



# HCA Tech Note 616

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## Weather Class for Davis WeatherLink Live

If you have a Davis Weather Station that supports the WeatherLink Live device, you can use this class to get current sensor values from your station.

<https://www.davisinstruments.com/pages/weatherlink-live>

Before starting with HCA, locate the IP address of the WeatherLink Live device on your internal network. Usually there is a way from your router UI to do this. Then open a browser and enter in the address bar:

`http://<ip address of the WeatherLink Live device>/v1/current_conditions`

Make sure you enter it exactly as shown substituting the IP address for your unit of course. Depending upon your browser, the result may or may not be formatted. If not, then copy and paste into a JSON viewer (I use <http://json.parser.online.fr/>)

You should see something close to the image below. It is important to understand how Davis names the various sensor values as these are the names you will use when accessing the weather data.

For example, “temp” (near the very top) is the outside temperature and “temp\_in” (near the bottom) is the inside temperature.

Some of this data is important – the temperatures – and others probably not like “rain\_storm\_start\_at” with an odd value.



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```
{
  "data": {
    "did": "001D0A716E97",
    "ts": 1641840361,
    "conditions": {
      {
        "laid": 480795,
        "data_structure_type": 1,
        "txid": 1,
        "temp": 41.0,
        "hum": 99.3,
        "dew_point": 40.8,
        "wet_bulb": 40.9,
        "heat_index": 41.0,
        "wind_chill": 38.2,
        "thw_index": 38.2,
        "thw_index": null,
        "wind_speed_last": 1.43,
        "wind_dir_last": 202,
        "wind_speed_avg_last_1_min": 4.00,
        "wind_dir_scalar_avg_last_1_min": 227,
        "wind_speed_avg_last_2_min": 4.18,
        "wind_dir_scalar_avg_last_2_min": 229,
        "wind_speed_hi_last_2_min": 9.56,
        "wind_dir_at_hi_speed_last_2_min": 249,
        "wind_speed_avg_last_10_min": 4.31,
        "wind_dir_scalar_avg_last_10_min": 228,
        "wind_speed_hi_last_10_min": 12.00,
        "wind_dir_at_hi_speed_last_10_min": 225,
        "rain_size": 1,
        "rain_rate_last": 0,
        "rain_rate_hi": 0,
        "rainfall_last_15_min": 0,
        "rain_rate_hi_last_15_min": 0,
        "rainfall_last_60_min": 0,
        "rainfall_last_24_hr": 4,
        "rain_storm": 3,
        "rain_storm_start_at": 1641826980,
        "solar_rad": null,
        "uv_index": null,
        "ex_state": 0,
        "trans_battery_flag": 0,
        "rainfall_daily": 3,
        "rainfall_monthly": 300,
        "rainfall_year": 300,
        "rain_storm_last": 171,
        "rain_storm_last_start_at": 1641456300,
        "rain_storm_last_end_at": 1641713260
      },
      {
        "laid": 480780,
        "data_structure_type": 4,
        "temp_in": 60.8,
        "hum_in": 44.6,
        "dew_point_in": 39.1,
        "heat_index_in": 58.3
      },
      {
        "laid": 480779,
        "data_structure_type": 3,
        "bar_sea_level": 30.324,
        "bar_trend": 0.046,
        "bar_absolute": 29.643
      }
    }
  }
}
```

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## Step 1.

Import the class from the HCA Online library

## Step 2.

There are several configuration methods for the class that involve setting tags on the class program. Open the class program “Weather” and on the tags tab enter the IP address of the WeatherLink Live device for a tag named StationIPAddress

| Tag Name         | Current Value |
|------------------|---------------|
| StationIPAddress | 192.168.86.30 |

Use whatever facilities are in your router – IP Reservations - to ensure that the WeatherLink Live IP address doesn’t change over time.

## Step 3.

Next open the properties of the package program “Weather Set” and select the tags tab.

| Tag Name | Current Value            | Tag Name             | Current Value |
|----------|--------------------------|----------------------|---------------|
| Omit1    | lsid                     | temp                 | 1             |
| Omit2    | data_structure_type      | hum                  | 2             |
| Omit3    | txid                     | bar_sea_level        | 3             |
| Omit4    | rain_storm_start_at      | rainfall_last_60_min | 4             |
| Omit5    | solar_rad                | rainfall_last_24_hr  | 5             |
| Omit6    | uv_index                 | wind_speed_last      | 6             |
| Omit7    | rx_state                 | wind_dir_last        | 7             |
| Omit8    | trans_battery_flag       |                      |               |
| Omit9    | rain_storm_last_start_at |                      |               |
| Omit10   | rain_storm_last_end_at   |                      |               |



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On this tab are two sets of tags. The left set tells HCA what data items that you do not care about. Name the tags “Omit#”, where # is 1 to as many as you need. All this does is to tell HCA that it doesn’t need to capture that data item, each time it processes a weather observation. In the above image it tells HCA that various times and internal station data isn’t needed.

The right column tells HCA which items are what kind of data. The tag name is the davis supplied name and the tag value is a code. This is detailed in technical note 606 on weather classes. What it is saying is this:

| Davis item name             | What kind of data       |
|-----------------------------|-------------------------|
| <b>temp</b>                 | Temperature             |
| <b>hum</b>                  | Humidity                |
| <b>bar_sea_level</b>        | Pressure                |
| <b>rainfall_last_60_min</b> | Precipitation intensity |
| <b>rainfall_last_24_hr</b>  | Percipitation amount    |
| <b>wind_speed_last</b>      | Wind Speed              |
| <b>wind_dir_last</b>        | Wind Direction          |

You may decide that you want to use different sensor items for different purposes – for example using “rainfall\_last\_15\_min” for precipitation intensity. If so, just make the changes in tag values.

Why is this important? Because when HCA wants to show units or check acceptable ranges of data it helps to know what kind of data it is working with: a wind direction has different units and range than a rain amount.



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## Step 4.

Once the package is imported you should create a mechanism to start the program “Weather”. One way is to add a Start-Program element to your Startup program that runs when HCA starts. Once it is started, it automatically reruns every minute. This uses the Auto-run option on the program advanced properties tab:

Don't check for possible object reference errors during validate

Once started automatically run again in: 0 days 0 hours 1 minutes 

Provide an option on Compute and Compute-Test elements to check HCA version before evaluation

You can modify this if you want the data collected at a slower interval.



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## Step 5. Using the data

When a weather class has been run, all the data it captures is available for you use in the Weather-Test element, the Weather-Get expression function, and weather triggers.

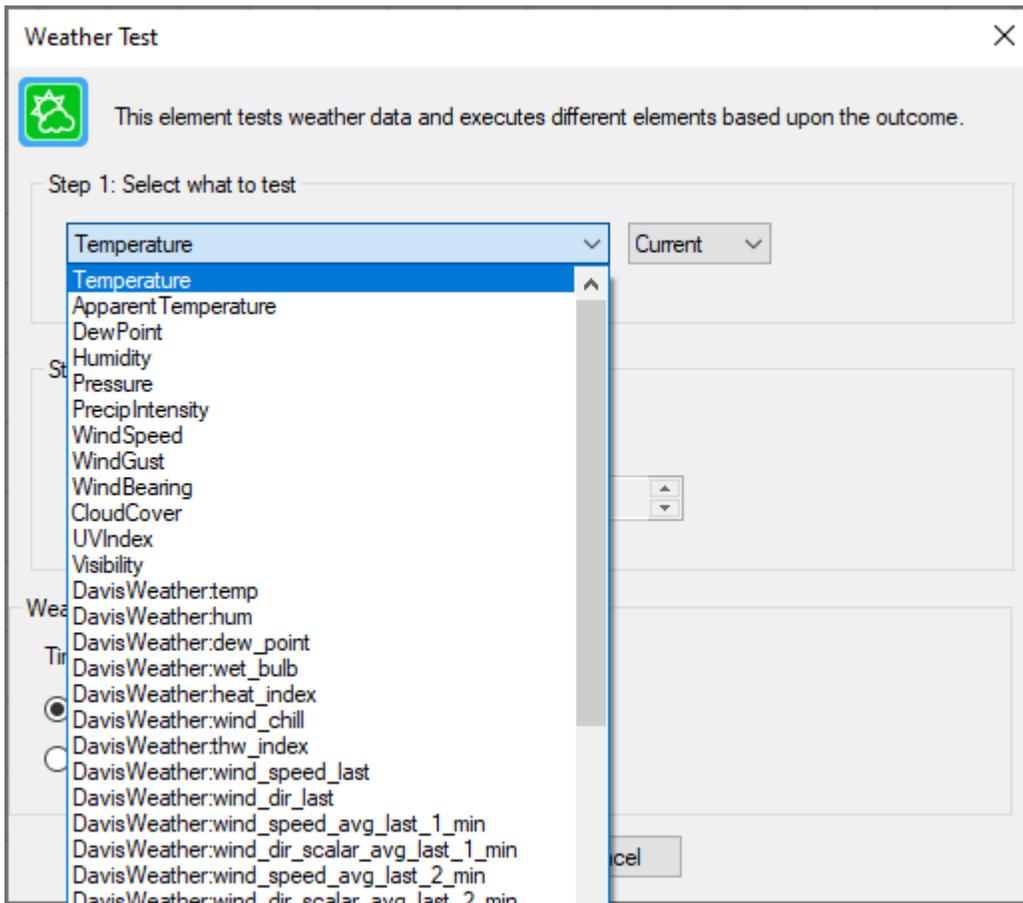
Before the weather class is executed, the Weather-Test element offers the various selections provided by the built-in weather provider:

The screenshot shows the 'Weather Test' configuration window. At the top, there is a description: 'This element tests weather data and executes different elements based upon the outcome.' Below this, 'Step 1: Select what to test' is shown. A dropdown menu is open, listing various weather parameters: Temperature, Apparent Temperature, DewPoint, Humidity, Pressure, PrecipIntensity, WindSpeed, WindGust, WindBearing, CloudCover, UVIndex, and Visibility. To the right of this menu is another dropdown menu set to 'Current'. Below the main configuration area, there is a section for 'Weather data retrieval error' which includes a 'Timeout' field set to '5' seconds, a radio button for 'On timeout continue with next element' (which is selected), and another radio button for 'Continue at connector element' with a value of '1'. At the bottom of the window are 'OK' and 'Cancel' buttons.



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After the weather class is executed, additional options are now available.



Note that the names seen here are the same names as provided by the Davis system prefixed by the name of the class “DavisWeather”. That’s why the suggestion was made to familiarize yourself with the weather data in a browser.

In the above image if you were to test “Temperature” that data would come from the built-in weather provider (DarkSky). If you were to test “DavisWeather:temp” that would be the value from your station.

##end##