Critical manufacturing
an ASM PT company

Live / Historical Data

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Live / Historical Data

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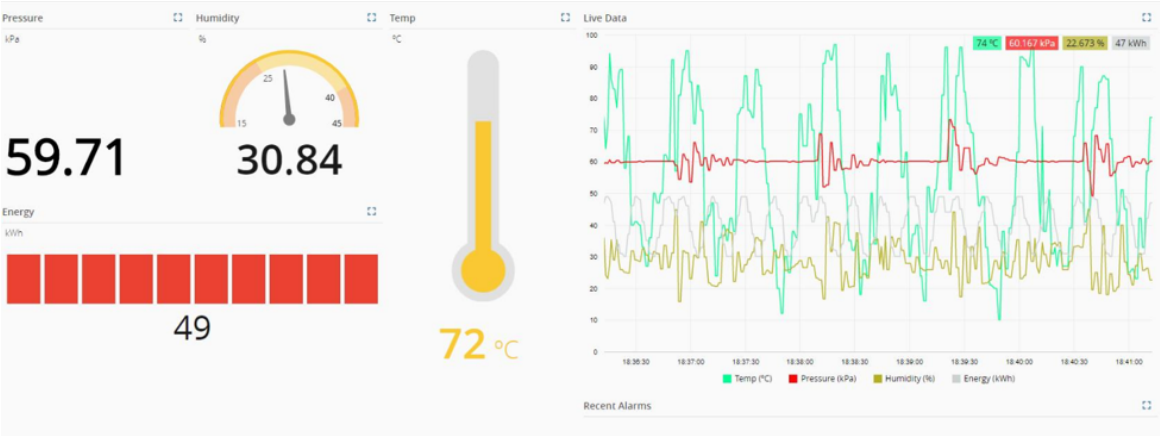
Live data is computing data that is still relevant and is observable in real-time. This type of data enables you to be proactive and take immediate action to prevent problems before they happen. It also provides you with the necessary tools to respond with greater speed and accuracy to the needs of your industry.

Historical data is collected data about past events and circumstances pertaining to a particular subject. This type of data allows you to track improvements over time and better understand your business and how it is evolving.

> **Note**
>
> Historical data includes most data generated either manually or automatically within a company.

Being able to access, work with, and process live and historical data gives you the upper hand to better manage production on a daily basis and in the future. It means you have more information at your disposal, and this makes for a better understanding of your segment.

The image below is an example of how live data can be visualized:



Overview

This document will provide a quick guide for the configuration of a mechanism that enables retrieving information from the events entering the system in real time or to fetch historical data recorded in the past.

Setting Up Live Data / Historical Data

In order to be able to use the Live Data / Historical Data feature, it is necessary to follow the following steps:

- Create the **UI Page** and Configure the Event Data Source
- Plug in Widgets to visualize the events information

Create the UI Page

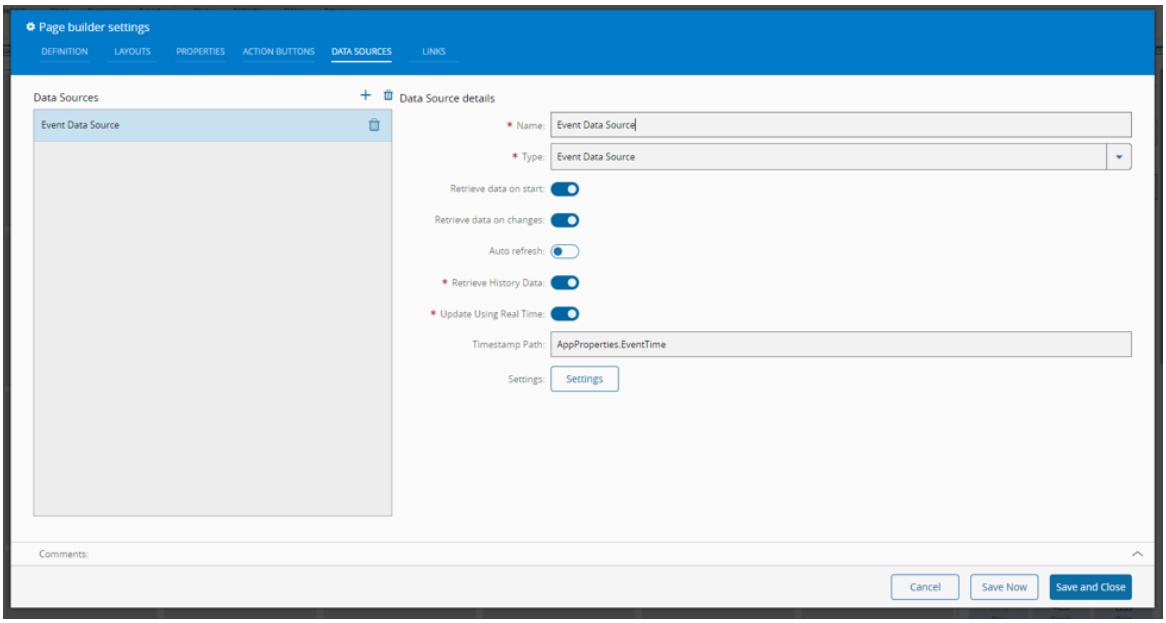
The **UI Pages** used for Live Data / Historical Data are normal **UI Pages** with the added functionality of an Event Data Source which must be created and added.

Configure the Event Data Source

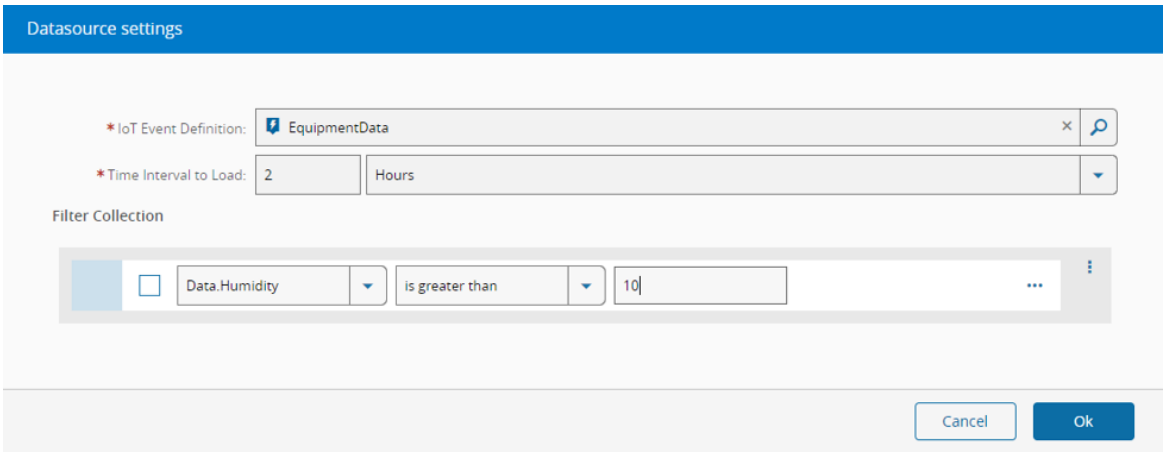
In this example, the Data Source is being configured to subscribe to an **IoT Event Definition** named *EquipmentData*. The structure of this example event is the following:


```
{
  "AppProperties": {
     "EventDefinition": "EquipmentData",
     "EventTime": "2020-08-12T20:17:46.384Z",
     "ApplicationName": "ConnectIoTSimulator",
  },
  "Data": {
      "Temp": 20,
      "Humidity": 45
  },
  "SysProperties": {
    "EventId": "1600795819339901352",
    "EnqueueTime": "2020-09-22T17:30:19.385Z",
    "UserName": "CMF\\producttest",
    "HostName": "VM-DSM03",
    "IPAddress": "::ffff:10.24.16.33"
 }
```


To set up an event data source in the UI Page editor, go to the *Data Source* tab in the UI Page settings:



You can access additional settings of the Data Source by clicking the *Settings* button in the same tab:



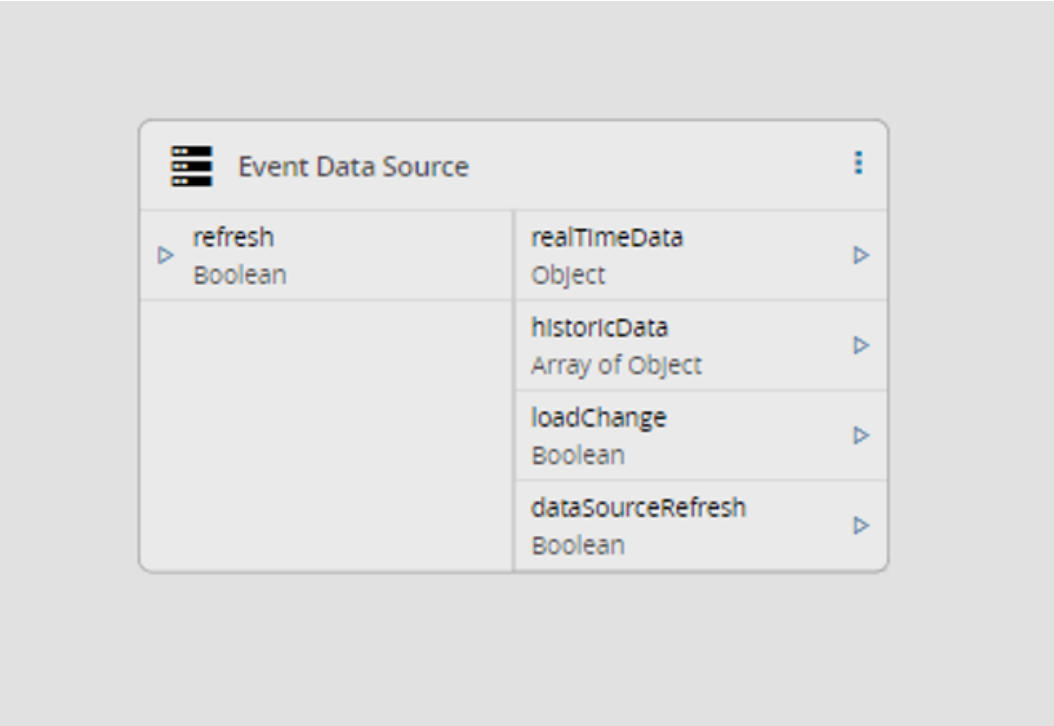
Here are the specific properties of the Event Data Source:

Parameter	Description	Example
Retrieve History Data	Set to true to fetch historical data, false otherwise	`True`
Update Using Real Time	Set to true to subscribe to real time data	`True`
Timestamp Path	The path to the timestamp property in the event	`AppProperties.EventTime`
IoT Event Definition	The IoT Event Definition to retrieve information from	`EquipmentData`
Time Interval to Load	The time interval to be used to retrieve historical data	`2 Hours`
Filter Collection	A Filter Collection constructed to filter the results in the real time subscription or historical data	`Data.Humidity > 10`

Table: Specific properties of Event Data Source

> **Note**
>
> To access these properties it is necessary to access the extended Data Source Settings by clicking *Settings*

Event Data Source Outputs



The specific outputs of this data source are the following:

Parameter	Description
realTimeData	Contains the object (event) received via real time subscription
historicData	Contains the collection of objects (events) fetched via Historical Data

Table: Specific outputs of Event Data Source

Visualization Widgets

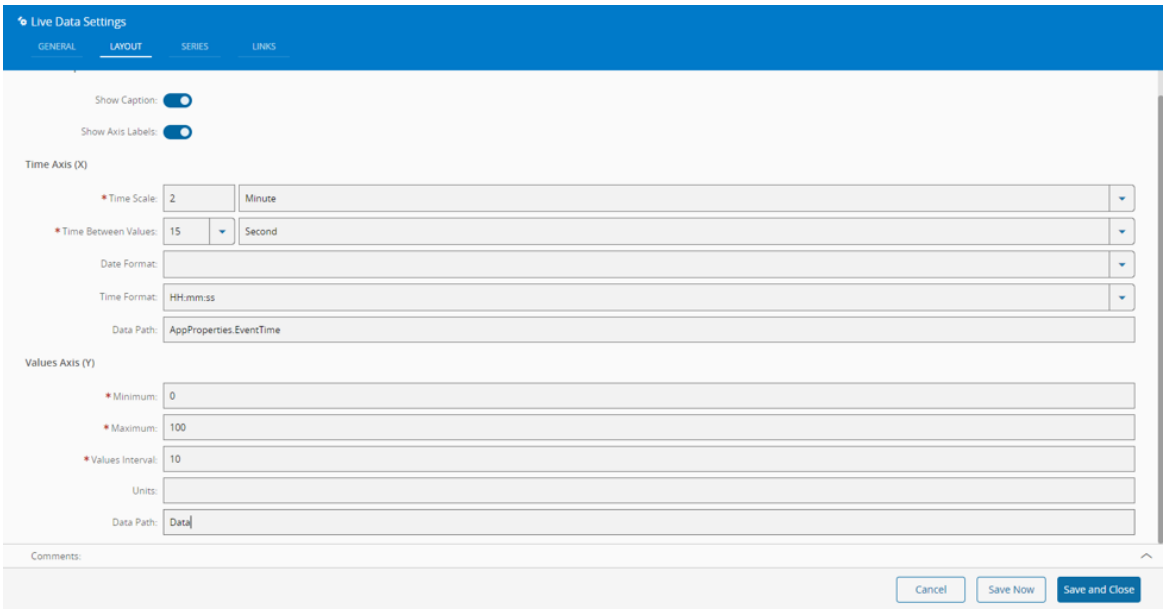
The Event Data Source is responsible for fetching the information that can be fed to the different Widgets in the MES system through the available Data Source Outputs. The following sections exemplify the usage and configuration of the *Live Data Widget* to display the information provided by the DataSource from the previous section.

Live Data Widget Configuration

Add the Live Data Widget to the UI Page and then proceed to the configuration panels:

Layout

Configuration of the Time (X) and Values (Y) axes is performed in this panel.



X axis important configuration entries

Parameter	Description	Example
Time Scale	The X axis scale displayed in the graph	`2 Minutes`
Data Path	Path to the property in the object containing the timestamp of the event	`AppProperties.EventTime`

Table: X axis important configuration entries

Y axis important configuration entries

Parameter	Description	Example
Minimum	The Y Axis minimum scale value	`0`
Maximum	The Y Axis maximum scale value	`100`
Data Path	Path to the property in the object containing the information of the event to display	`Data`

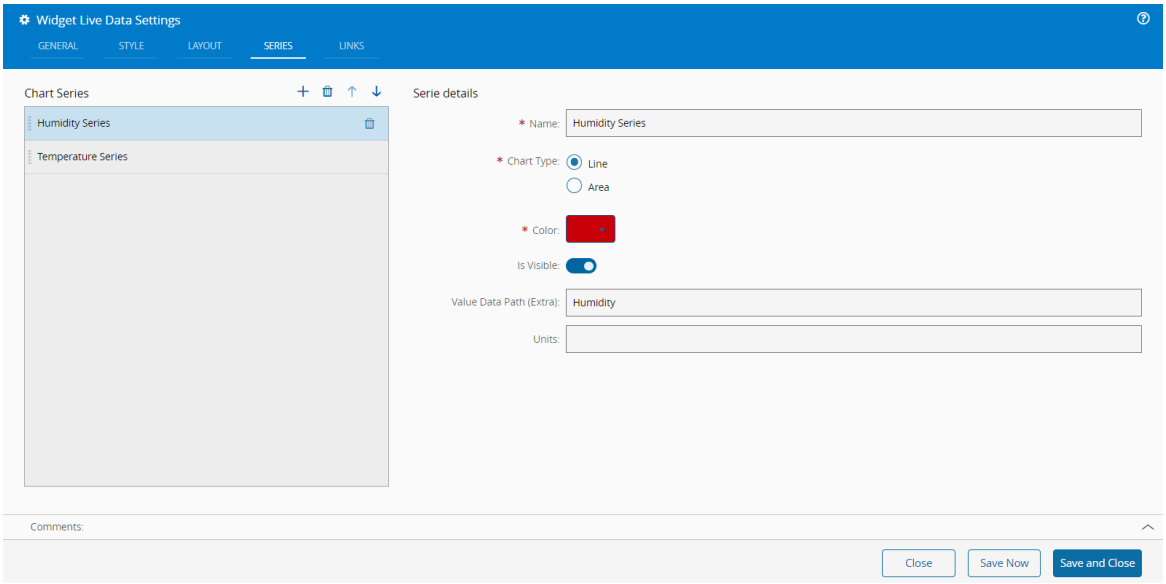
Table: Y axis important configuration entries

In this example we are setting up the Live Data Widget with an X scale of 2 minutes and Y scale from 0 to 100. The widget will fetch the information to display in the X axis from the property `AppProperties.EventTime` and the information to display in the Y axis from the property `Data`.

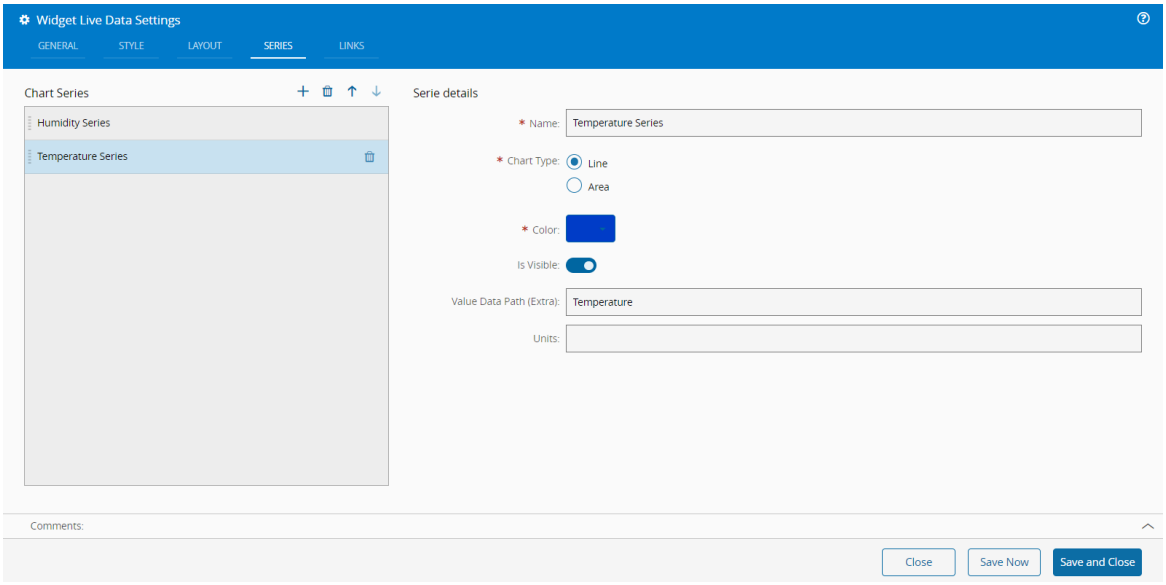
Chart Series

Several different series can be added, displaying different values to be displayed. In this example we are configuring two Chart Series:

- **Humidity**
  - Series will be displayed in red color and will show information available in the object property `Data.Humidity`
- **Temperature**
  - Series will be displayed in blue color and will show information available in the object property `Data.Temperature`



Temperature Series



Series Configuration

In the next table the most important settings of these series are displayed:

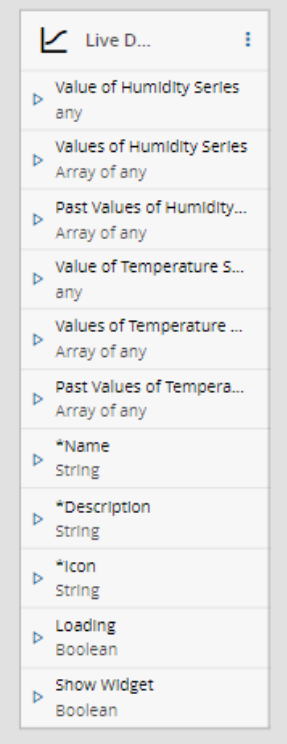
Parameter	Description	Example

Parameter	Description	Example
Name	Series name	`Temperature Series`
Color	Series display color	`-`
Extra Data Path	A Data path can be specified here so that multiple series can be created for the same event. This will be appended to the Data Path of the Layout Settings	`Temperature`
Series Units	Units of this Series	`°C`

Table: Series configuration settings

Since we specified `Data` as the Data path in the layout panel, in this series the information will be retrieved from the property `Data.Temperature`.

Inputs



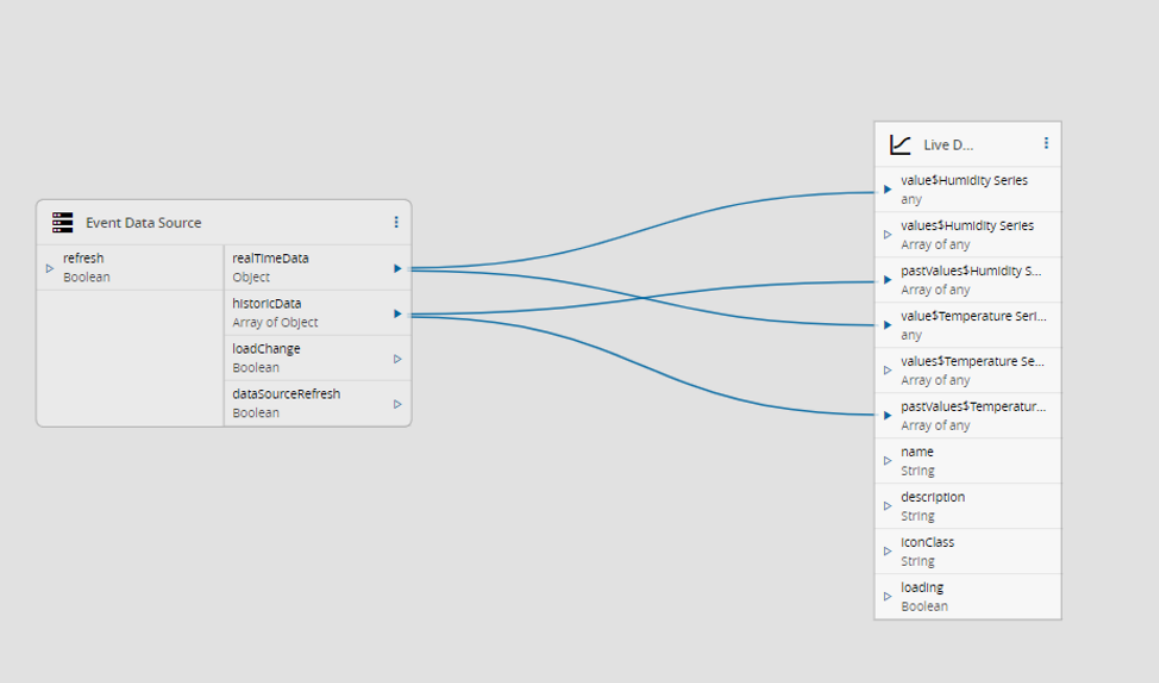
The next table displays the specific inputs of the Live Data Widget. These inputs will be available for each series:

Parameter	Description
value	Receives a single value and displays it
values	Receives an array of values and displays it

Parameter	Description
pastValues	Receives an array of values with past timestamps displays it

Table: Live Data Widget inputs

To complete the configuration, set the connections between the Event Data Source outputs and Live Data Widget inputs such as what is shown below:



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