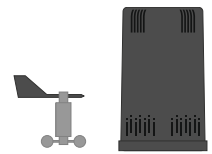# The DavisWeather Driver

The DavisWeather driver connects to the Davis Instruments weather monitoring station. Available for Commander and ObSys.

This document relates to DavisWeather driver version 2.0

Please read the *Commander Manual* or *ObSys Manual* alongside this document, available from *www.northbt.com*

Contents

Compatibility with the Davis Weather Station

The DavisWeather driver allows North to interface with a Davis Instruments weather monitoring station.

The driver connects, locally via an Ethernet network, to a single WeatherLink Live (Fig. 1). The device supports up to eight weather stations.

The WeatherLink is polled by the driver for its values. These values are stored and made available to read as objects.

Fig. 1 North to Davis Weather
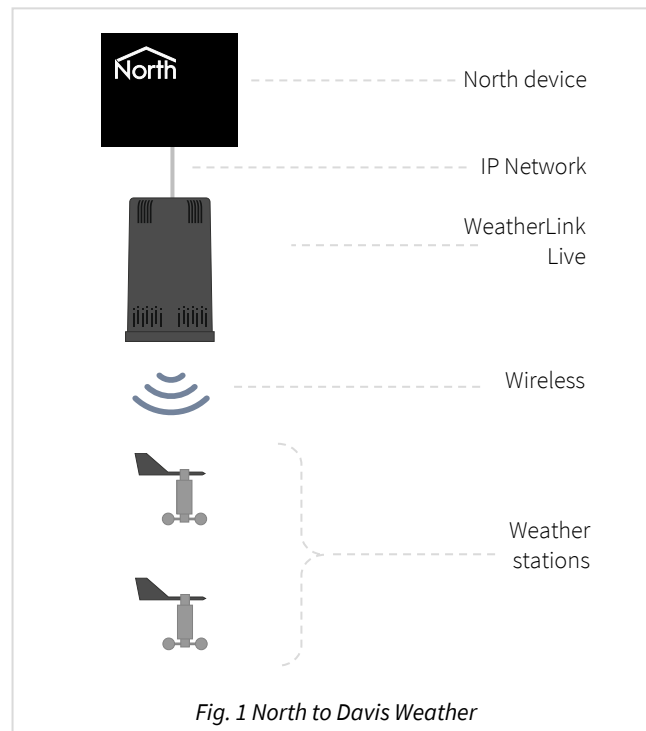
Equipment

Davis Instruments devices compatible with the driver include:

- Vantage Vue weather station
- Vantage Pro2 weather station
- Stand-alone Davis sensors

Values

Depending on the type of sensors fitted, each station has the following values available:

- Temperature
- Wind
- Solar radiation

- UV
- Rain
- Barometer

The DavisWeather system does not generate alarm event messages.

Prerequisites

The WeatherLink Live is typically assigned an IP address from the local network's DHCP server. We recommend creating a reservation for the WeatherLink within the router/DHCP server, or assigning a static IP address.

If you are connecting to a WeatherLink via a firewall, then the driver will require access to TCP port 80 on the device.

Using the Driver

On ObSys and Commander, the DavisWeather driver is pre-installed. On all of these North devices, you can use the driver to create an interface to Davis Weather. Once started, you will need to set up the driver before it can communicate with the WeatherLink Live system.

Starting the Interface

🖳 To start an interface using the DavisWeather driver, follow these steps:

→ **Start Engineering** your North device using ObSys

→ Navigate to **Configuration, Interfaces,** and set a unused **Interface** to 'DavisWeather' to start the particular interface

→ Navigate to the top-level of your North device, then rescan it

The driver setup object (M*c*), labelled **Davis Weather Setup**, should now be available. If this object is not available, check an interface licence is available and the driver is installed.

Setting up the Driver

🖳 To set up the driver, follow these steps:

→ Navigate to the **Davis Weather Setup** object (M*c*). For example, if you started interface 1 with the driver earlier, then the object reference will be 'M1'

→ Set the **WeatherLink Local IP Address** object (IA) to the IP address of the WeatherLink

→ Navigate to **Station 1** object (S1), set the **Label** and enable the **Sensor** options fitted for the weather station with ID 1. Repeat for all other weather stations installed.

Checking Communications

You can check that the interface is communicating by reading the **WeatherLink Available** object (DS). A value of 'yes' indicates the driver has connected to, and is communicating with, WeatherLink Live.

Object Specifications

Once an interface is started, one or more extra objects become available within the top-level object of the device. As with all North objects, each of these extra objects may contain sub-objects, (and each of these may contain sub-objects, and so on) - the whole object structure being a multi-layer hierarchy. It is possible to navigate around the objects using the ObSys Engineering Software.

Each object is specified below, along with its sub-objects.

Example Object Reference

An example of a reference to an object in the same device: the Weather Station (S1) contains Weather Link (S0). This station contains a Barometer (B) with the value (S). Therefore, the complete object reference is 'S1.S0.B.S'.

An example of a reference to an object in a different device: the IP network object (IP) contains Default Commander object (CDIP), which contains the object above (S1.S0.B.S) – therefore the complete object reference is 'IP.CDIP.S1.S0.B.S'.

Device Top-Level Objects

When an interface is started using the DavisWeather driver, the objects below become available within the top-level object of the device. For example, if interface 1 is started, then the object references 'M1' and 'S1' become available.

Description	Reference	Type
Davis Weather Setup Set up the DavisWeather driver, started on interface *c* (*c* is the interface number)	M*c*	Fixed Container: On the Commander platform this will be *[CDM v20\DavisWeather v20]* On the ObSys platform this will be *[OSM v20\DavisWeather v20]*
Weather System Access WeatherLink connected to interface *c* (*c* is the interface number)	S*c*	Variable Container: *[DavisWeather v20]*

Davis Weather Setup

Object Type: *[OSM v20\DavisWeather v20]*
Object Type: *[CDM v20\DavisWeather v20]*

The DavisWeather driver contains the following objects:

Description	Reference	Type
System Label Label displayed when scanning the system	DL	Obj\Text: max. 20 chars; Adjustable
WeatherLink Local IP Address The IP address of the WeatherLink device	IA	Obj\IP; Adjustable
WeatherLink Available Indicates the driver has connected to and is communicating with Weatherlink	DS	Obj\NoYes
Weather Station *x* Configure the connected weather station or sensor, with an ID *x*	S*x*	Fixed container: On the Commander platform this will be *[CDM v20\DavisWeather v20\Station]* On the ObSys platform this will be *[OSM v20\DavisWeather v20\Station]*
Unit Preferences Set your preferred units of measurement for sensor readings	U	Fixed container: On the Commander platform this will be *[CDM v20\DavisWeather v20\Units]* On the ObSys platform this will be *[OSM v20\DavisWeather v20\Units]*
Debug Enable This will store additional debug information in the record file. Use this option only when instructed by North Support	DE	Obj\NoYes; Adjustable

Weather Station Setup

Object Type: *[OSM v20\DavisWeather v20\Station]*
Object Type: *[CDM v20\DavisWeather v20\Station]*

The Weather Station Setup contains objects to enable sensor values from a weather station. Enable the ones installed.

Description	Reference	Type
Label Weather station label	L	Obj\Text: max. 20 chars; Adjustable
Sensor: Humidity Set value to 'yes' if a humidity sensor is installed	ST1	Obj\NoYes; Adjustable
Sensor: Temperature Set value to 'yes' if a temperature sensor is installed	ST2	Obj\NoYes; Adjustable
Sensor: Wind Set value to 'yes' if an anemometer is installed	ST3	Obj\NoYes; Adjustable
Sensor: Solar Radiation Set value to 'yes' if a solar radiation sensor is installed	ST4	Obj\NoYes; Adjustable
Sensor: UV Set value to 'yes' if a UV light sensor is installed	ST5	Obj\NoYes; Adjustable
Sensor: Rain Set value to 'yes' if a rain collector is installed	ST6	Obj\NoYes; Adjustable

Unit Preferences

Object Type: *[OSM v20\DavisWeather v20\Units]*
Object Type: *[CDM v20\DavisWeather v20\Units]*

Unit Preferences contains objects to specify your preferred engineering units for temperature, rain, and barometer values.

Description	Reference	Type
Temperature Select units for temperature	P0	Obj\Enum; Adjustable Values: 0=°C, 1=°F
Rain Select units for rainfall, and rain rate (units/hr)	P1	Obj\Enum; Adjustable Values: 0=mm, 1=cm, 2=inches
Barometer Select units for pressure	P2	Obj\Enum; Adjustable Values: 0=mbar, 1=mmHg, 2=hPa, 3=inHg
Wind Select units for wind speed	P3	Obj\ENum; Adjustable Values: 0=mph, 1=hm/h, 2=knots
Wind Direction Select units for wind direction. 'Cardinal 16' provides an enumerated value based on 16 points of the compass – N, NNE, NE, ENE, E, etc. 'Cardinal 8' provides an enumerated value based on 8 points of the compass – N, NE, E, etc. 'Degrees' provides a numerical value 0…359° from North	P4	Obj\ENum; Adjustable Values: 0=Cardinal 16, 1=Cardinal 8, 2=Degrees

Weather System

Object Type: *[DavisWeather v20]*

The Weather System contains values from the Weather Link and up to eight weather stations.

Description	Reference	Type
Weather Link Barometer and internal temperature values	S0	Variable container: *[DavisWeather v20\Station]*
Weather Station x Values from connected station, ID *x*. The ID number, *x*, is in the range 1…8	S*x*	Variable container: *[DavisWeather v20\Station]*

Weather Station

Object Type: *[DavisWeather v20\Station]*

Each Weather Station contains groups of values from the installed sensors. Before values can be made available here, enable the sensors from driver setup.

For a description on the weather terms used, refer to the Davis Instruments guide at
https://www.davisinstruments.com/pages/definition-of-weather-terms

Description	Reference	Type
Information	I	Fixed container. *[DavisWeather v20\Info]* Weather Link: *[DavisWeather v20\InfoWL]*
Temperature	T	Fixed container. If both temperature and humidity sensors installed: *[DavisWeather v20\TempHum]* If only temperature sensor installed: *[DavisWeather v20\Temp]*
Wind	W	Fixed container: *[DavisWeather v20\Wind]*
Solar Radiation	SR	Fixed container: *[DavisWeather v20\SRad]*
UV	UV	Fixed container: *[DavisWeather v20\UV]*
Rain	R	Fixed container: *[DavisWeather v20\Rain]*
Internal Temperature Weather Link only	TI	Fixed container: *[DavisWeather v20\TempInternal]*
Barometer Weather Link only	B	Fixed container: *[DavisWeather v20\Bar]*

Information

Object Type: *[DavisWeather v20\Info]*

The Information object contains.

Description	Reference	Type
Sensor ID	LSID	Obj\Num
Rx State Radio receiver state	RXS	Obj\ENum Values: 0:Synched & tracking, 1:Synced (1-14 missed), 2:Scanning
Tx Battery State	BATT	Obj\ENum Values: 0:Good, 1:Low
Rain Collector	RC	Obj\ENum Values: 0:Unknown, 1:0.01", 2:0.2mm, 3:0.1mm, 4:0.001"

Information (Weather Link)

Object Type: *[DavisWeather v20\InfoWL]*

The Information object contains.

Description	Reference	Type
Weather Link ID	DID	Obj\Text
Data Timestamp	TS	Obj\DateTime

Temperature

Object Type: *[DavisWeather v20\TempHum]*

The Temperature object contains the following when both temperature and humidity sensors are installed.

See Unit Preferences for the units of measurement used. The temperature can be °C or °F

Description	Reference	Type
Temperature	V	Obj\Float
Humidity (%RH)	RH	Obj\Float
Feels Like in Sun Also called the THSW index, a calculated temperature. Requires solar radiation and wind sensors	FLN	Obj\Float
Feels Like in Shade Also called the THW index, a calculated temperature. Requires a wind sensor	FLD	Obj\Float
Wind Chill Calculated temperature taking into account wind speed	WC	Obj\Float
Heat Index Calculated temperature taking into account humidity	HI	Obj\Float
Web Bulb The lowest temperature that can be observed by evaporating water into the air	WB	Obj\Float
Dew Point The temperature to which the air must cool for it to become completely saturated with water	DP	Obj\Float

Temperature

Object Type: *[DavisWeather v20\Temp]*

The Temperature object contains the following when a temperature sensor is installed, and no humidity sensor.

See Unit Preferences for the units of measurement used. The temperature can be °C or °F

Description	Reference	Type
Temperature	V	Obj\Float
Wind Chill Calculated temperature taking into account wind speed	WC	Obj\Float

Wind

Object Type: *[DavisWeather v20\Wind]*

The Wind object contains the following.

See Unit Preferences for the units of measurement used. The wind speed be mph, km/h, or knots.

Description	Reference	Type
Wind Direction	D	Obj\ENum Values: 0=N, 1=NNE, 2=NE, 3=ENE, 4=E, 5=ESE, 6=SE, 7=SSE, 8=S, 9=SSW, 10=SW, 11=WSW, 12=W, 13=WNW, 14=NW, 15=NNW
Wind Speed	S	Obj\Float
Last 1 min: Average	P1	Fixed container: *[DavisWeather v20\WindAverage]*
Last 2 mins: Average	P2	Fixed container: *[DavisWeather v20\WindAverage]*
Last 10 mins: Average	P10	Fixed container: *[DavisWeather v20\WindAverage]*

Average Wind

Object Type: *[DavisWeather v20\WindAverage]*

The Average Wind object contains the following.

See Unit Preferences for the units of measurement used. The wind speed may be mph, km/h, or knots.

Description	Reference	Type
Wind Direction Scalar average wind direction over the period	D	Obj\ENum Values: 0=N, 1=NNE, 2=NE, 3=ENE, 4=E, 5=ESE, 6=SE, 7=SSE, 8=S, 9=SSW, 10=SW, 11=WSW, 12=W, 13=WNW, 14=NW, 15=NNW
Wind Speed Average wind speed over the period	S	Obj\Float
Gust Direction Wind direction at maximum gust wind speed over the period. Not available for 1 min period.	GD	Obj\ENum Values: 0=N, 1=NNE, 2=NE, 3=ENE, 4=E, 5=ESE, 6=SE, 7=SSE, 8=S, 9=SSW, 10=SW, 11=WSW, 12=W, 13=WNW, 14=NW, 15=NNW
Gust Speed Maximum gust wind speed over the period. Not available for 1 min period.	GS	Obj\Float

Solar Radiation

Object Type: *[DavisWeather v20\SRad]*

The Solar Radiation object contains the following.

Description	Reference	Type
Solar Radiation (W/m²)	V	Obj\Num

UV

Object Type: *[DavisWeather v20\UV]*

The UV object contains the following.

Description	Reference	Type
UV Index	I	Obj\Float

Rain

Object Type: *[DavisWeather v20\Rain]*

The Rain object contains the following.

See Unit Preferences for the units of measurement used. Rainfall can be mm, cm, or inches.

Description	Reference	Type
Rain Rate (/hr)	R	Obj\Float
Last 1 min: High Rain Rate (/hr)	P1.R	Obj\Float
Last 15 mins: High Rain Rate (/hr)	P15.R	Obj\Float
Last 15 mins: Rainfall	P15.T	Obj\Float
Last 1hr: Rainfall	P60.T	Obj\Float
Last 24hrs: Rainfall	P24.T	Obj\Float
Rainfall Today	DT	Obj\Float
Rainfall this Month	MT	Obj\Float
Rainfall this Year	YT	Obj\Float
Current Storm	P10	Fixed container: *[DavisWeather v20\Rain\StormCurrent]*
Last Storm	P10	Fixed container: *[DavisWeather v20\Rain\StormLast]*

Current Storm

Object Type: *[DavisWeather v20\Rain\StormCurrent]*

The Current Storm object contains the following.

See Unit Preferences for the units of measurement used. Rainfall can be mm, cm, or inches.

Description	Reference	Type
Rainfall	T	Obj\Float
Start Time and date storm started	S	Obj\DateTime

Last Storm

Object Type: *[DavisWeather v20\Rain\StormLast]*

The Last Storm object contains the following.

See Unit Preferences for the units of measurement used. Rainfall can be mm, cm, or inches.

Description	Reference	Type
Rainfall	T	Obj\Float
Start Time and date storm started	S	Obj\DateTime
End Time and date storm ended	E	Obj\DateTime

Internal Temperature

Object Type: *[DavisWeather v20\TempInternal]*

The Internal Temperature object, available from the internal sensors of a Weather Link, contains the following values.

See Unit Preferences for the units of measurement used. The temperature can be °C or °F

Description	Reference	Type
Temperature	V	Obj\Float
Humidity (%RH)	RH	Obj\Float
Heat Index Calculated temperature taking into account humidity	HI	Obj\Float
Dew Point The temperature to which the air must cool for it to become completely saturated with water	DP	Obj\Float

Barometer

Object Type: *[DavisWeather v20\Barometer]*

The Barometer object, available from the internal sensors of a Weather Link, contains the following values.

See Unit Preferences for the units of measurement used. Barometer pressure can be mmHg, hPa, or inHg.

Description	Reference	Type
Barometer Sensor reading with elevation adjustment	S	Obj\Float
Last 3hrs Trend	T	Obj\ENum Values: 0: Falling rapidly, 1:Falling slowly, 2:Steady, 3:Rising slowly, 4:Rising rapidly
Absolute Pressure Raw barometer sensor reading	A	Obj\Float

Driver Versions

Version	Build Date	Details
1.0	01/07/2009	Driver released Implementing RS232 data logger protocol
2.0	21/06/2024	Redesign to implement WeatherLink Live local API. Removed RS232 protocol support

Next Steps…

If you require help, contact support on 01273 694422 or visit *www.northbt.com/support*

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