



SCADA Systems and Campbell Scientific Weather Stations



Deliver Real-Time Weather Data

Reliable Meteorological Data for Critical Decision Making

Benefits and Features

- Real time weather data to SCADA Systems
- Freely Modifiable Data Mappings
- Simple Setup
- Quality products ensure accurate measurements

Campbell Scientific Weather Stations

Weather stations based around our dataloggers are used worldwide because of their capability, flexibility, accuracy and reliability. These weather stations can deliver real-time data to SCADA systems allowing the data to be used for making critical decisions. Campbell Scientific dataloggers support both the Modbus and DNP3 protocols (see table below).

Compatibility Table

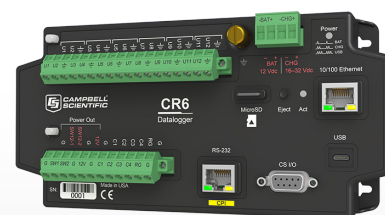
Datalogger	Modbus Master	Modbus Slave	DNP3 Outstation
CR3000	✓	✓	✓
CR6	✓	✓	✓
CR1000	✓	✓	✓
CR800 Series	✓	✓	✓
CR200X Series	✓	✓	

Case Study Example

A power generating facility is required to report accurate real-time weather data to a local ISO, as well as store real-time and historical data at the facility. Both the facility and the ISO can then use the data for making critical decisions. The power generating facility delivers the real-time data to the ISO by first bringing the data into the facility's SCADA system.

The facility manager selects the appropriate weather station sensors that meet the ISO's measurement requirements. The measurements required for this example include:

- Air Temperature
- Relative Humidity
- Wind Speed
- Wind Direction
- Barometric Pressure
- Precipitation
- Solar Radiation



more information: 435.227.9030

campbellsci.com/weather



A Campbell Scientific datalogger is used to accurately measure the weather station's sensors and make the data available to the facility's SCADA system. The datalogger is configured with a Modbus or DNP3 data map that can be read by the facility's SCADA system over the

local area network. Data maps for this case study are configured as shown in the tables below. Data maps are freely modifiable, allowing the facility to get the critical data exactly the way they need it.

Modbus Data Mapping for Weather Station Example

Register	Data Type	Data Point	Units
40001-40002	Floating Point	Weather Station Battery Voltage	Volts
40003-40004	Floating Point	Datalogger Panel Temperature	F
40005-40006	Floating Point	Air Temperature	F
40007-40008	Floating Point	Relative Humidity	%
40009-40010	Floating Point	Wind Speed	m/s
40011-40012	Floating Point	Wind Direction	Degrees
40013-40014	Floating Point	Barometric Pressure	mBar
40015-40016	Floating Point	Precipitation	mm
40017-40018	Floating Point	Solar Radiation	W/m ²

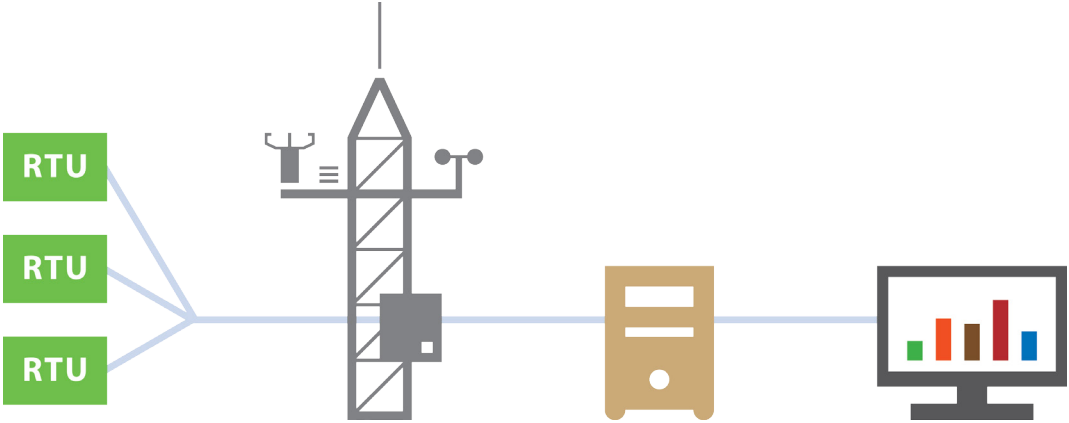
DNP3 Mapping for Weather Station Example

Group	Variation	Data Point	Units	Scaling
30	2	Weather Station Battery Voltage	Volts	10 ²
30	2	Datalogger Panel Temperature	F	10 ²
30	2	Air Temperature	F	10 ²
30	2	Relative Humidity	%	10 ²
30	2	Wind Speed	m/s	10 ²
30	2	Wind Direction	Degrees	10 ¹
30	2	Barometric Pressure	mBar	10 ¹
30	2	Precipitation	mm	10 ⁰
30	2	Solar Radiation	W/m ²	10 ¹

Additional-Functionality Example

The example application depicted below highlights the ability of the weather station's datalogger to act as a Modbus master. This weather station measures meteorological sensors and gathers measurements from other Modbus RTUs such as power meters, inverters, sensors, or

other weather stations. All data is then put into a DNP3 data map in the weather station's datalogger. The relevant data is now available to the SCADA system through a single device using DNP3.



Please contact a Campbell Scientific Application Engineer to discuss your application and for more information on simplifying your measurement needs.