Embedding charts in external webpages

Hydras 3 net offers the option to embed different chart types from the dashboards also in external webpages.

This feature must be explicitly made available in the registry by setting the key

HKEY_CURRENT_USER\SOFTWARE\Ott-Hydrometry\Hydras3\Communication\External_Web_Links

To 1.

It can also be set for specific workspaces only by adding an “External_Web_Links=1” entry in the “Workspace.cfg” file of the workspace. Or disabling by setting it to 0.

General concept

When a webpages wants to embed data from Hydras 3 net, it has to include a URL of a Hydras 3 net server into the page. All of these URLs start with /h3external/ after the hostname.

The different chart types have different URLs. For example a line chart uses h3external/chart while a barchart has h3external/barchart.

Each h3external URL requires a couple of parameters that specific the sensor(s) that shall be displayed, timerange and chart specific parameters.

The h3external URLs can return different type of content, which is specified by the mode parameter.

See table below fo the different modes.

Mode	Description
0	Returns Javascript code that renders the chart to the component passed as URL param renderto
1	Returns a HTML part that kann be directly loaded into a div using e.g. the jQuery function $(“#container”).load(…)
2	Returns a complete HTML page including references to required (chart) libraries. Can be used to populate a separate page or an iFrame.

Line chart

The h3external/chart URL is used to embed a line chart.

URL parameter	Description
ws / uid	Workspace index or unique ID of workspace on the server
range	Timerange of data to display day:N for last N days hour: N for last N hours thisweek for this week thismonth for this month thisyear for this year
start / end	Alternatively to range the explicit start and end of the time range can be specified Start and end must be specified in YYYYMMDDHHNNSS format, where the timestamp HHNNSS is optional.
sensorids	The combined station and sensor id of the sensor(s) to display Stationid and sensorid are concatenated Multiple sensorids are separated by a comma
name	The (optional) name of the Javascript chart object. If not specified it is “chart”. Must be specified if multiple charts occur in one HTML page
renderto	If mode=0 (Javascript) then the parameter renderto has to be specified to tell the Javascript code to which HTML div the chart shall be rendered

Examples:

Mode 0: Javascript: h3external URL is directly used in the src attribute of a <script> element.

```
<html>
 <head>
  <script ="http://10.20.30.40/hydrometcloud/js/highcharts.js"></script>
 </head>
 <body>
  <div id="mychart" style="width:600px; height:400px;"></div>
  <script
src="http://10.20.30.40/h3external/chart?ws=1&range=day:3&sensorids=01234567890123&renderto=mychart&name=chart01&mode=0"></script>
 </body>
</html>
```

Note that in this case the highcharts.js library must be explicitly included and the renderto Parameter must be used!

Mode 1: HTML

```
<html>
 <head>
  <script ="http://10.20.30.40/hydrometcloud/js/jquery.js"></script>
 </head>
 <body>
  <div id="mychart" style="width:600px; height:400px;"></div>
  <script>
```

$("#mychart").load("http://10.20.30.40/h3external/chart?ws=1&range=day:10&sensorids=01234567890123&name=chart01&mode=1");

```
  </script>
 </body>
</html>
```

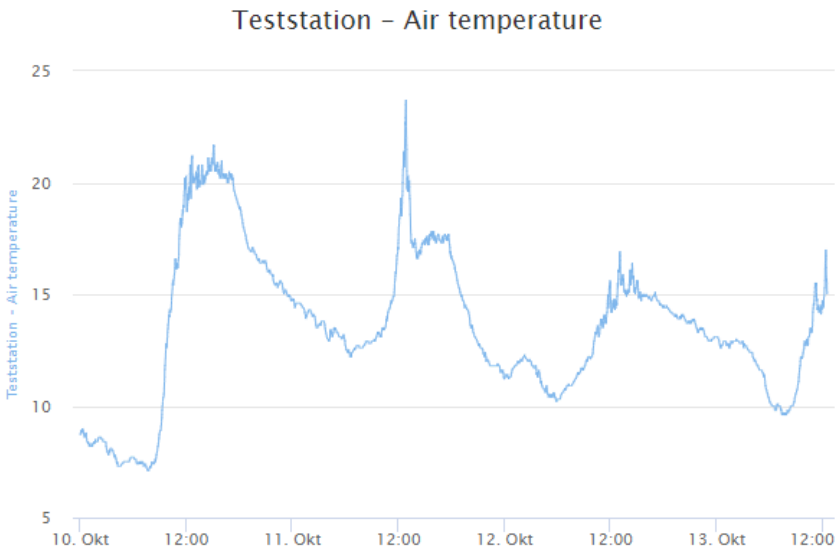
Note that in this case the highcharts.js library does not have to be explicitly included!

The jquery lib is included here so the comfortable $().load function can be used.

Mode 2: Full HTML page

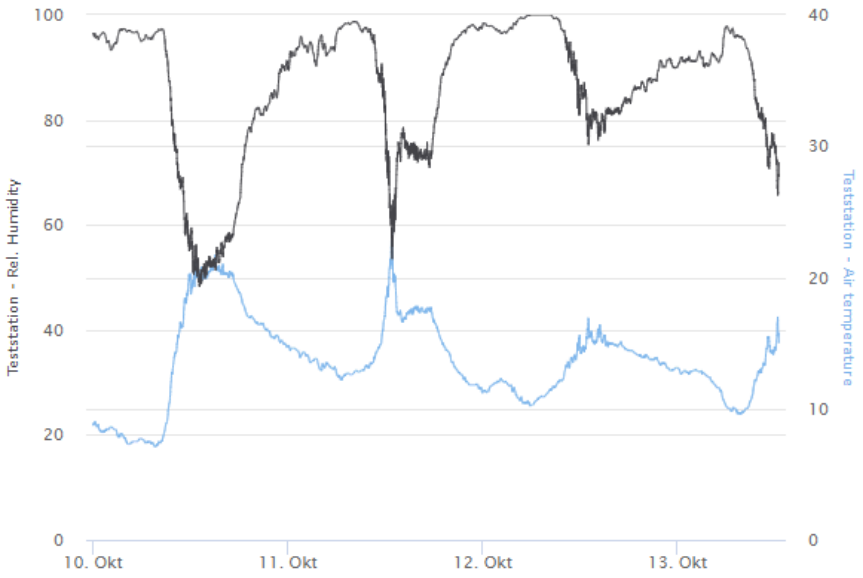
http://10.20.30.40/h3external/chart?ws=1&range=day:10&sensorids=01234567890123&mode=2

This URL can be directly entered into a browser, as the result is a complete HTML page including the javascript code and the data.



Below is an example with 2 sensors in a chart:

http://10.20.30.40/h3external/chart?ws=1&range=day:10&sensorids=01234567890123,11111111119999&mode=2



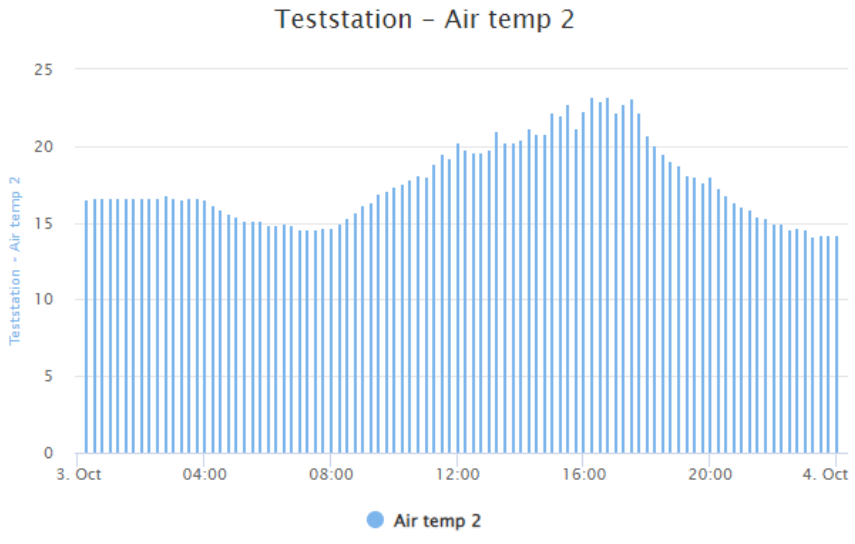
Bar chart

The h3external/barchart URL is used to embed a bar chart.

The parameters are exactly the same as for a line chart.

Example

http://10.20.30.40/h3external/barchart?ws=1&range=day:1&sensorids=01234567890123&mode=2



Gauge

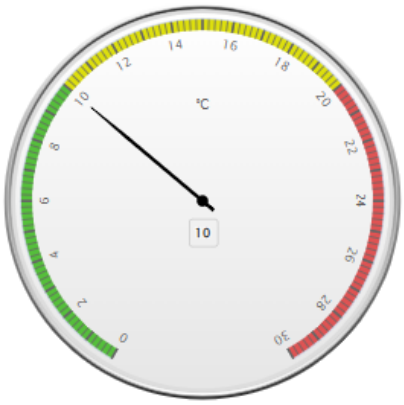
The h3external/gauge URL is used to embed a gauge displaying the latest value of one sensor.

As the latest value is used, no timerange is required.

With the URL parameters gaugevalue0, gaugevalue1, gaugevalue2 and gaugevalue3 the ranges of the green, yellow and red areas can be defined. With the URL parameter inverted=1 the ranges can be inverted (starting with red and ending with green).

Example:

http://10.20.30.40/h3external/gauge?ws=1&sensorids=01234567890123&gaugevalue0=0&gaugevalue1=10&gaugevalue2=20&gaugevalue3=30&mode=2"



Table

The h3external/gauge URL is used to embed a table displaying the values of one more more sensors in a specific timerange

The parameters are exactly the same as for a line chart.

http://10.20.30.40 /h3external/table?ws=1&range=day:2&sensorids=01234567890123&mode=2

Date / Time	Hauptstadtbach
	W-Temp. PLS (C)
2022-10-11 12:00:00	13.8
2022-10-12 00:00:00	13.8
2022-10-12 12:00:00	13.8
2022-10-13 00:00:00	13.7
2022-10-13 12:00:00	13.7

As the table contains the label “Date / Time”, an optional parameter language=EN can be used to define the language of that label.

Language can have one of these values:

EN: English

DE: German

FR: French

ES: Spanish

Current Values

The h3external/current URL is used to embed a table with the latest values of one or more sensor(s).

As the latest value is used, no timerange is required.

http://10.20.30.40
/h3external/current?ws=1&sensorids=01234567890123,11111111119999&mode=2

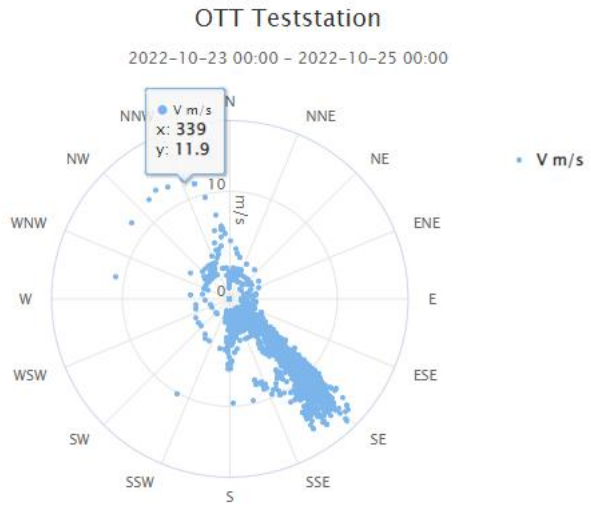
Using the optional language URL parameter the language for the column headers can be specified.

Station	Sensor	Timestamp	Value
OTT Teststation	Wind speed	2022-10-12 17:45:00	4,7 km/h
OTT Teststation	Air temperature	2022-10-12 17:45:00	14,5 °C
OTT Teststation	Rel. Humidity	2022-10-12 17:45:00	83,2 %
OTT Teststation	Rel. Pressure	2022-10-12 17:45:00	1021,5 hPa

Windrose

The h3external/windrose URL is used to embed a windrose chart showing windspeed and winddirection in a polar diagram.

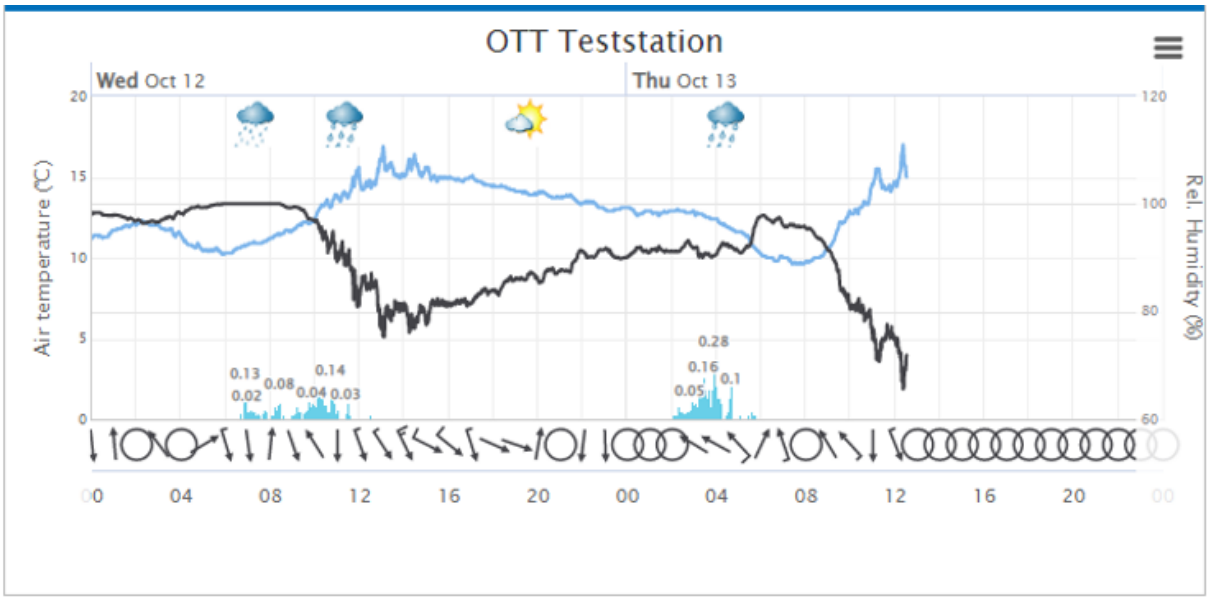
http://10.20.30.40/h3external/windrose?ws=1&range=day:2&windspeedid=01234567890123&winddirid=01234567890124&mode=2



Meteogram

The h3external/meteogram URL is used to embed a meteogram showing different parameters of a weather station diagram.

http://10.10.30.40/h3external/meteogram?ws=1&range=day:4&sensorid0=01234567890001&sensorid1=01234567890002&rainid=0123456789RAIN&windspeedid=0123456789WIND&winddirid=0123456789WDIR&mode=2



These URL parameters are used to define the displayed sensors.

URL parameter	Description
sensorid0	ID of sensor displayed as line with left y-axis
sensorid1	ID of sensor displayed as line with right y-axis
rainid	ID of precipitation sensor displayed as blue bar chart
windspeedid, winddirid	ID of wind speed sensor / wind direction sensor for displaying wind arrow at bottom of meteogram
codeid	Numerical weather code (METAR code from Parsivel) to display weather icon at top of meteogram

Heatmap

The h3external/heatmap URL is used to embed a heatmap, showing data of one sensor as color coded values in a 2-D grid.

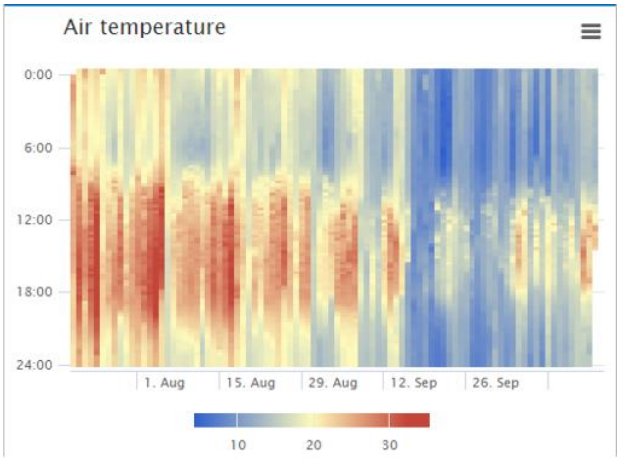
There are 2 different types of heatmaps: Compare Days and Compare Years.

For details of these 2 types see the documentation on dashboards.

To show a **heatmap that compares days**, use a URL like below:

http://10.20.30.40/h3external/heatmap?ws=1&sensorid=01234567890123&range=day:30&mode=2

The sensorid parameter is the id of the sensor to display. Range defines the time range (also start and end defining explicit timestamps can be used).

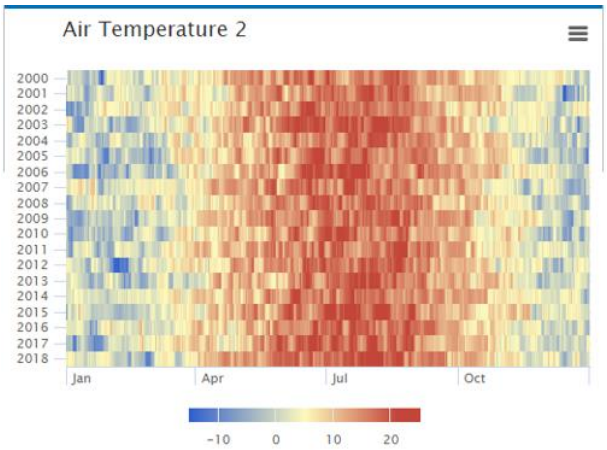


To show a **heatmap that compares years**, use a URL like below:

http://10.20.30.40/h3external/heatmap?ws=1&sensorid=01234567890123&startyear=2000&endyear=2018&mode=2

So, the time range for the heatmap is defined by the startyear and endyear URL parameters.

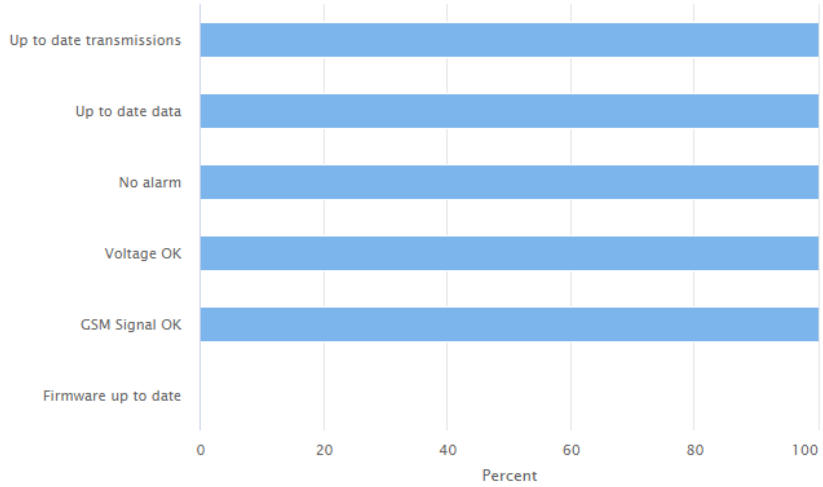
As default, daily mean values are displayed in such a heatmap. To display daily totals instead use the URL parameter valuetype=dailytotals.



Status

The h3external/status URL is used to embed a bar chart showing the status of the workspace.

http://10.20.30.40 /h3external/status?ws=1&mode=2



The optional URL parameter language=… can be used to define the language of the labels.

Full Dashboard

The h3external/dashboard URL is used to embed a full dashboard in another webpage.

http://10.20.30.40/H3EXTERNAL/DASHBOARD?ws=1&dashid=1&userid=78626583

The URL parameter dashid defines the id (or index) of the dashboard (1-5).

The URL parameter userid defines the internal userid of Hydras 3 net.

Hydras 3 net saves the dashboard configurations in the subfolder “Users” of the workspace folder.

For each user and dashboard id a separate text file userid_DashN.txt is created, where N is in the range from 1 to 5.

So the userid can be extracted from the filename here, or the configuration file of a dashboard can be copied and the userid in the filename can be replaced with a simple number, so that a file with such a filename is created:

0_Dash1.cfg

This dashboard configuration is then independent of a real userid and can be referenced using this URL:

http://10.20.30.40/H3EXTERNAL/DASHBOARD?ws=1&dashid=1&userid=0

Such a URL always return a full HTML page, so it can be used as a standalone webpage or embedded in another webpage using an iFrame.

```
<iframe src="http://10.20.30.40/H3EXTERNAL/DASHBOARD?ws=1&dashid=1&userid=0"
width="100%" height="800px" style="border:1px solid black;" />
```