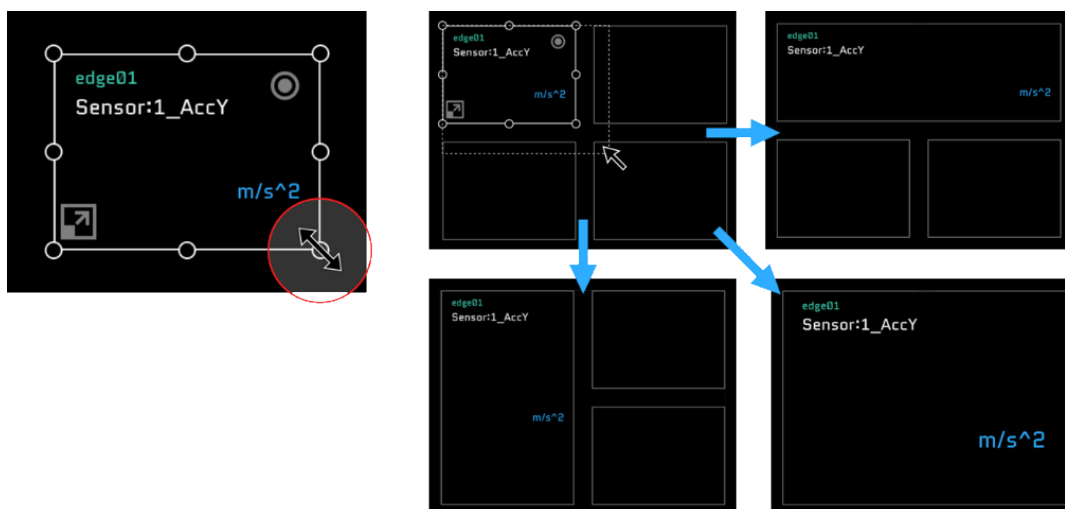
Note: To delete the added Bind Data

In the "Bind Data" items of Panel Setting, mouse over the data of the bind data you want to delete, and then select [x].




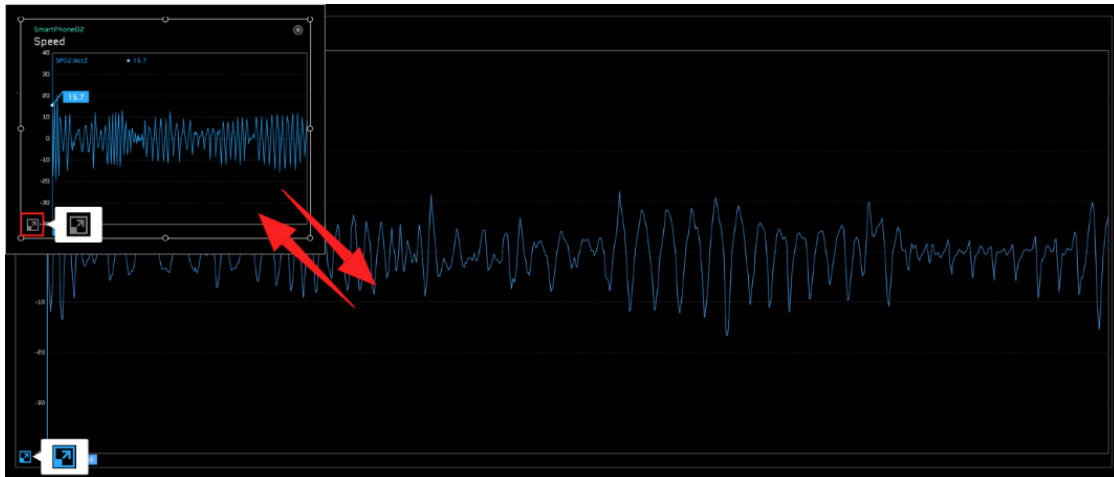
8.5 Changing the panel size

You can change the panel size by dragging the guide points on the edges displayed when you mouse over the panel.



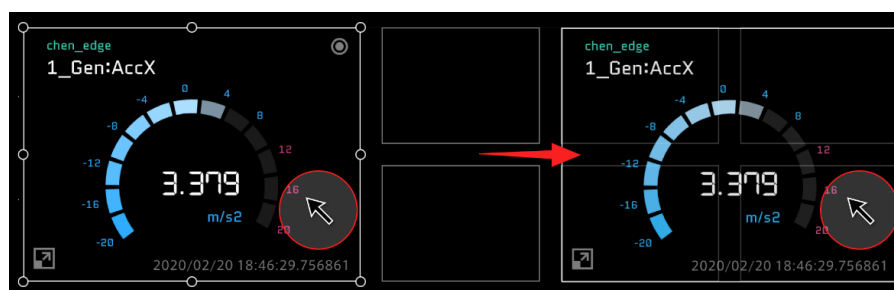
8.6 Switching the panel to full-screen display

You can enlarge or reduce the panel by pressing the  button at the bottom left of the panel.



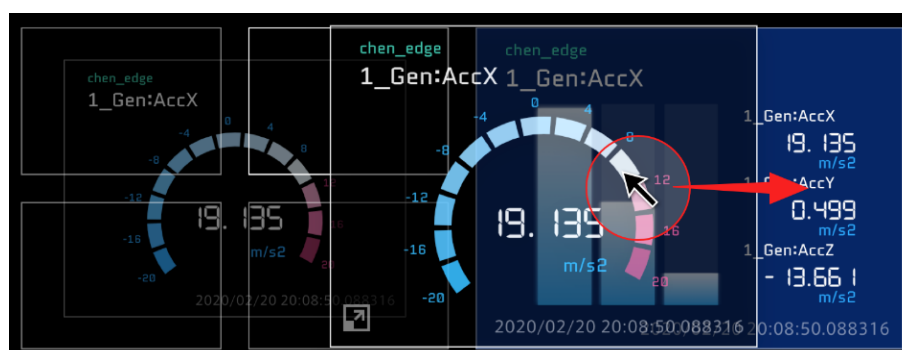
8.7 Changing the panel position

You can change the position of the panel by dragging and dropping the panel to a blank panel on the screen.



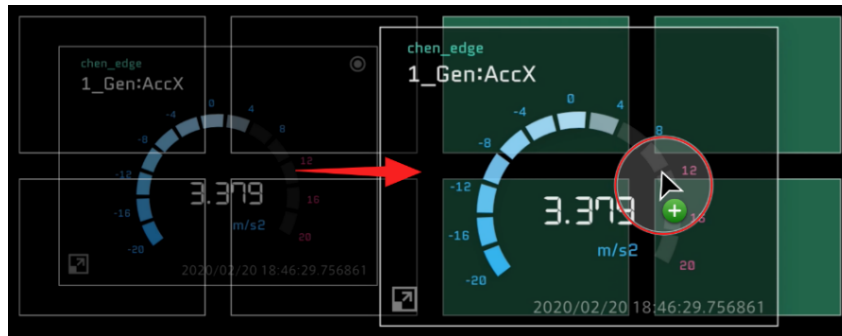
8.8 Replacing panels

You can replace panels by dragging and dropping a panel to an already set panel.





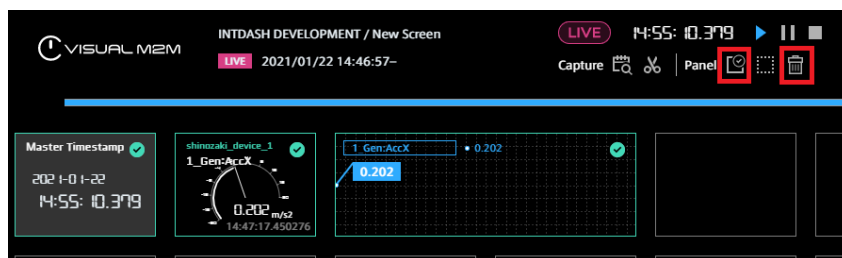
8.9 Copying panels

Drag and drop a panel while holding down the Alt key (the option key for Mac). The set data and option settings are all copied.




8.10 Deleting panels

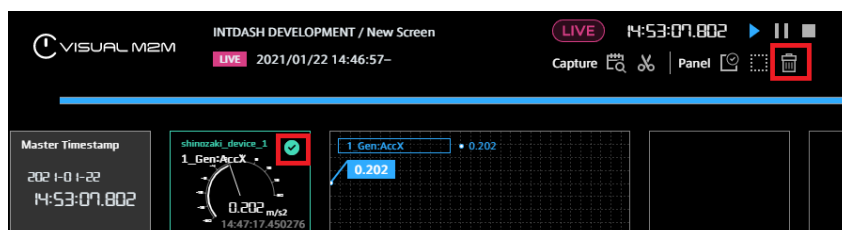
Select  (Select All Panel) in the panel operation tool, and then select  (Delete Panel).



8.10.1 Deleting individual data binds

Mouse over the panel you want to delete, and then select the displayed .

Select  (Delete Panel) in the panel operation tool.




Note: Selecting panels within a rectangle

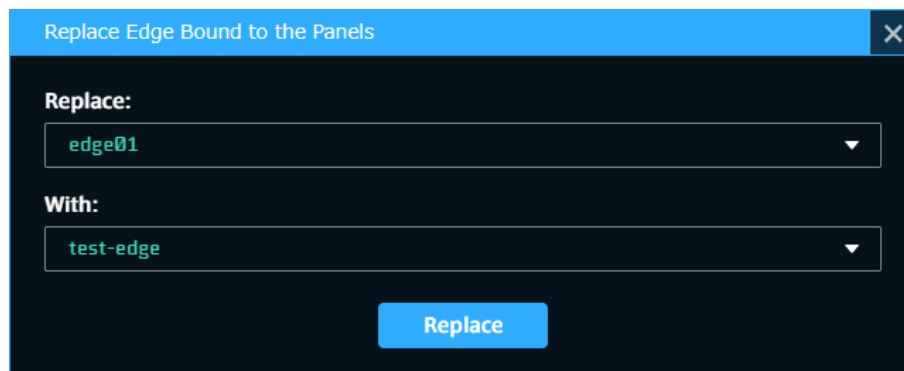
You can select an area of panels by clicking the mouse between panels (or on a blank panel), and then dragging it to create a rectangular selection area. All panels within the rectangle will be selected.

8.11 Change edges set in timeline and panels at once

The data source edges set in the timeline and panels can be changed at once.

1. Click  (Replace Edge) in the Panel Operation Tool.
2. Select the edge name to be replaced (Replace:) and the new edge name to be set (With:), and click [Replace].

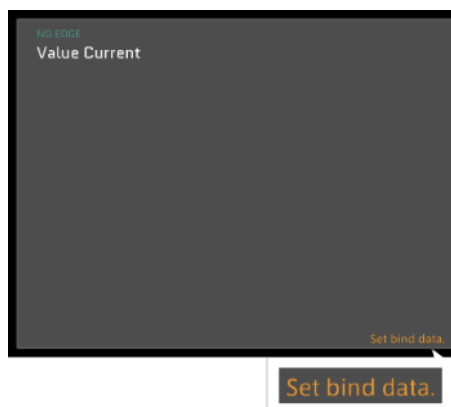
In the following example, the timeline and all panels displaying "edge01" data will be changed to display "test-edge" data.



8.12 Error display

8.12.1 Errors in panels

When an error occurs at the panel, a message appears on the panel.



Set bind data

Data is not bound. Please bind data.

Set edge or data

Edge or Data is not set, please set Edge and Data.

Data not loaded yet

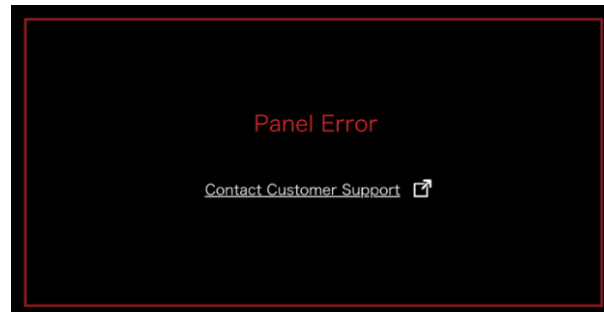
Data not loaded. Please load the data again.

Panel Error

Data in an unexpected format has been Bind. Please contact Customer Support.

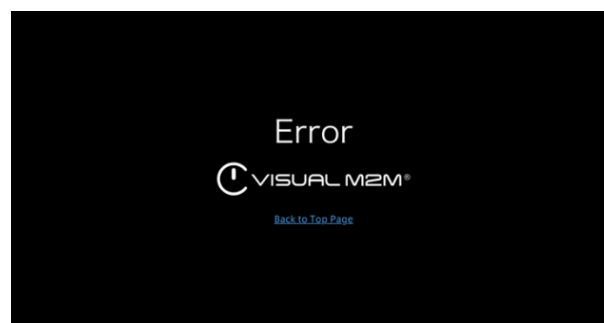
8.12.2 Full-screen errors

When an error occurs that cannot be processed by a visual part alone or by certain configurations of visual parts, or if the error affects the screen only, the error will be displayed full-screen.



8.12.3 Full-browser error

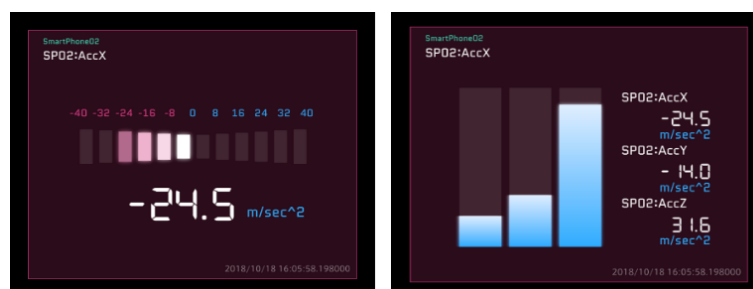
If the error affects the entire program, the entire browser will display an error message.



8.13 Display of data exceeding threshold values

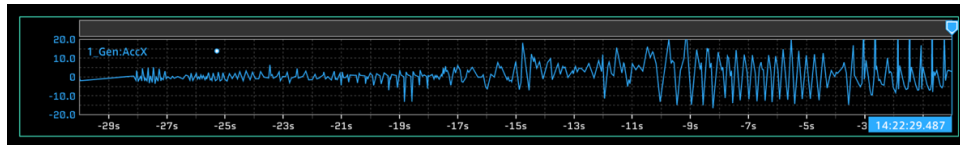
If the data itself exceeds the set thresholds, a threshold error will be displayed on the panel. If multiple data items are being tracked, an error will be displayed even if the threshold for only one of the items has been exceeded.

* This function does not support line graphs.




09 Operate on the timeline

You can bind the main measurement data to the timeline. Measurement data is displayed as a line graph.



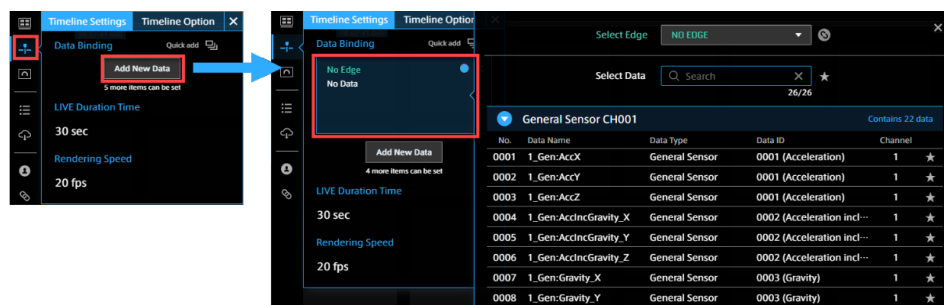
In real time playback, the specified time frame is displayed. In past data display, the entire time frame of the data is displayed.

9.1 Binding data to a timeline

1. Select  (Timeline Settings) from the function menu.
2. From the Data Bind item, select [Add New Data], and then set the measurement data to be bound.

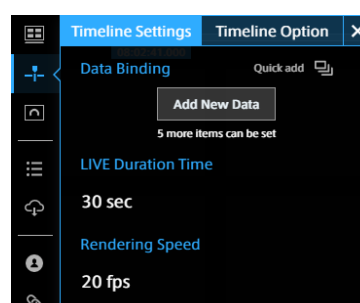
* It is also possible to bind multiple measurement data items to a timeline (in the same way as Line Graph).

* The method for binding data is the same as that for a panel. For details, see [Data binding](#) (p. 29).



In [Live Duration Time], specify the range of data to be displayed in real time on the timeline.

9.1.1 Timeline Settings



Setting item	Required/Optional	Settings
Live Duration Time	Required	For live measurement, the time range of data to be displayed on the timeline. For example, if "30sec" is set, the data for 30 seconds from the current time is displayed. The default value is 30 seconds.
Rendering Speed	Required	You can change the rendering interval of the timeline. Reducing the rendering speed can reduce the burden on the PC.

9.1.2 Timeline Option

Timeline Settings | Timeline Option X

Data Range

Min to
default: -

Step Forward (Sec)

default: -

Show Compared Position

☐ OFF Show Compared Position

Threshold

☐ OFF Show Threshold Grid

Time (X) Interval (sec)

default: 1

Max Number Of Y Ticks

default: 8

Graph Interpolation

Default

Setting item	Required/Optional	Settings
Data Range	Optional	Set the maximum and minimum values of the vertical axis. (Up to five sets of values can be set.)
Step Forward (Sec)	Optional	You can set the frame advance width for Current Position.
Show ComparedPosition	Optional	ON: Compared Position (comparison position) is displayed. OFF: Compared Position is not displayed.
Threshold	Optional	ON: The threshold line set for data is displayed. OFF: The threshold line is not displayed.
Time(X) Interval (sec)	Optional	Set the interval width for the horizontal axis.
Max Number of Y Ticks	Optional	Set the interval width for the vertical axis.
Graph Interpolation	Optional	Set the form of a graph. Default: Curved line graph Step: Stepped graph

9.2 Cursor operation

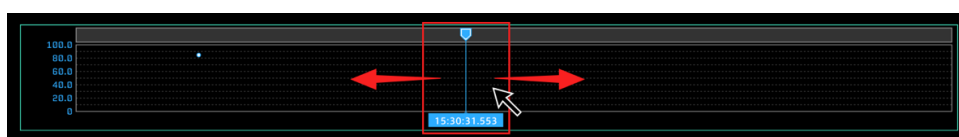
The timeline can display adjustable cursors to indicate two separate points in time: Current Position and Compared Position.

9.2.1 Current Position

For real-time display, this will indicate the current point in time. For past data playback, this will indicate the stream replay point.

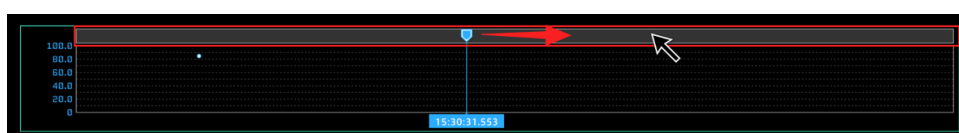


Method 1: Dragging Current Position




Method 2: Clicking a point on the timeline header

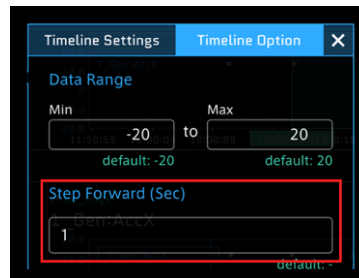
Click a point on the timeline header to move the cursor to that position.



Method 3: Timeline control

You can step backward or forward by selecting  (Backwards) and  (Forwards) on the timeline control.

The width of cursor movement is determined by the value set in [Timeline Options] > [Step Forward].

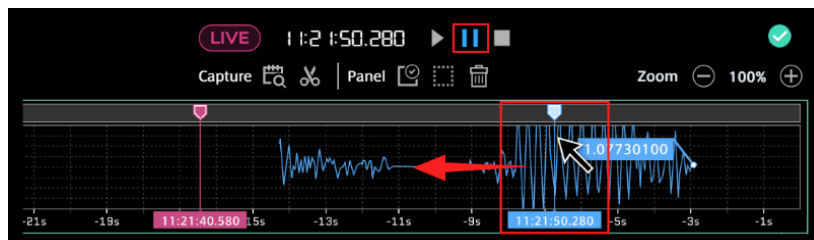


Method 4: Operation of the ← and → keys on the keyboard

Press the [←] key to rewind, and press the [→] key to advance. The timeline will continue advancing or rewinding as long as the key is held down.

Note: Moving Current Position

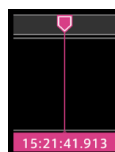
Moving Current Position pauses playback.



After the operation is completed, for past data playback, the state prior to the drag operation (pause state/playback state) is applied. For real-time playback, playback remains paused.

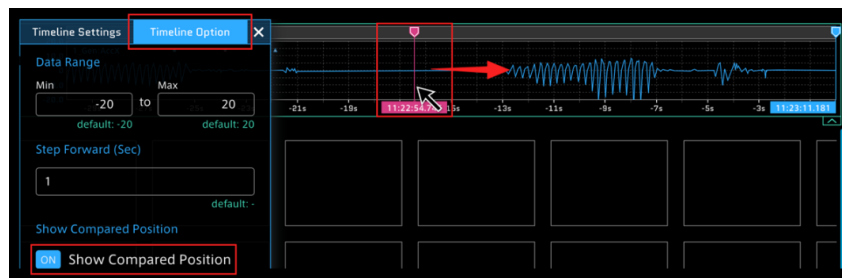
9.2.2 Compared Position

Compared Position is used as a position comparative to the Current Position. The differences in values between the Compared and Current Positions can be displayed.



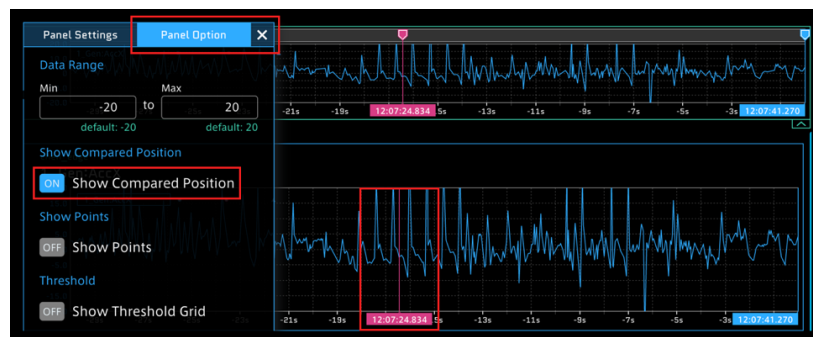
To display Compared Position, select [Timeline Settings] from the function menu. Then, in the [Timeline Option] tab, set [Show Compared Position] to ON.

For both Compared Position and Current Position, the cursor can be moved via drag and drop operation.



Note: To display Compared Position on Line Graph

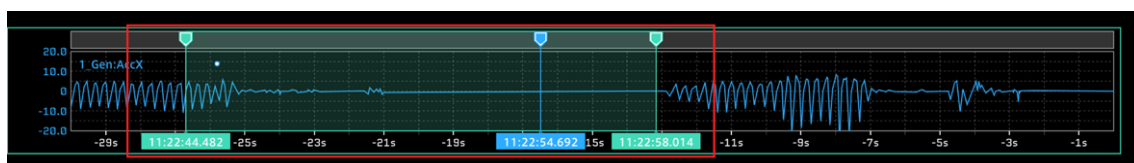
1. Select the Panel Name on Line Graph, and then select [Panel Option].
2. Set [Show Compared Position] to ON.




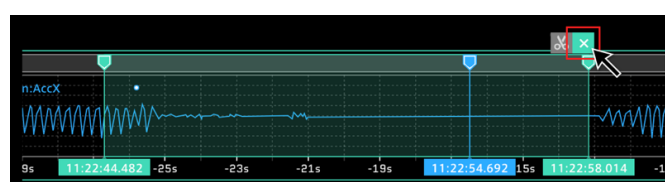
9.2.3 Specifying the timeline range

When you drag the mouse to select an arbitrary time range on the timeline, a green cursor is displayed. You can use this green cursor to specify the display time range of the measurement data on the panel. Depending on the visual parts, the measurement data within the specified time range can be displayed.

* If the time range is not specified, the measurement data is displayed with the entire timeline.



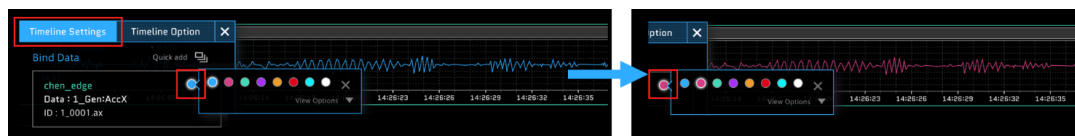
You can cancel the range specification by using the  button in the menu displayed in the upper right when hovering the mouse over the green cursor.



9.2.4 Setting timeline details

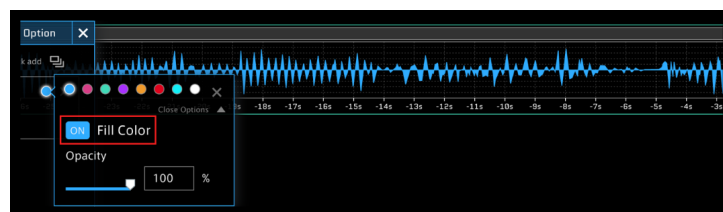
In [Timeline Settings], you can change the color or transparency of the timeline. Select the colored circle in [Bind Data] to open the advanced color settings.

Changing graph color



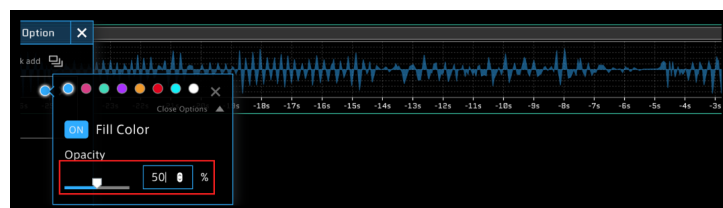
Filling graph

Click [Fill Color] to set it to [ON] to fill the displayed graph with the color.



Changing the transparency of the graph

You can change the transparency by dragging the [Opacity] slider or by directly entering a number.

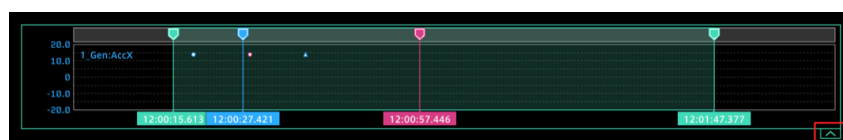


* The above settings are also available from the Panel Settings window for Line Graph in visual parts.

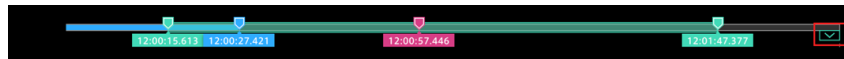
9.3 Switching the display size

You can switch the display size between normal display and reduced display by using the button at the bottom right of the timeline.


Normal display

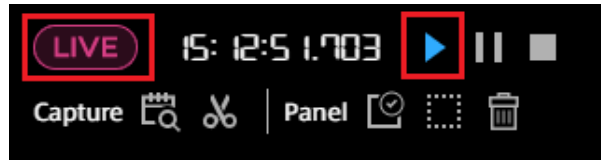


Reduced display



10 Playback in real time

1. Change to Live Mode in the timeline control.
2. Click  (Play).



When the edge set on the screen is streaming the target data, the data is displayed on the panel on the screen.

Note: To display measurement data in real time

The measurement edge and data need to be bound to the screen. For details about how to bind data, see [Data binding](#) (p. 29).

If the measurement data is not displayed, confirm that the edge and data are correctly selected in the data binding to the panel.

11 Playback past data

11.1 Types of past data

There are three types of Stored Data.

Measurements

Data from the start to end of measurement

Markers

Markers added to measurements

Captures

Data cut out from a measurement by specifying a time range as necessary. For details, see [Creating a capture \(record within a specified time frame\)](#) (p. 54).

11.1.1 Measurements

1	2	3	4	5	6	7
2020/12/02	LIVE	UUID b6be83b9...	Name Measurement test 1	21s	22:12:34-22:12:55	edge1
	LIVE	UUID e9b59869...	Name Measurement test 2		10:31:12-	edge1
	i	UUID 16284fee...	Name	03m 03s	18:46:28-18:49:31	edge1
	i	UUID 4f805ed9...	Name	05m 05s	16:36:42-16:41:47	edge1

1 Measurement date

2 Measurement status



Live measurement in progress



Live measurement in progress (with missing data)



Measurement completed



Measurement completed (with missing data)

3 Measurement UUID

4 Measurement name

5 Measurement length

6 Start time and end time

7 Name of the edge that created this measurement

11.1.2 Markers

Markers that have been given to measurements with other applications are displayed. If there are tags with key-value pairs, they will also be displayed **1**.

2020/03/04					
S2E-beb5c5		35m 31s	13:08:26–13:43:58	qa-edge11	1 Car: FIT コース: その他 + 3 tags
S2E-11f775		15s	12:19:24–12:19:39	qa-edge11	Car: FIT コース: その他 + 3 tags
S2E-f7420e		10m 44s	12:07:35–12:18:19	qa-edge11	Car: FIT コース: その他 + 3 tags
S2E-4bc2de		02m 09s	11:59:58–12:02:07	qa-edge11	Car: FIT コース: その他 + 3 tags

11.1.3 Captures

When you mouse over the data item, the **1** [Edit] button and **2** [Delete] button appear. For details about how to create a capture, refer to [Creating a capture \(record within a specified time frame\)](#) (p. 54).

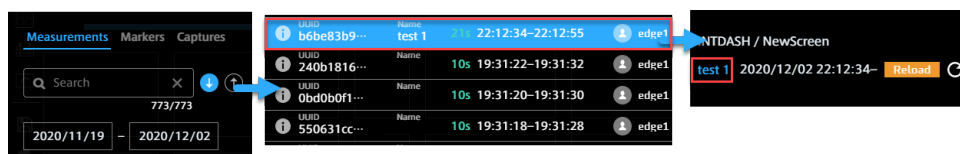
2020/03/06					
test2		25s	18:50:57–18:51:22		
test1		32s	18:50:51–18:51:23		
test		01m 10s	18:44:30–18:45:40	1 Edit	2 Delete

11.2 Replaying past data

1. Select [Stored Data] from the content menu.



2. Select Measurements, Markers, or Captures. Past measurements are displayed in chronological order.
3. Select the measurement you want to display.




Note: Captures list

The Captures list shows the captures you (your user account) have created, and all captures created by edge accounts. Captures created by other user accounts are not displayed.

Note: Large measurement data may not be loaded

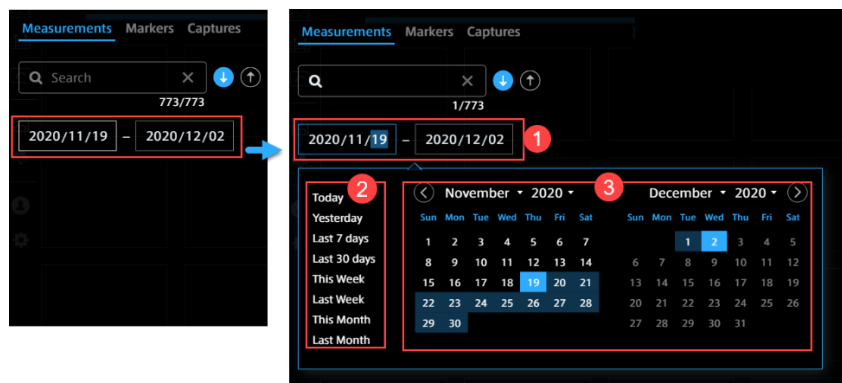
If the measurement data is too large to be loaded, do one of the following to reduce the size of the data to be loaded.

-  Use the Preview Stored Data function to shorten the time range to be loaded.
- Reduce data bindings to screens; Data Visualizer will attempt to load all data (whose Edge, Data Type, Data ID, and Channel match the settings) bound on the screens. Check for all loaded screens, not just the one currently visible.

11.3 Searching for past data

11.3.1 Searching by period

Click the date area to set the period. There are three ways to set the period, as follows.



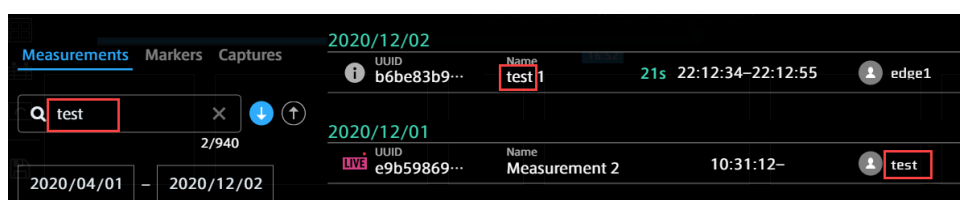
- 1 Enter the dates with keyboard.
- 2 Select a preset period. You can select a value such as "Today", "Yesterday", "Last 7 days", and "Last week", from the menu on the left.
- 3 Select the dates on the calendar.

11.3.2 Searching in the list


In the Measurements list, you can search by measurement UUID, measurement name or edge name.

In the Markers list, you can search by marker name, edge name, or tag value.

In the Captures list, you can search by the name of a capture.



11.4 Specifying the playback time range

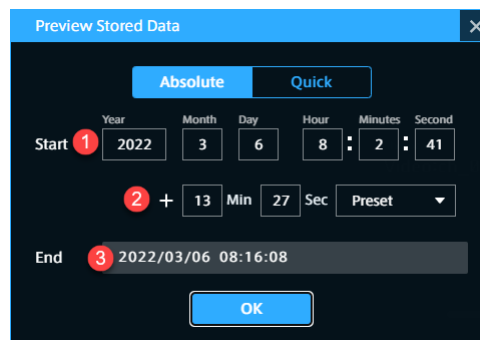
You can replay the measurement data by specifying an arbitrary time range. Click  (Preview Stored Data) on the timeline control.

Absolute mode and Quick mode are provided to specify a period of past data.

11.4.1 Absolute mode

This mode is based on the start time.

1. In the [Preview Stored Data] window, enter the start date and time and the playback period you want to display.
2. Click [OK]. After the data is loaded, the data is played from the specified start time

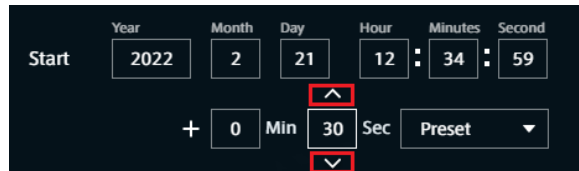


- 1 [Start] Enter a specific start time (seconds can also be set)
- 2 [+Min, Sec] Enter the length of the playback time of the data. (For details, see Point below.)
- 3 [End] End time of the data playback (optional). The calculation result from 1 and 2 is displayed.

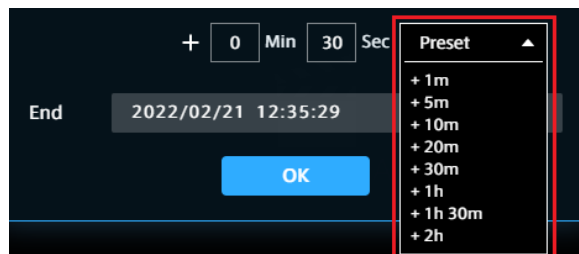
Note: How to enter the playback period

There are three ways to enter the playback period.

- Method 1: Directly enter numbers in the [Min] and [Sec] boxes.
- Method 2: Mouse over the [Min] or [Sec] box, and then click the displayed arrows. The time can be set in minutes/seconds.



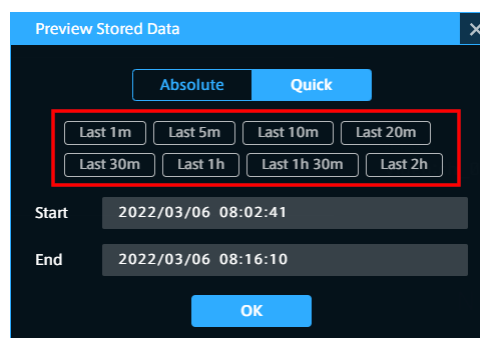
- Method 3: Click [Preset], and then select a preset from the base time provided by the system.



11.4.2 Quick mode

This specification method is based on the current time. You can set the period from 1 minute to 1 hour before the current time.

Select [Last XX], and then click the [OK] button.



11.5 Creating a capture (record within a specified time frame)

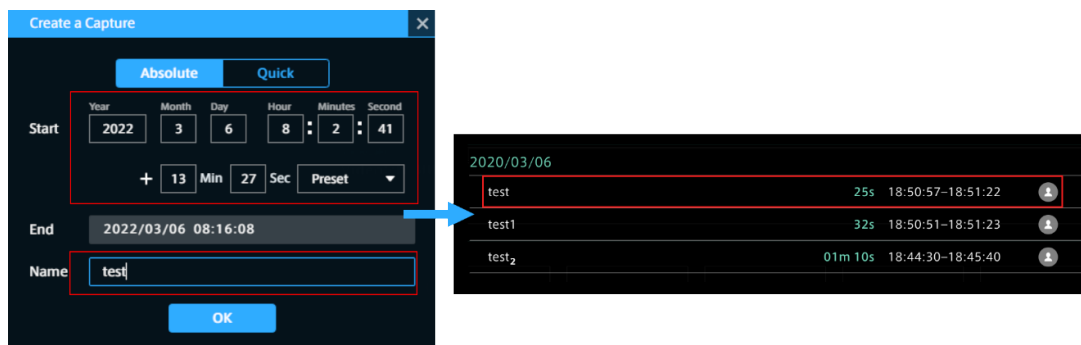
You can specify the data start time and end time, and then register them as a capture in Stored Data. There are two ways to specify the time.

11.5.1 Method 1: Directly entering the time

1. Click  (Create a Capture) on the timeline control.




2. Enter the start/end date and time of the data you want to register as a capture and the capture name, and then click [OK].

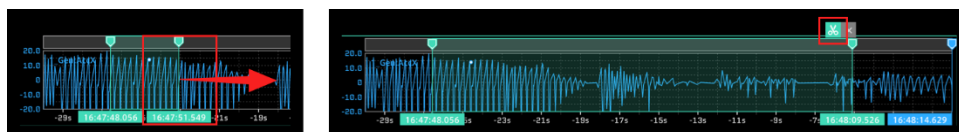


When you select the registered capture, data playback is started.

11.5.2 Method 2: Specifying the time on the timeline

You can specify an arbitrary period within the measurement on the timeline.

1. Click the start time and drag it to the end time. The area in light green means the specified period.
2. Adjust the specified period and click .

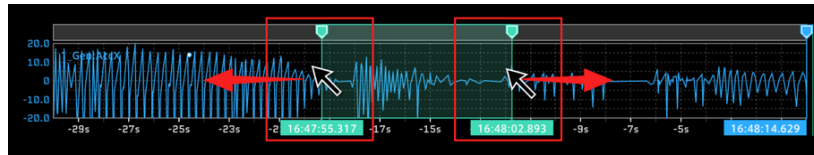


3. Enter the capture name in the displayed [Create a Capture] window and click [OK].

Note: Adjusting the specified period on the timeline

Adjustment of the start time and end time

Fine-tune the time frame by dragging the green cursor and click the [Create a Capture] button.



Adjustment without changing the length of the specified period

Drag the light green area between the cursors to move it to the left or right. You can adjust the start time and end time while keeping the length of the specified period.



Note: Captures list

The Captures list shows the captures you (your user account) have created, and all captures created by edge accounts. Captures created by other user accounts are not displayed.

12 Play/stop and repeat playback

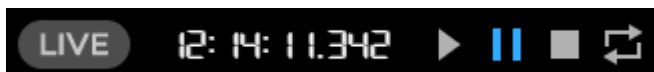
You can control real-time display and past data display by using the timeline control.

Play Starts playing of real-time or past data.



Pause

Pauses playback and provides analysis of the data at the point paused.



Stop

Stops playback and clears the panel data. The data of the panel is cleared.



Repeat

Repeats playback when playing back past data.



Note: Displaying data at a particular timestamp in the past data playback
Double-click the Master Timestamp on the timeline control.



Input a timestamp to go to that time point instantly. This allows you to snap to precise points in time, which is more difficult to do from the seek bar.
For details about how to operate the cursor, see [Cursor operation](#) (p. 43).

13 Download measurement data in CSV format

Measurement data can be exported to a local PC as CSV.

Note: When exporting historical data (Stored Data) in CSV, please execute the export after the data has been loaded to the browser.


This function exports only the data that has been loaded in the web browser. If CSV is exported when data has not been completely loaded, an incomplete CSV will be output.

Note: Large measurement data may not be exported

Measurement data that is too large to be loaded into Data Visualizer cannot be exported.

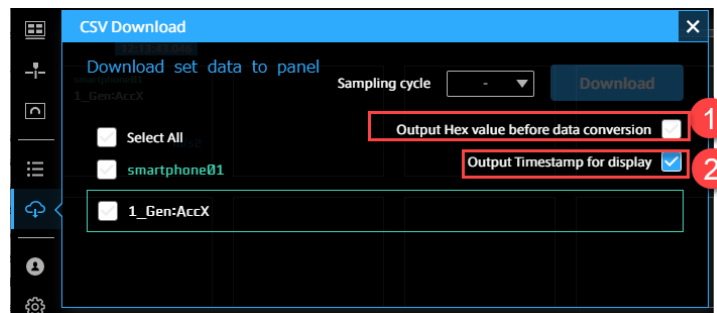
If the measurement data is too large, the message "Download stopped because the data is too large to be loaded to the browser." will be displayed and loading will stop.

In this case, do one of the following to reduce the data to be loaded.

- Use  (Preview Stored Data) to shorten the time range to be loaded.
- Reduce the number of data bound to the screen; Data Visualizer will attempt to load all data bound to the screens (data with specified edge, data type, data ID, and channel). Check for all loaded screens, not just the current screen.

13.1 Types of CSV downloading

There are the following two types of optional settings for CSV downloading.



1 Output Hex value before data conversion

If checked, pre-conversion binary data (CAN data from vehicle measurements for example) is downloaded as hex values.

Example of output when OFF (physical value):

```
"#timestamp", "51_Analog_p5V:ch0051_apr_an[edge1]"
"1649397290.214403", 1.0090028229190506
"1649397290.220803", 1.0090791180285341
"1649397290.227203", 1.0090791180285341
"1649397290.233603", 1.0090791180285341
"1649397290.240003", 1.0090028229190506
```

Example of output when ON (hex value):

```
"#timestamp", "51_Analog_p5V:ch0@51_apt_an[edge1]"
"1649397290.214403", "0xA93361515B5342650000000000000000"
"1649397290.220803", "0xAA335151385350650000000000000000"
"1649397290.227203", "0xAA335451155322650000000000000000"
"1649397290.233603", "0xAA334A511E533A650000000000000000"
"1649397290.240003", "0xA93367514C5331650000000000000000"
```

2 Output Timestamp for display

If checked, timestamps are added to the first row for date-time display. Example of output:

```
"#timestamp", "#timestamp", "51_Analog_p5V:ch0@51_apt_an[edge1]"
"2022/04/08 14:54:50.214403", "1649397290.214403", 1.0090028229190506
"2022/04/08 14:54:50.220803", "1649397290.220803", 1.0090791180285341
"2022/04/08 14:54:50.227203", "1649397290.227203", 1.0090791180285341
"2022/04/08 14:54:50.233603", "1649397290.233603", 1.0090791180285341
"2022/04/08 14:54:50.240003", "1649397290.240003", 1.0090028229190506"
```

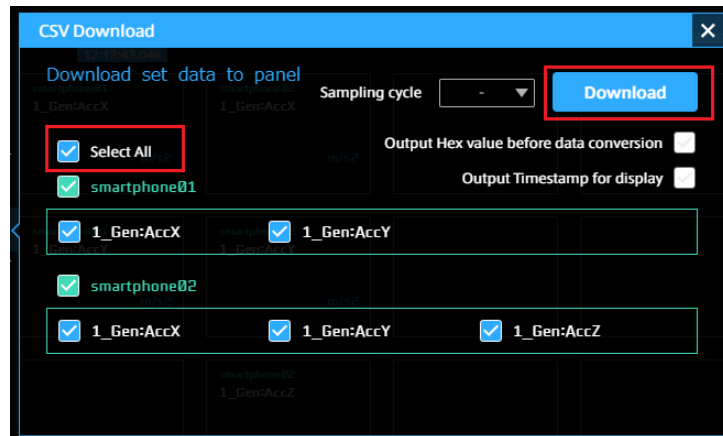
Note: Naming rules for output files

yyyymmddhhmmss{start date and time}-yyyymmddhhmmss{end date and time}.csv

13.2 CSV downloading

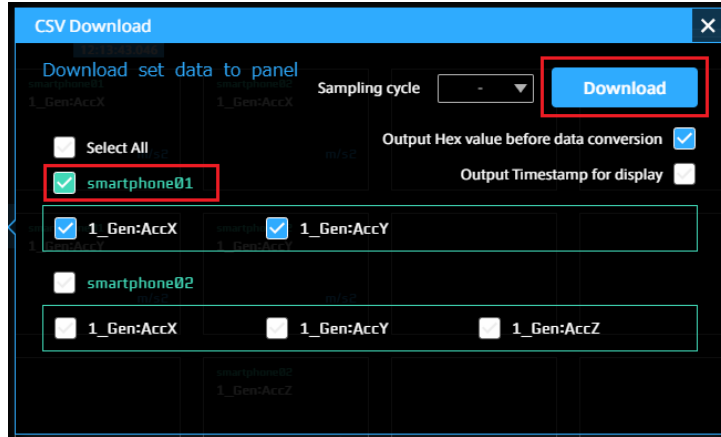
13.2.1 CSV downloading for data from all panels

When you check [Select All], a CSV file for data from all panels is downloaded.



13.2.2 CSV downloading for each edges

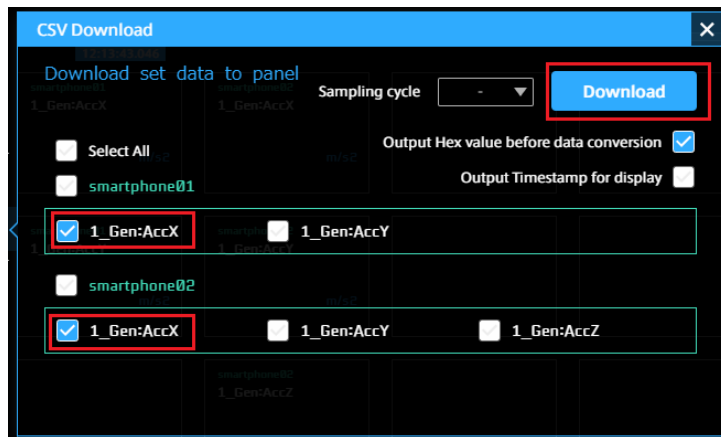
When you select the edge name, a CSV file for data from the selected edge panel is downloaded.



13.2.3 CSV downloading for each data

When you select the data name, a CSV file for the selected data is downloaded.

Data items can be selected from different edges.

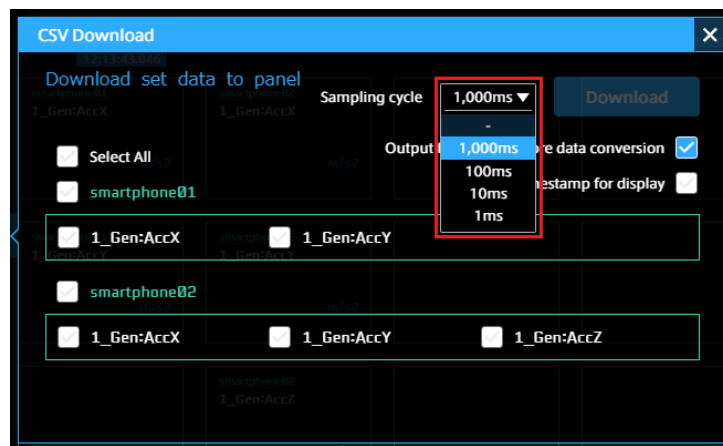


13.2.4 Setting the sampling period

You can use the "Sampling Cycle" box to set the sampling period of the data. Data will be out-putted at the rate determined by the specified sampling period.

The value at the most recent time in the period will be set as the value of the data.

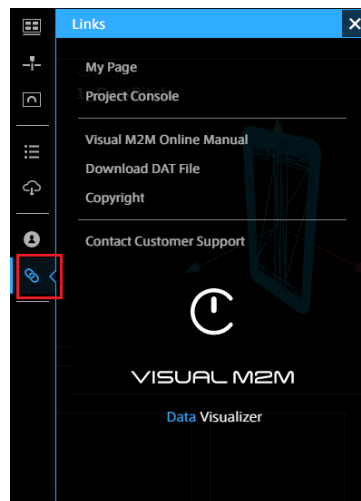
If there is no preceding data, the data will be set as blank.



Sampling period values: - (none), 1000 ms, 100 ms, 10 ms, 1 ms

14 Links to DAT files and other applications

Links contains links to other applications and the data settings download page. It also displays the version of this product. However, depending on your environment, links to other applications may not be displayed.



My Page

Open My Page for configuring your user account and the edge accounts you own.

Project Console

Open Project Console to manage projects and groups.

Visual M2M Online Manual

Open a list of intdash/Visual M2M documentation. Refer to the documentation for the version you are using.

Download DAT File

Open the download page of the data settings file (DAT). The DAT files can be imported and used in the Data Settings screen. For details, refer to [Data Settings](#) (p. 21).

Copyright

Displays the license of the software that Data Visualizer is using.

Contact Customer Support

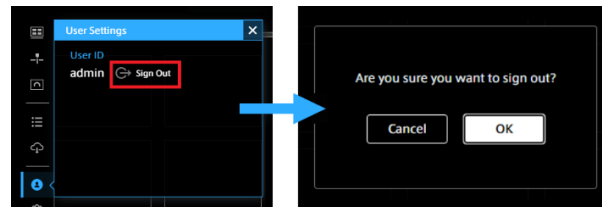
Create an inquiry email to the support desk.

Version

Displays the version of the Data Visualizer.

15 Sign out (User Settings)

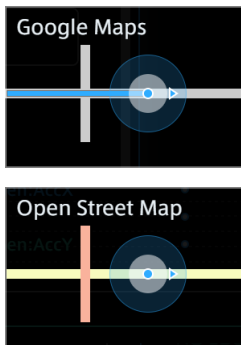
1. Select [User settings] from the function menu, and then click [Sign out].
2. Click [OK] in the sign-out message dialog box.



16 How to use visual parts

16.1 Map

16.1.1 Google Maps and Open Street Map



There are two visual parts that display a location on a map using latitude and longitude data: Google Maps and Open Street Map.

The difference between Google Maps and Open Street Map in Data Visualizer is as follows.

	Google Maps	Open Street Map
Map data	Map data provided by Google	By default, map data provided by Open Street Map tile server (https://tile.openstreetmap.org/{z}/{x}/{y}.png). You can change the tile server.
Switching Map Types	You can switch between several map types (Satellite, Dark, etc.) by mouse operation.	Various maps provided in Open Street Map format can be used by changing the settings of the map data source (tile server) in Panel Settings.
API key to use the map data	For indash servers operated by aptpod, no API key setting is required. If you are running your own indash server, you will need to set up an API key (refer to the document on building an indash server for instructions).	Default maps can be used without an API key. If you want to use map data that requires an API key, enter the URL that contains the API key when setting the source (tile server) of the map data.

Data to be bound to Google Maps or Open Street Map

You can bind latitude, longitude, direction, and other data to a Google Maps or Open Street Map visual part. Latitude and longitude are required, the others are optional.

- Binding latitude and longitude will display the location on the map.
- Binding the direction will display the direction of the edge on the map.
- Binding any other data will display the value (only one) in a callout on the map.

Latitude, longitude, and direction

If the Data ID (or Data Name) of the bound data contains specific keywords, it is recognized as data representing latitude, longitude, or direction, and is used to display the position on the map.

The keywords are as follows. For example, if the Data ID or Data Name contains the keyword "LAT," it is recognized as latitude.

- Latitude: LAT
- Longitude: LNG or LON
- Direction: HEAD or DIRECTION

If you use the data settings for NMEA or General Sensor downloaded from [Links] > [Download DAT File], bind the following data. (In the downloaded data settings, "x" is the channel number.)

	Latitude	Longitude	Direction
NMEA (GPS)	x_RMC_Lat	x_RMC_Lng	x_RMC_Direction
GeneralSensor (Smartphone)	x_Gen:Lat	x_Gen:Lng	x_Gen:Head

Other data

You can also bind data other than latitude, longitude, and direction. The first data except latitude, longitude, and direction is displayed in a box on the map.

Example of setting and display

In the following example, latitude (Lat), longitude (Lng), and direction (Head) are bound to the map. Other than those, speed (Speed) and altitude (Alt) are bound to the map but only the first data (speed) is displayed in a callout box on the map.





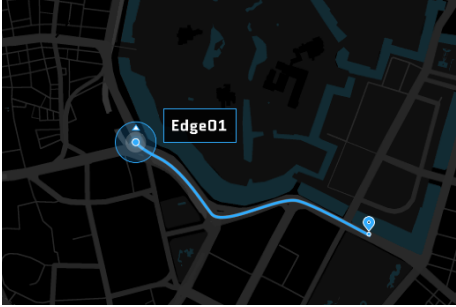



1 Edge location (latitude, longitude), 2 Edge direction, 3 Edge name, and 4 Other data

Note: If no edge is displayed on the map

- Confirm that the latitude and longitude data are set.
- Confirm that the data and measurement edge channels are the same. If they are different, the edge cannot be displayed.
- Make sure the edge and Data Visualizer are both communicating with the server.

16.1.2 Window operation

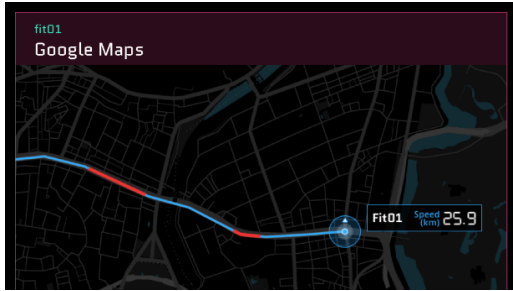

When you mouse over the map panel, a list of operation icons appears at the bottom right of the panel.

Icon	Operation
 (Google Maps only)	Click to select the Map Type (Satellite, Dark, etc.).
	When this is set to ON, the trajectory is displayed. 
	Changes the edge displayed at the center of the window. Displays all edges, or focuses on a particular edge.
	Zoom in/out on the map.
	When this is set to ON, the map is displayed in full screen on the back of the screen. When this is set to OFF, the map is displayed in the panel.

16.1.3 Panel Settings

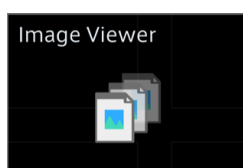
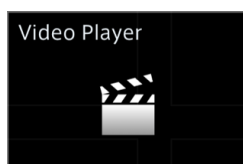
Setting item	Required / Optional	Settings
Panel Name	Optional	Enter the name to be displayed on the panel.
Bind Data	Required	See Data to be bound to Google Maps or Open Street Map (p. 64).

16.1.4 Panel Option

Setting item	Required / Optional	Settings
Threshold	Optional	<p>When turned on, if the data displayed in the callout box exceeds the threshold, the trajectory turns red. For more information on setting the threshold, refer to Setting the display format (Display Settings) (p. 28).</p> 
Custom Tile Server URL (Open Street Map only)	Optional	<p>To change the source of the map data, enter the tile server URL, including variables such as {x}, {y}, and {z} in the URL. Example: <code>https://{s}.example.com/{z}/{x}/{y}.png</code> If not specified, the default tile server URL <code>https://tile.openstreetmap.org/{z}/{x}/{y}.png</code> will be used.</p>
Custom Copyright Attribution (Open Street Map only)	Optional	<p>Enter the credit you want to display in the lower right corner of the map. HTML can be used. Example: <code>© Example contributors</code> If not specified, the default tile server credentials will be used.</p> 

16.2 Media (Video and audio)

16.2.1 Video Player (for H.264) and Image Viewer (for Motion JPEG)

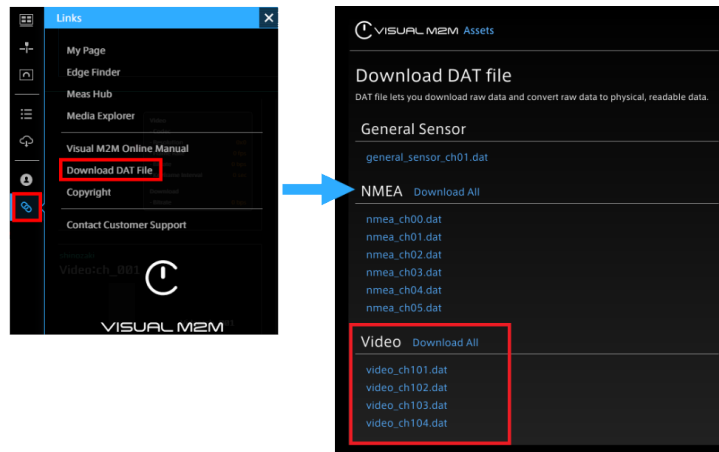


Video Player and Image Viewer display video. Use the appropriate visual parts for the codec of the video.

- Use Video Player for H.264.
- Use Image Viewer for Motion JPEG (MJPEG).

To display video, the data setting for video (data type "VIDEO(H.264,JPEG)") is required.

Download and import a settings file (.dat) or create settings on the Data Settings screen. If you download the settings, be sure to download data settings for the correct channel. For example, the settings file for channel 1 is video_ch001.dat.



The same data settings can be used for H.264 and Motion JPEG.

Note: Set up visual parts and channels correctly

All of the following must be done correctly to display video.

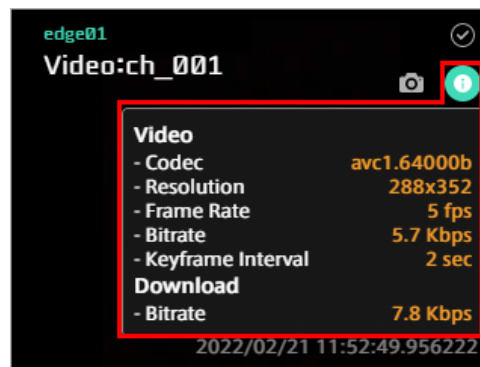
- Use Video Player for H.264 and Image Viewer for Motion JPEG.
- Use data settings for the correct channel
- Bind correct data

Operation of Video Player and Image Viewer

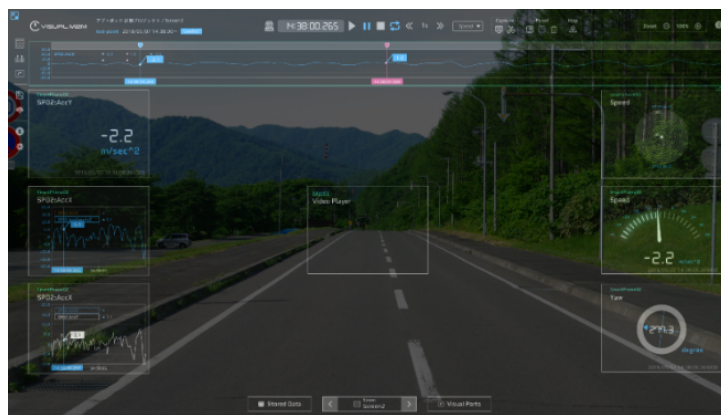


1 Downloads the currently displayed image as a still image file. The file will be saved in the resolution of the original data, regardless of the current display size.

2 (Video Player only) Displays information about the video, where Bitrate in Video indicates the bit rate of the video at the time it was shot, and Bitrate in Download indicates the bit rate at which the Data Visualizer is currently downloading the video from the intdash server.



3 Displays this video as the background of the dashboard. Click the same button again to return to the original view.



Note: Aspect Ratio

The visible area of the video is affected by the aspect ratio of the panel. Adjust the panel size according to the ratio of the video. For details on panel size, see [Changing the panel size](#) (p. 36).

Note: Downloading video

Videos acquired with H.264 codec can be downloaded from the measurement details screen of the Meas Hub application. In this case, the video is downloaded as an MP4 file and does not contain any audio or timestamp by intdash.

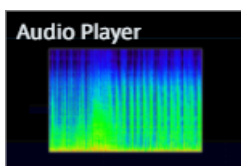
Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Enter the name to be displayed on the panel.
Bind Data	Required	Select the data source (edge) and the data you wish to display (data type "VIDEO(H.264,JPEG)").
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency. During LIVE playback, the Rendering Speed of the Image Viewer cannot be changed.

Panel Option

Setting item	Required / Optional	Settings
Time Offset or Start Time Offset	Optional	Playback start time can be adjusted. If the time of the video is out of sync with other data, you can offset the video to align it with other data (Minimum unit: 0.01s).
Hardware Acceleration	Optional	(Video Player only) Specifies whether hardware acceleration is used for video playback. <ul style="list-style-type: none"> • Use Browser Setting: Follows the web browser setting. • No Hardware Acceleration: Hardware acceleration is not used. Hardware acceleration may enable smoother video playback, but the effect depends on the video to be played back and the performance of the PC.
Show Video info on Panel	Optional	(Video Player only) When turned on, information about the video is displayed on the panel.
Live Buffer Timeout (sec) (Only for H.264 NAL Unit Type)	Optional	(Video Player only) Sets the maximum amount of time to wait for one frame to be ready when playing a h264_nal_unit type video of iSCP v2. If the data for one frame is not ready after the time set here, the frame is displayed with missing data. This may result in block noise or green display. Set a smaller value if real-time playback is important. This setting only has an effect when playing the h264_nal_unit type of iSCP v2.

16.2.2 Audio Player

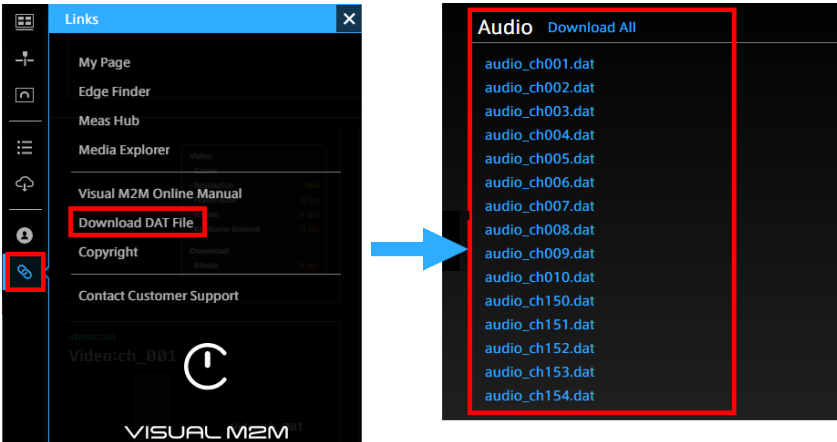


Audio Player plays audio and displays a spectrogram.

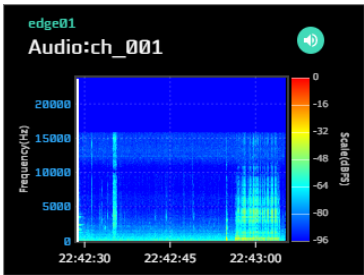
To playback audio, data settings for audio (data type "AUDIO(PCM,AAC)") are required.


Download and import a settings file (.dat) or create settings on the Data Settings screen. If you

download the settings, be sure to download the data settings for the correct channel. For example, the settings file for channel 1 is audio_ch001.dat.



Operating the Audio Player



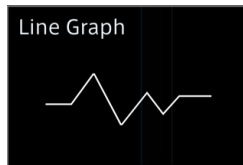
Click  to mute/unmute audio.

Panel Settings

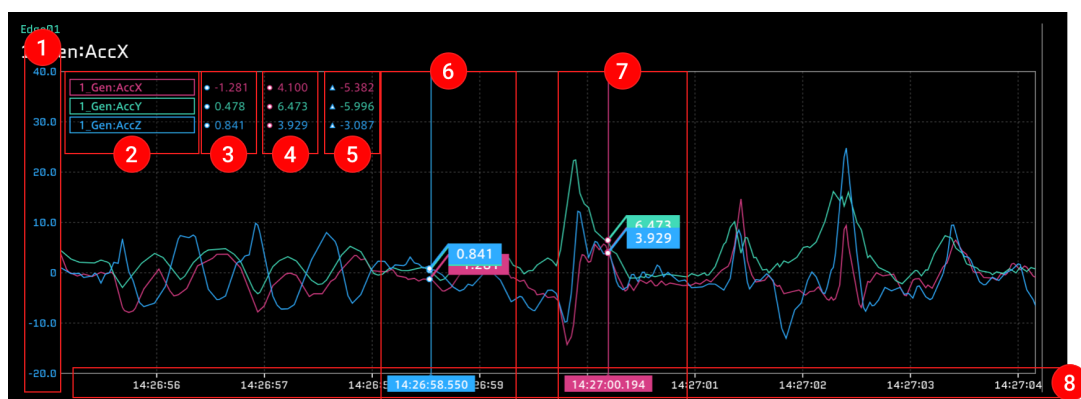
Setting item	Required / Optional	Settings
Panel Name	Optional	Enter the name to be displayed on the panel.
Bind Data	Required	Select the data source (edge) and the data you wish to display (data type "AUDIO(PCM,AAC)").
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency. This setting is for the spectrogram and does not affect the audio played back.

16.3 Graph

16.3.1 Line Graph



16.3.2 Description of the window

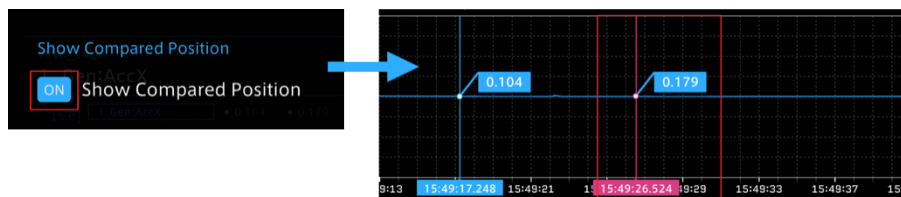


* Up to 10 data items can be bound.

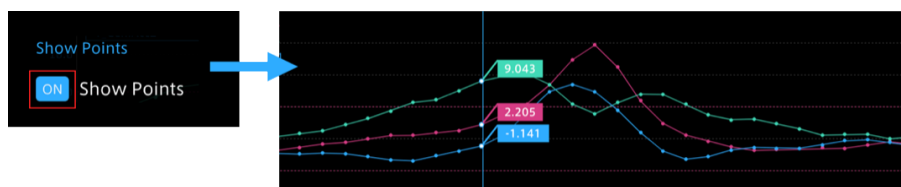
- 1 The vertical axis that represents the data value. This can be set with the [Data Range] item in the Panel Option window.
- 2 Field name of the data. You can click these items to show or hide the data. For details, see [Showing or hiding data](#) (p. 75)
- 3 Value of Current Position.
- 4 Value of Compared Position.
- 5 Difference value obtained by subtracting the value of Compared Position from the value of Current Position.
- 6 Current Position (instantaneous value).
- 7 Compared Position (comparison position).
- 8 The horizontal axis that represents time. This can be set with the [Time (X) Interval] item in the Panel Option window.

16.3.3 Panel Option

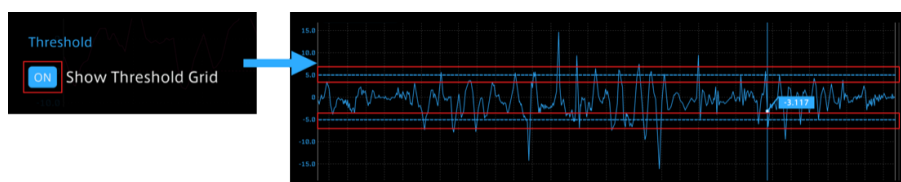
Setting item	Required / Optional	Settings
Data Range	Optional	Set the maximum and minimum values of the vertical axis. Multiple scales can be displayed on the left scale only when [Relative (relative display)] is set in the [Graph Scale] item.
Show Compared Position	Optional	ON: Compared Position is displayed.



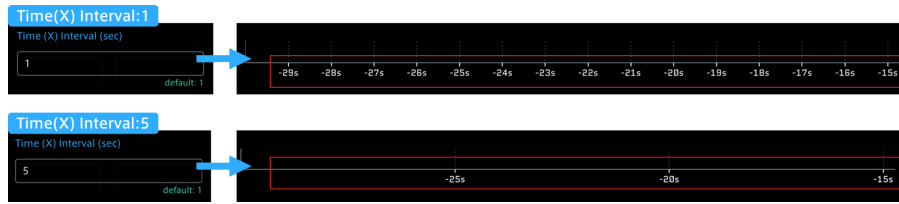
Setting item	Required / Optional	Settings
Show Points	Optional	ON: Sampling points are displayed when the display range is specified. They are not displayed if the display range is too wide.



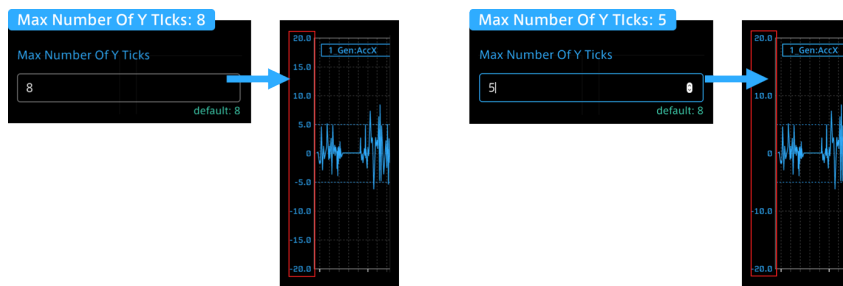
Setting item	Required / Optional	Settings
Threshold	Optional	ON: The threshold grid set for data is displayed.



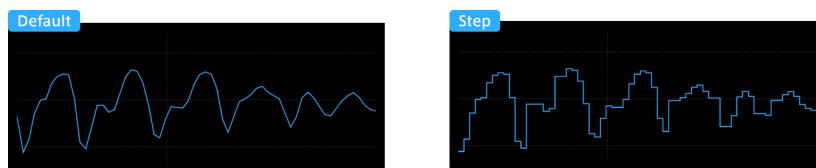
Setting item	Required / Optional	Settings
Time (X) Interval (sec)	Optional	Set the interval for the horizontal axis.



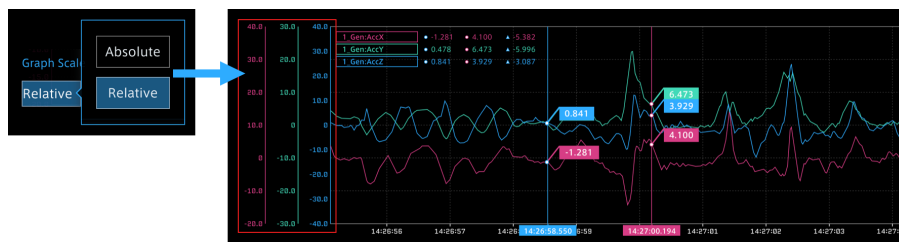
Setting item	Required / Optional	Settings
Max Number of Y Ticks	Optional	Maximum number of scales on the vertical axis. The default value is 8.



Setting item	Required / Optional	Settings
Graph Interpolation	Optional	Set the data interpolation method. Default: Line graph Step: Stepped graph

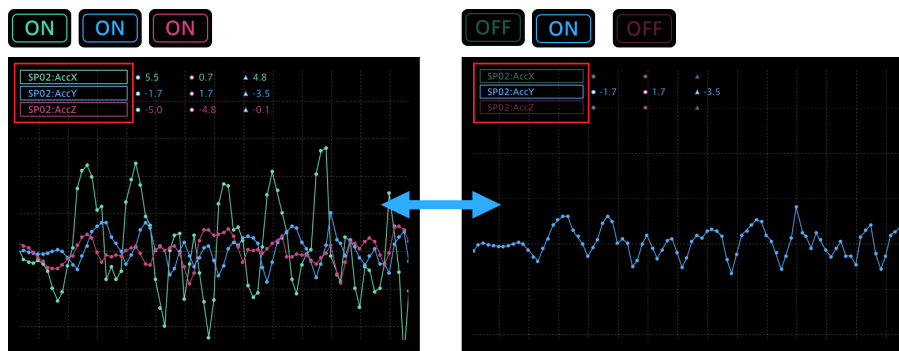


Setting item	Required / Optional	Settings
Graph Scale	Optional	Set the display scale of the graph. Absolute: Absolute value display. All data items are displayed on the same scale. Relative: Relative display. The Y axis for each data item is displayed, and the graph is drawn using its own scale.



16.3.4 Showing or hiding data

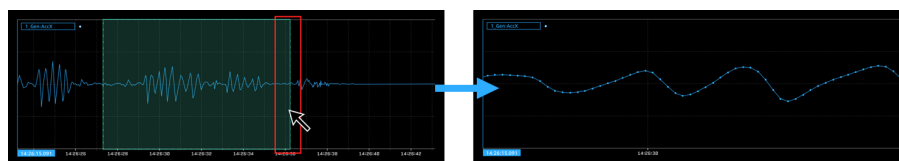
When multiple data items are bound, the line graphs are displayed for all the data items. You can show or hide line graphs by clicking Field Name of each data item. The Field Name for a hidden data item is faded out.



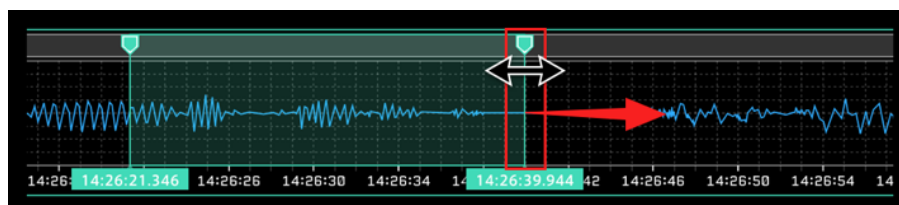
16.3.5 Narrowing the display range of Line Graph


1. Operation on the graph

Click anywhere in the graph display area, and then drag it to the right or left.



2. Operation on the timeline



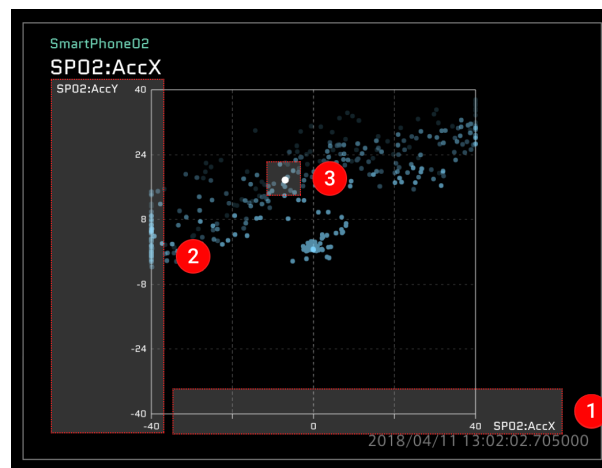
To return to the whole graph display, cancel the range specification by using the  button in the menu displayed in the upper right when hovering the mouse over the green cursor (timeline).

For details, see [Specifying the timeline range](#) (p. 45).

16.3.6 Scatter

Scatter displays a scatter plot. Bind two data items to one scatter plot.

If you specify the display range by dragging on the timeline, the scatter plot is displayed only with the data in the specified range. For details about specification of the timeline range, see [Specifying the timeline range](#) (p. 45).



Description of the window

- ❶ Data01 is displayed as the X axis.
- ❷ Data02 is displayed as the Y axis.
- ❸ The instantaneous value is displayed.

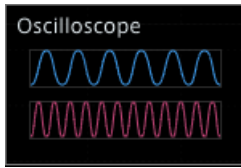
Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Enter the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display. Two data items are always necessary.
Rendering Speed	Required	The update frequency. The default is 10 fps. Increasing the value of Rendering Speed increases the processing load. If the load is too high, the panel may not be updated at the specified frequency.

Panel Option

Setting item	Required / Optional	Settings
Data Range - X Axis	Optional	Set the maximum and minimum values that can be displayed on the X axis (Data01).
Data Range - Y Axis	Optional	Set the maximum and minimum values that can be displayed on the Y axis (Data02).

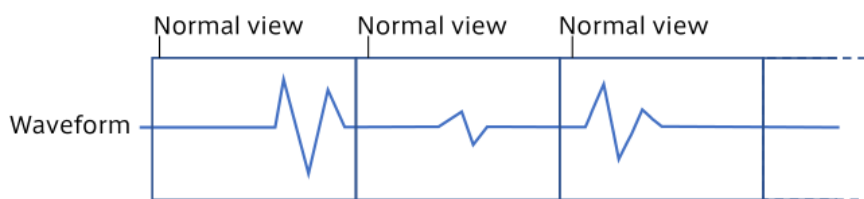
16.3.7 Oscilloscope



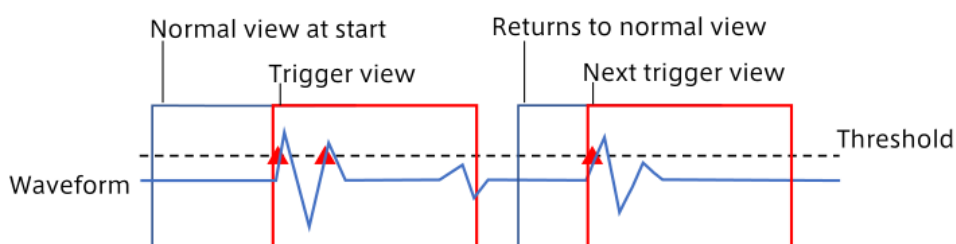
The Oscilloscope is a visual part for displaying repeated waveforms. When using the Line Graph visual part, the waveform of the entire measurement or selected range is displayed, whereas in Oscilloscope, the waveform of the specified short time range (Time Window) is cut out and displayed. As time passes, the display will be updated with the waveform of the new data.

In Oscilloscope, "trigger view" is possible by setting thresholds on the Data Settings screen, which makes it possible to display the waveform in an easy-to-see format. A trigger occurs when the value is greater than the upper threshold or less than the lower threshold. When a trigger occurs, the waveform drawing area is updated from the left end. The waveform display in such case is called trigger view.

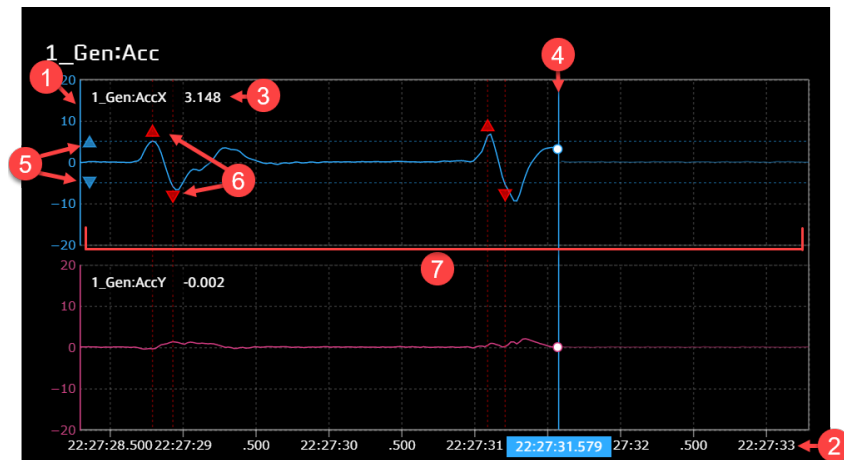
When a threshold is not set:




When a threshold is set:



Description of the window



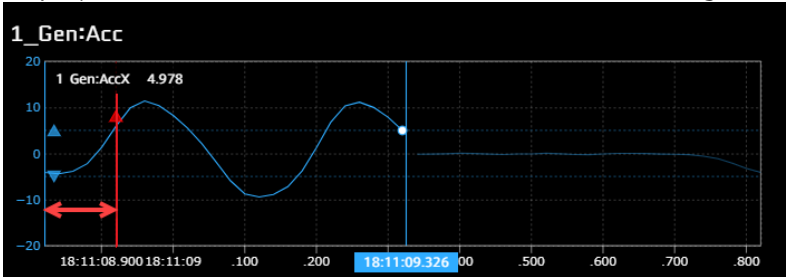
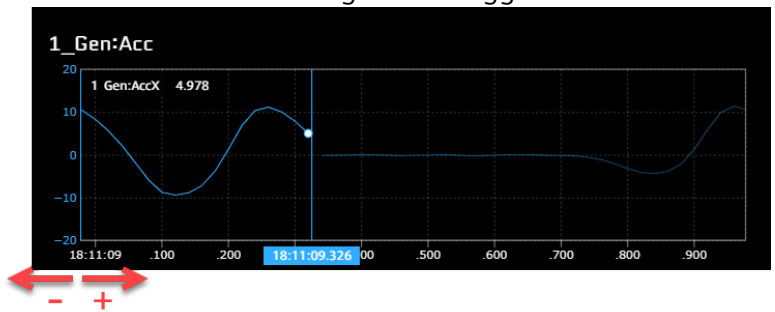
Up to 8 data can be bound.

- ❶ Vertical axis. The range to be displayed can be set with the [Data Range] item in the Panel Option window.
- ❷ Horizontal axis representing time. The displayed time range can be set in the [Time Window] of the Panel Option window.
- ❸ Data name and current value.
- ❹ Current position.
- ❺ Thresholds used as triggers (Threshold set in  Data Settings).
- ❻ A trigger marker (▲ ▼) indicating that the value exceeds the threshold, and a trigger has occurred. Hover your mouse over the trigger marker to see when the trigger occurred.
- ❼ Waveform drawing area.

Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Enter the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

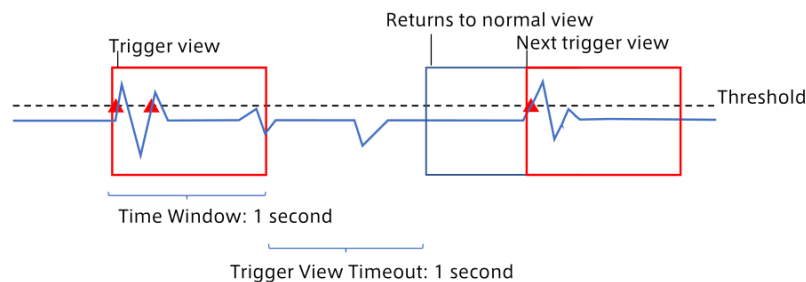
Panel Option

Setting item	Required / Optional	Settings
Data Range	Optional	Set the maximum and minimum values on the vertical axis.
Time Window (sec)	Optional	Set the length of the time range displayed on the horizontal axis.
Trigger Position (%)	Optional	<p>Set the position where the trigger is displayed in the waveform drawing area.</p> <p>For example, if the Trigger Position is 10%, the trigger will be displayed 10% from the left end of the waveform drawing area.</p> 
Trigger View Timeout (sec)	Optional	<p>When a trigger occurs, the Oscilloscope switches to the trigger view, but after a certain period of time, it returns to the normal view. Trigger View Timeout sets the time until the waveform returns to the normal view after it reaches the right edge in the trigger view.</p> <p>For example, if Trigger View Timeout is set to 1 second, the current trigger view will be maintained for 1 second after the waveform reaches the right edge. After that, it returns to the normal view.</p>
Trigger Holdoff (sec)	Optional	Set the minimum time from one trigger to the next. No trigger will occur within this time.
Time Offset (sec)	Optional	<p>Shifts the display time range. For example, setting the Time Offset to -0.2 shifts the display time range 0.2 seconds to the left.</p> <p>This setting is valid only for the normal view. Use Trigger Position to shift the time range in the trigger view.</p> 

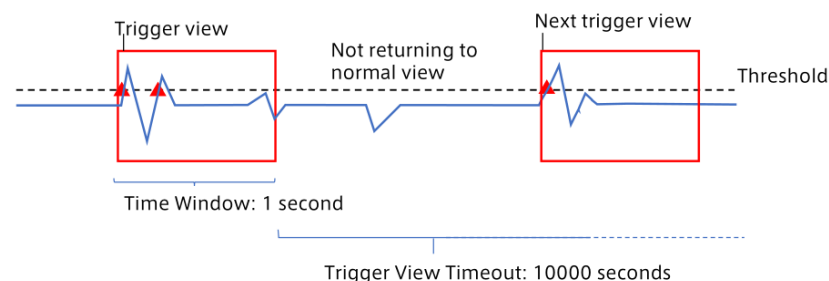
Note: Update the display only when the threshold is exceeded

The trigger view automatically returns to the normal view after the time set by Trigger View Timeout has elapsed. If you do not need to return to the normal view and want to check only the waveform when the trigger occurs, set a large value (for example, 10000 seconds) for Trigger View Timeout. This allows you to postpone the timing of returning to normal view so that the display does not update until a trigger occurs.

Example when Trigger View Timeout is set to a small value:



Example when Trigger View Timeout is set to a large value (Updates the display only when the threshold is exceeded):

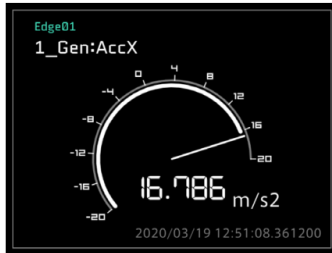


16.4 Meter

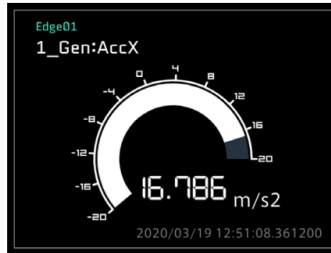
16.4.1 Various basic meters

The following types of meters display one piece of bound data. Of these meters, Bar Meter and Zero Based Meter display the midpoint between minimum and maximum values (as set in Panel Option) at the center as the reference point. Zero Based Meter shows the difference from the reference point with a bar.

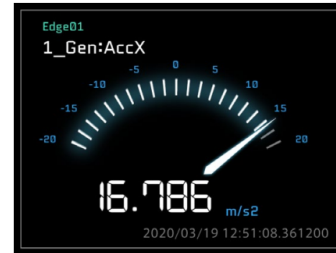
Arc Instrument



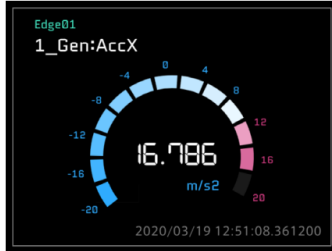
Arc Meter



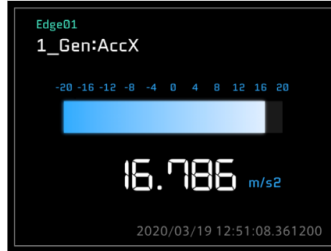
Arc Instrument001



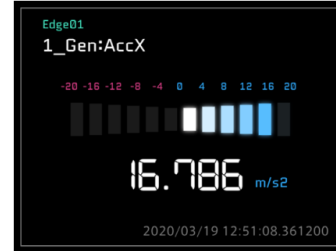
Arc Subdivision Meter



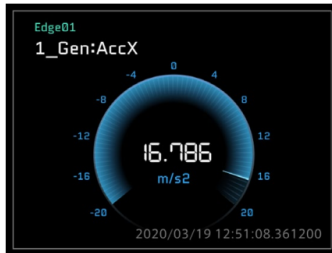
Bar Meter



Zero Based Meter



Radial Gauge Meter



Panel Settings

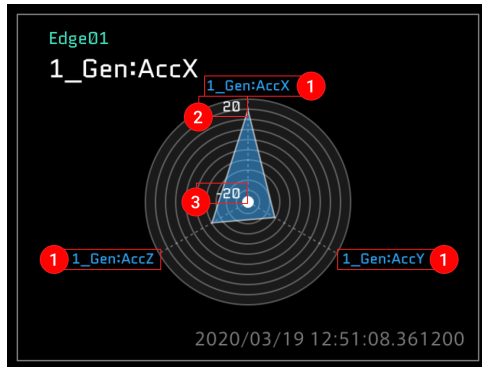
Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

Panel Option

Setting item	Required / Optional	Settings
Data Range - Axis	Optional	Set the maximum and minimum values of the meter.
Ticks	Optional	Set the number of ticks of the meter.

16.4.2 Radar Chart

Radar Chart displays multiple data items on a radar chart. Up to 10 data items can be bound to one radar chart.



Description of the window

- 1 The set data name is displayed.
- 2 The max Data Range of Data01 is displayed (this can be changed with Data Range of Panel Option).
- 3 The min Data Range of Data01 is displayed (this can be changed with Data Range of Panel Option).

Note: The maximum and minimum values of a radar chart can be set only for Data01.

Panel Settings

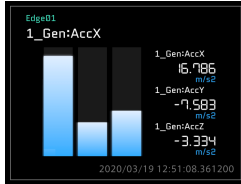
Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

Panel Option

Setting item	Required / Optional	Settings
Data Range - Axis	Optional	Set the maximum and minimum values of a radar chart.
Ticks	Optional	Set the number of scales of a radar chart.

16.4.3 Vertical Bar Meter

Vertical Bar Meter displays multiple data items in a bar graph. Up to 3 data items can be bound to one Vertical Bar Meter panel. You can set a different Data Range for each data.



Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

Panel Option

Setting item	Required / Optional	Settings
Data Range - 1	Optional	Set the maximum and minimum values of the display of Data01.
Data Range - 2	Optional	Set the maximum and minimum values of the display of Data02.
Data Range - 3	Optional	Set the maximum and minimum values of the display of Data03.

16.5 Label

Label displays numeric values and character strings. Bind one data item to one Label panel.



Visual parts	Function
Value Current	Displays the current value.
Value Average	Displays the average value in the loaded data. If you specify a range on the timeline, the average value in that range is displayed.
Value Min	Displays the minimum value in the loaded data. If you specify a range on the timeline, the minimum value in that range is displayed.
Value Max	Displays the maximum value in the loaded data. If you specify a range on the timeline, the maximum value in that range is displayed.
Hex Label	Displays the current value in hex format.
Binary Label	Displays the current value in binary format.
Text Label	Displays the current value as a single line of text. It is not possible to display multiple lines. There is no limit to the number of characters.

16.5.1 Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

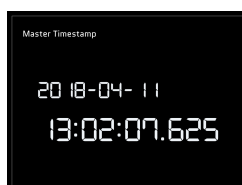
16.5.2 Panel Option (only for Hex Label, Binary Label)

Setting item	Required / Optional	Settings
Data Range	Optional	Set the maximum and minimum values to be displayed.
Byte Range	Required	Set a value between 0 and 4.

16.6 Master (Master Timestamp)

16.6.1 Master Timestamp

The master timestamp, which is the reference date and time for the timeline control, is displayed.



Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	-	You do not need to set Bind Data.
Rendering Speed	Required	The update frequency. The default is 30 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

Panel Option

There is no item to set.

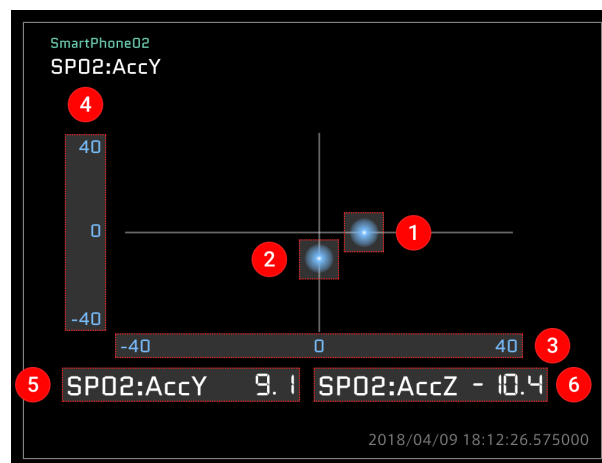
16.7 Position

There are six types of visual parts contained in the Position category.

16.7.1 Shine Ball

Shine Ball displays data on a two-dimensional (x axis and Y axis) plane. Bind two data items to one Shine Ball panel.

Description of the window



- ❶ The instantaneous value of Data01 is displayed as a sphere.
- ❷ The instantaneous value of Data02 is displayed as a sphere.
- ❸ The Data Range set in Data01 is displayed (X axis).
- ❹ The Data Range set in Data02 is displayed (Y axis).
- ❺ The instantaneous value of Data01 is displayed.
- ❻ The instantaneous value of Data02 is displayed.

Panel Settings

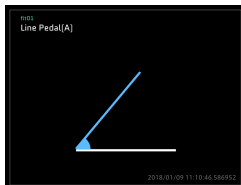
Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

Panel Option

Setting item	Required / Optional	Settings
Data Range - X Axis	Optional	Set the maximum and minimum values that can be displayed on the X axis (Data01).
Data Range - Y Axis	Optional	Set the maximum and minimum values that can be displayed on the Y axis (Data02).

16.7.2 LINE Pedal (A), (B)

LINE Pedal displays a graphic whose angle varies resembling a pedal. Bind one data item to one LINE Pedal panel.



Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

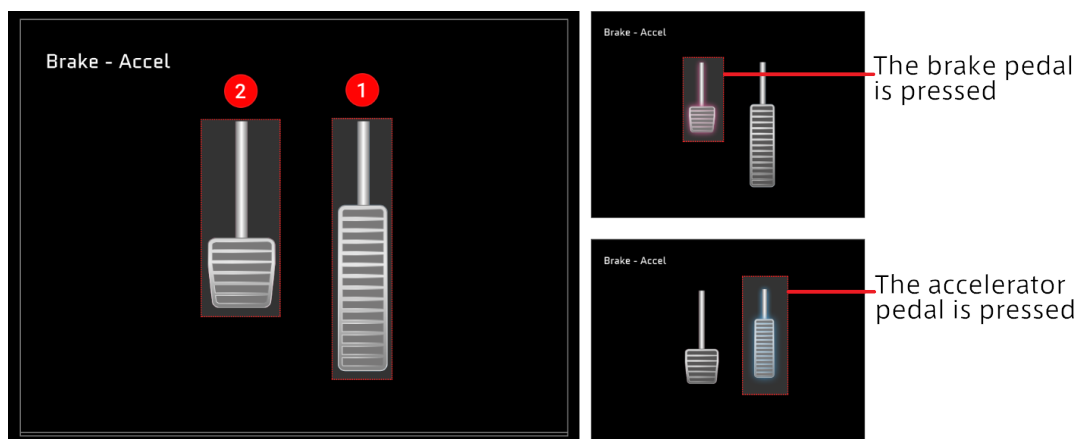
Panel Option

Setting item	Required / Optional	Settings
Data Range	Optional	Set the maximum and minimum values to be displayed.

16.7.3 Accel Brake Pedal

Accel Brake Pedal displays graphics resembling the vehicle accelerator pedal and brake pedal. Bind two data items for accelerator and brake to one Accel Brake Pedal panel.

Description of the window



- ❶ The data set in Data01 is displayed as a pedal image.
- ❷ The data set in Data02 is displayed as a pedal image.

Note: Setting accelerator and brake

- Set the accelerator data for Data01. Set the brake data for Data02.
- If Data01 and Data02 are set reversely, the accelerator operation and the brake operation are reversed.

Panel Settings

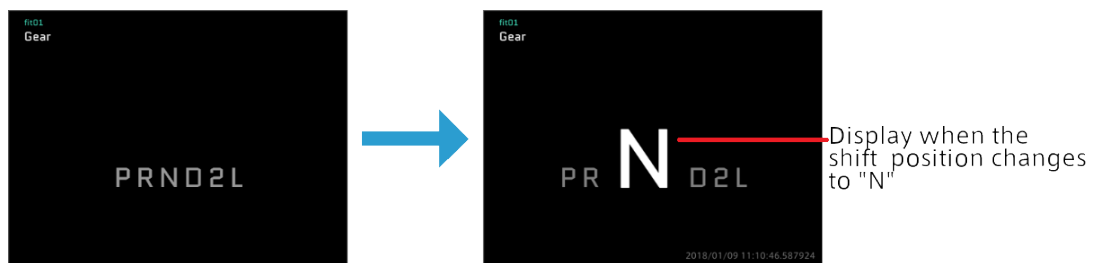
Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display. Set the accelerator data for Data01 and the brake data for Data02.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

Panel Option

Setting item	Required / Optional	Settings
Data Range - Brake	Optional	Set the maximum and minimum values.
Data Range - Accel	Optional	Set the maximum and minimum values.

16.7.4 AT Gear

AT Gear displays a graphic resembling the shift indicator of an automatic transmission. Bind one data item to the AT Gear panel.



Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

Panel Option

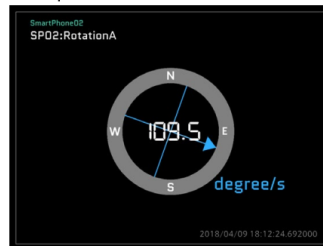
There is no item to set.

16.8 Rotation

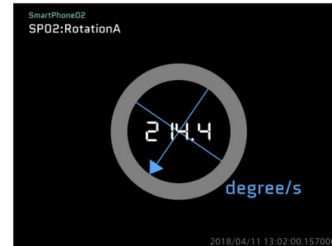
There are four types of visual parts contained in the Rotation category.

16.8.1 Compass and Rotation

Compass



Rotation



Compass and Rotation display the direction. Bind one data item to the panel to display Compass or Rotation. The direction (N, E, W, S) is shown in Compass, but not in Rotation.

Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

Panel Option

There is no item to set.

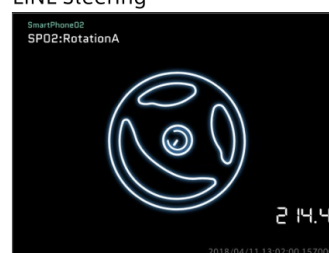
16.8.2 Real Steering and LINE Steering

Real Steering and LINE Steering display graphics resembling the steering wheel of a vehicle. Bind one data item to the panel that displays Real Steering or LINE Steering.

Real Steering



LINE Steering



Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

Panel Option

There is no item to set.

16.9 Stream (list view)

There is only one type of visual part contained in the Stream category.

16.9.1 Text Stream

Text Stream displays the timestamps and values of data in a list format. Bind one data item to the Text Stream panel. The list of data items is displayed in descending order of timestamps.

SmartPhone02 SP02:Pitch	
2018/04/09 18:12:25.192000	63.613481798
2018/04/09 18:12:25.176000	72.899444098
2018/04/09 18:12:25.159000	78.386845117
2018/04/09 18:12:25.142000	98.432113878
2018/04/09 18:12:25.126000	98.577786522
2018/04/09 18:12:25.109000	100.045916821
2018/04/09 18:12:25.093000	101.103591481
2018/04/09 18:12:25.076000	101.153507065
2018/04/09 18:12:25.059000	100.339443831
2018/04/09 18:12:25.043000	99.558239083
2018/04/09 18:12:25.026000	100.948390945
2018/04/09 18:12:25.009000	75.306162799
2018/04/09 18:12:24.993000	69.752000540
2018/04/09 18:12:24.976000	60.649156115
2018/04/09 18:12:24.959000	53.343019702
2018/04/09 18:12:24.943000	47.017121303
2018/04/09 18:12:24.926000	41.997817423

16.9.2 Description of the window

- ① The timestamp of Current Position is displayed (instantaneous value).
- ② The value of Current Position is displayed (instantaneous value)
- ③ The timestamp of Compared Position (comparison position) is displayed.
- ④ The value of Compared Position (comparison position) is displayed.

Note: Display of Compared Position

The Compared Position is displayed in red even if Show Compared Position in Timeline Settings is set to OFF.

Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

Panel Option

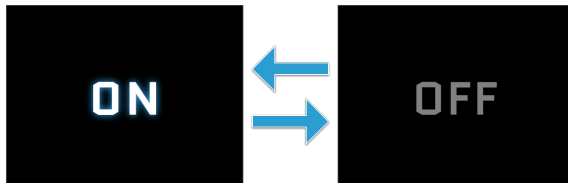
There is no item to set.

16.10 Switch

There are four types of visual parts contained in the Switch category. The value of one piece of bound data is displayed as ON (0) or OFF (1).

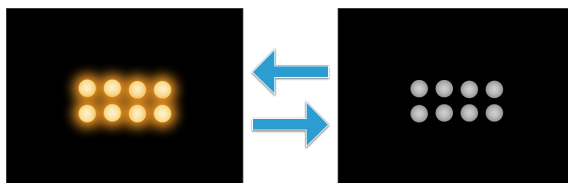
Label Switch

The setting is displayed as "ON" or "OFF".



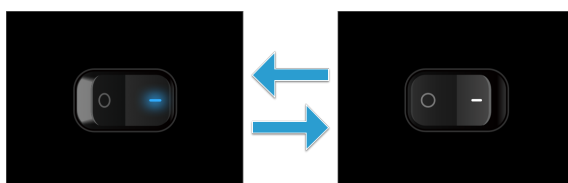
Signal Switch

The ON/OFF setting is displayed with a glowing lamp image.



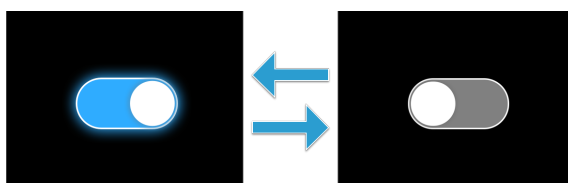
Rocker Switch

The ON/OFF setting is displayed with a rocker switch (seesaw switch) image.



Slide Switch

The ON/OFF setting is displayed with a slide switch image.



16.10.1 Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

16.10.2 Panel Option

There is no item to set.

16.11 3D

16.11.1 SmartPhone

A 3D graphic model of a smartphone displays posture and acceleration.

Data to be bound to SmartPhone parts

Bind the data representing the smartphone's orientation (Euler angle or quaternion) and the acceleration.

Important:

- Select whether to use Euler angles or quaternions in the orientationAngle of the Panel Option.
- Values are recognized by order, so they must be bound in the correct order.

When using Euler angles:

Bind the data in the following order.

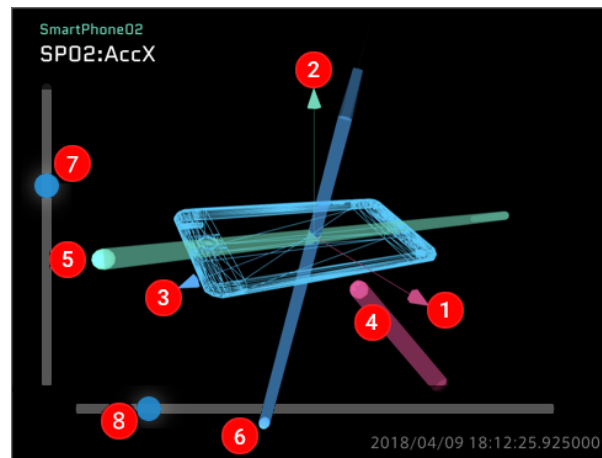
- Pitch (degrees)
- Roll (degrees)
- Yaw (degrees)
- Acceleration (X)
- Acceleration (Y)
- Acceleration (Z)

When using quaternions:

Bind the data in the following order.

- Quaternion X (-1 to 1)
- Quaternion Y (-1 to 1)
- Quaternion Z (-1 to 1)
- Quaternion W (-1 to 1)
- Acceleration (X)
- Acceleration (Y)
- Acceleration (Z)

Description of the window



- ❶ X-axis (pink)
- ❷ Y axis (green)
- ❸ Z-axis (blue)
- ❹ Acceleration of X (trajectory of the pink circle)
- ❺ Acceleration of Y (trajectory of the green circle)
- ❻ Acceleration of Z (trajectory of the blue circle)
- ❼ Move the viewpoint up and down (The slider appears only when the mouse pointer hovers over it.)
- ❽ Move the viewpoint left or right (The slider appears only when the mouse pointer hovers over it.)

Panel Settings

Setting item	Required / Optional	Settings
Panel Name	Optional	Set the name to be displayed on the panel.
Bind Data	Required	Select the device where the data is collected (edge) and the data you want to display.
Rendering Speed	Required	The update frequency. Default is 20 fps. Increasing the Rendering Speed increases the processing load. If the processing load is too high, the panel may not be updated at the specified frequency.

Panel Option

Setting item	Required / Optional	Settings
modelRotationX	Required	Set the offset for model X-axis rotation (-180 to 180 degrees).
modelRotationY	Required	Set the offset for model Y-axis rotation (-180 to 180 degrees).
modelRotationZ	Required	Set the offset for model Z-axis rotation (-180 to 180 degrees).
localRotationX	Required	Set the offset for local X-axis rotation (-180 to 180 degrees).
localRotationY	Required	Set the offset for local Y-axis rotation (-180 to 180 degrees).
localRotationZ	Required	Set the offset for local Z-axis rotation (-180 to 180 degrees).
orientationAngle	Required	Select whether the attitude data is based on Euler angles (euler) or quaternions (quaternion).
coordinateSystem	Required	Select whether the coordinate system to be used is left handed or right handed.

17 Data Visualizer FAQ

17.1 Q&A about accounts

Is it possible to create user information?

User information cannot be created by Data Visualizer. Use the Edge Admin Console application.

Is it possible to edit or delete user information?

User information cannot be edited or deleted by Data Visualizer. Use the Edge Admin Console application.

How can I sign out?

Open [User Settings], and then select [Sign out].

What should I do if I forget my login password?

Click [Forgot Password?] in the login window, and then reissue a password.

17.2 Q&A about data settings

What is a data settings file?

Data Visualizer treats measurement data as binary data. A data settings file contains definition information for displaying measurement data as physical values.

How can I add settings from a data settings file?

Select [Import] from the Data Settings menu, and then select the file you want to add.

How can I add/delete data to/from the registered data settings file?

From the Data Settings menu, select [Add Group] to add a group, or [Delete Group] to delete a group. If you want to add only data, select [Add Data]. If you want to delete only data, select [Edit], and then [Delete].

17.3 Q&A about screen settings

What is a screen?

In Data Visualizer, a screen is a specific configuration for the display of measurement data.

How do I save a screen?

Screens are saved automatically. The same screen information can be used in another PC environment by executing [Export].

17.4 Q&A about visual parts

What are the Visual Parts?

Visual parts provide a graphical representation of measurement data. You can use Visual Parts by arranging them on screens. Visual Parts have various shapes such as graphs, movies, and meters, which provide the most suitable visualization for the characteristics and purposes of the data.

How can I arrange Visual Parts on the screen?

Select the part you want to display from [Visual Parts] at the bottom of the window, and then drag and drop the part to the target screen.

17.5 Q&A about playback

How can I perform live playback?

Select [LIVE]. Then, select [Play].

How can I replay Stored Data?

From [Stored Data], select the data you want to replay. Then, select [Play].

How can I switch from in-progress live playback to Stored Data playback?

Select [LIVE]. The [Stored Data] window appears. Then, select the data you want to replay.

How can I switch from in-progress Stored Data playback to live playback?

Select [LIVE]. Then, select [Play].

Is it possible to change the playback speed?

You can adjust the playback speed by selecting the playback speed from the [Speed] list.

Is it possible to replay only the data within a particular range?

Click [Preview Stored Data] in Capture to replay data within a set range. Also, when clicking [Create a Capture] and naming the specified range, a capture is created in Stored Data.

How can I display a graph on the timeline?

Set the data from the [Timeline Settings] menu.

What is the capture?

A capture is obtained by executing [Create a Capture] to extract a specific time range in the data. Think of it as a bookmark with a specified time range.

Is there a limit on the playable time?

The playable time differs depending on the environment. For more information, contact your aptpod representative.

How can I download time-series data?

You can download data from the [Data Download] menu.

17.6 Q&A about various settings

How can I delete a panel that has been set?

Select the panel you want to delete, and then select [Delete Panel].

Is it possible to change the size of a panel?

Hover the mouse over the Panel and drag one of the nine handles on the frame to resize it.

Is it possible to display visual parts in full screen?

You can enlarge visual parts and cancel them by clicking the button at the bottom of the panel. In addition, you can display specific parts such as videos and maps on the entire background of the window by clicking the full screen button.

Is it possible to switch the display to full screen?

Click the full-screen display icon in the upper left of the window. To return the display to the original size, click the full-screen display icon again.

Is it possible to copy the visual part panel being displayed?

Drag and drop the panel you want to copy while holding down the [Alt] key.

17.7 Other Q&A

Is it possible to switch the display language?

The display language of Data Visualizer is English only.

Which environment is guaranteed to provide correct operation?

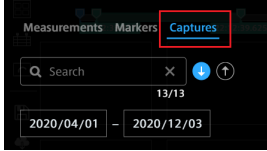

Operation on the Chrome browser is guaranteed for both Windows and Mac.

What should I do if the version upgrade is not applied?

Perform a super reload. Super reload ignores browser cache and forcibly downloads a file from the Web server.

18 Glossary

18.1 Terms related to Data Visualizer

Term	Description
Data Binding	To assign data to a panel. Data properly bound to visual parts will be displayed.
Capture	Data that is extracted for a particular time range. Data can be extracted down to 0.001 seconds. 
DAT	A data file or format for storing data settings.
MasterTimestamp	A visual part that displays the reference time for playback. The current time is displayed for real-time measurement, and the measurement time of the playback target is displayed for Stored Data playback. 
Panel	An area where visual parts are displayed. You can set visual parts individually, display frames for them, and change their display size.
Data Settings	Definition for converting binary data into numeric values or character strings.
Rendering Speed	The number of times to render a part in one second.

18.2 General terms

Term	Description
Binary Data	Data expressed in binary format.
CAN	The abbreviation for Controller Area Network, which is a serial bus for networks. This is the standard for in-vehicle networks.
DBC	This is the industry-standard conversion definition format (developed by Vector Inc.) for CAN bus definition files.
fps	This term represents the number of frames per second.
HEX value	Data expressed in hexadecimal format.
Threshold	Threshold of data. You can change the color of the panel when the value exceeds or falls below the specified value, or goes out of range.

19 Support

If you have any questions or problems, please contact us by using the following contact information.

aptpod, Inc.

- Email address (customer support) VM2M-support@aptpod.co.jp
- Website <https://www.aptpod.co.jp/en/>