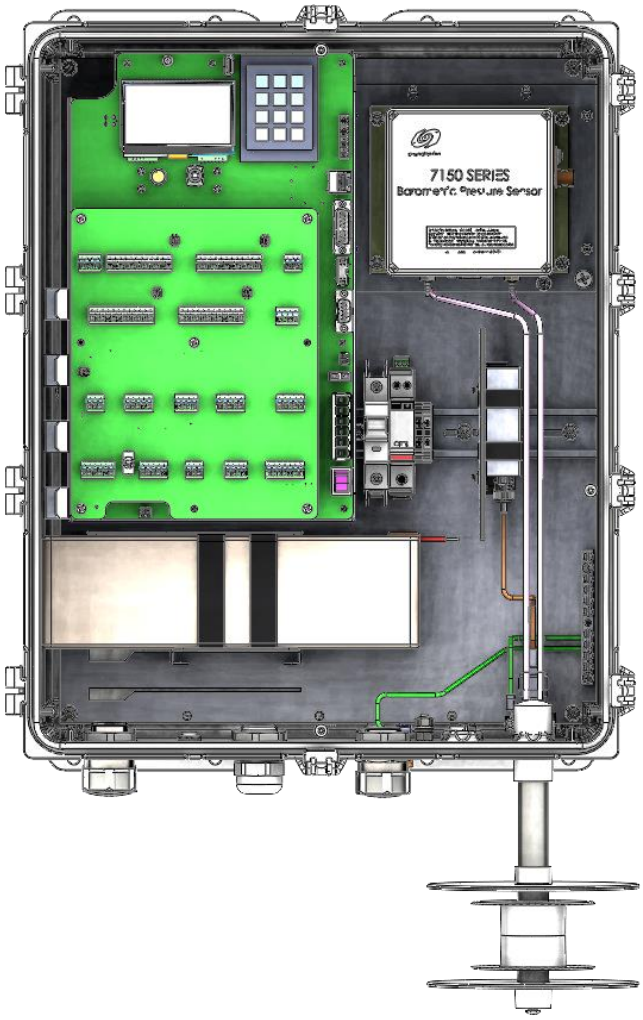
Model 1192
Data Collection Platform



User's Manual

Rev. D

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Disclaimer
The information and specifications described in this manual are subject to change without notice.

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- **Online** support is available by filling out a request at www.allweatherinc.com/support/online-support/
- **E-mail** your support request to support@allweatherinc.com

Revision History

Revision	Date	Summary of Changes
A	2021 Mar 15	Initial release
B	2021 Apr 23	Added PTB330 BP sensor
C	2021 Jun 21	Added directly connected 6498-DC and 6500-DC sensors, which is a connection adjustment to FAA certified sensors, and updated the associated supporting firmware to v2.0
D	2022 Jan 3	Added enhancements to MARS calibration menu and selected Vaisala sensors use with non-Federal AWOS systems as reflected in updating the associated supporting firmware to v3.0

TABLE OF CONTENTS

1. OVERVIEW

The Model 1192 Data Collection Platform (DCP) is used with Automated Weather Observing Systems (AWOS) to collect, process, and log sensor information. The DCP is located at the sensor station, and collects data from the sensors, performs error detection on the received information, converts the sensors' data into engineering units, and transmits a message packet containing sensor data and status information to the Central Data Platform (CDP). The DCP can communicate with the CDP using RS-232, RS-485, Ethernet, or wireless data radios.

The DCP mounts to the sensor tower or a mounting pole with Unistrut brackets. There is room inside the enclosure for the barometric pressure sensor (Model 7150 and PTB330) and wireless data radio kits. A keypad and LCD display screen inside the enclosure are used to view sensor information and perform maintenance checks. The DCP has electrostatic (ESD) protection and a battery charging circuit that allows it to be powered by an optional rechargeable 12 V backup battery during power outages.

The data logger assembly consists of two parts, the Main Board and the Sensor Interface Board (SIB), as shown in Figure 2. The SIB is a removable and field replaceable piece of equipment that houses all the digital, analog and smart sensor interfaces. In the event of an electrical transient event, such as a lightning strike, the SIB will protect the rest of the DCP from damage and can be replaced if it is damaged.

Figure 1. Sensor Interface Board Mounted on Main Board

The SIB is a modular assembly within the DCP and can be changed to accommodate varying customer requirements. The default SIB shipped with the DCP accommodates industry-standard sensors for measurement of common AWOS parameters, including Wind Speed, Wind Direction, Temperature, Relative Humidity, Pressure, Visibility, Runway Visual Range (RVR), Present Weather, Freezing Rain, Lightning, Rain Accumulation, and Solar Radiation.

An onboard GPS receiver provides the time reference. A battery-powered Real Time Clock (RTC) keeps track of time in the event of a power failure or temporary GPS signal outage. An LCD display provides diagnostic data for the DCP and all connected sensors. Status LEDs provide an indication of the state of the system.

1.1 MODELS

The Model 1192 Data Collection Platform has 120 VAC and 240 VAC models, and there are three enclosure options available.

Table 1. Model 1192 Options

Model	Description
1192	U.S. non-Federal AWOS, 120 VAC Polyester/Polycarbonate Hybrid Enclosure
1192-120 1192-240	Polyester/Polycarbonate Hybrid Enclosure Nominal: 16" W x 20" H x 8" D
1192-120-AL 1192-240-AL	Painted White Aluminum Enclosure Nominal: 24" x 24" x 8" D
1192-120-SS 1192-240-SS	304 SS Painted White Stainless-Steel Enclosure Nominal: 24" x 24" x 8" D

1.2 ACCESSORIES

The following accessories and replacement parts are available for the Model 1192 Data Collection Platform.

Part Number	Description
M404941-00	Sensor Interface Board A.2 (all others)
M404942-00	Sensor Interface Board A.3 (U.S. non-Federal AWOS)
M406233-00	microSD card
M438130-00	Backup Battery
M438159-00	Real Time Clock CR2032 Battery
M442117-00	Fuse Auto 7.5 A 32 VDC Blade Mini
M442131-00	15 A Single Pole Breaker
M488119-01	Mounting Kit (includes hardware mounting to tower legs and to pole)
M488679-01	UHF Data Radio Kit for 1192 DCP
M489167-00	GPS Antenna, Pole Mounted

1.2.1 Digital Barometer Kits

The two digital barometers offered by All Weather, Inc. are also available as part of a complete kit for installation in the Model 1192 Data Collection Platform. These kits include the digital barometer, the M105037 Quad Plate Pressure Port, and their associated tubing and power/data cables. Two sets of kits are offered corresponding to the digital barometer models.

Part Number	Digital Barometer Model	Number of BP Sensor Transducers
11926	7150	2
11926-A	7150-A	3
11926-B	7150-B	1
11926-PTB	PTB330	2
11926-PTB-A	PTB330-A	3
11926-PTB-B	PTB330-B	1

2. INSTALLATION

2.1 DCP ELECTRONICS ENCLOSURE

Mount the DCP electronics enclosure on the tower using the M488119-01 Unistrut Mounting Kit. Do not tighten all the nuts completely until all the Unistrut mountings have been completed. The enclosure may also be mounted on a pole or a mounting pipe (see Section 2.1.1).

If possible, mount the enclosure on the side of the tower opposite to where the sun is shining.

If the DCP electronics enclosure is being mounted on a fold-over tower, find a tower side with enough room and spacing to hold the enclosure. This could turn out to be the hinged side if the hinge is above ground, or it might have to be a side other than the hinged side if the hinge is at the base of the tower. If the tilts in the middle, then the DCP electronics enclosure should be on the fixed part of the tower; if it tilts at the base, then the electronics enclosure should be above the tilt. Note that all wires should be routed along leg on the hinged side with a bit of additional slack at the hinge to allow for the tower to fold over without stressing the wires.

1. Prepare the bolts by applying anti-seize.

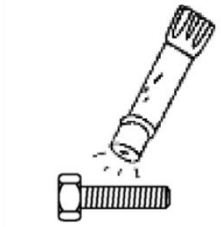


Figure 2. Apply Ant-Seize to Bolts

2. Position the upper Unistrut strip approximately 2 m (6 ft) above the ground next to a face of the tower centered on the tower legs and secure it to the tower legs using the mounting hardware provided (Figure 3). Keep the Unistrut parallel to the ground.

   In areas with snow, the lower Unistrut should be at least 30 cm (1 ft) above the average maximum snow depth.

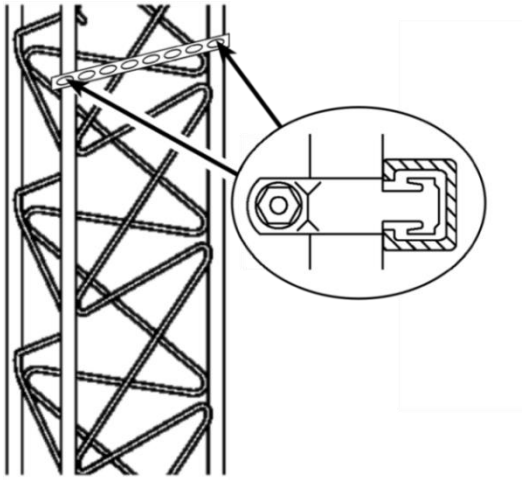


Figure 3. Secure Top Unistrut to Tower Leg

3. Line up and center the top of the DCP electronics enclosure on the upper Unistrut and secure the enclosure to the Unistrut using the mounting hardware provided (Figure 4).

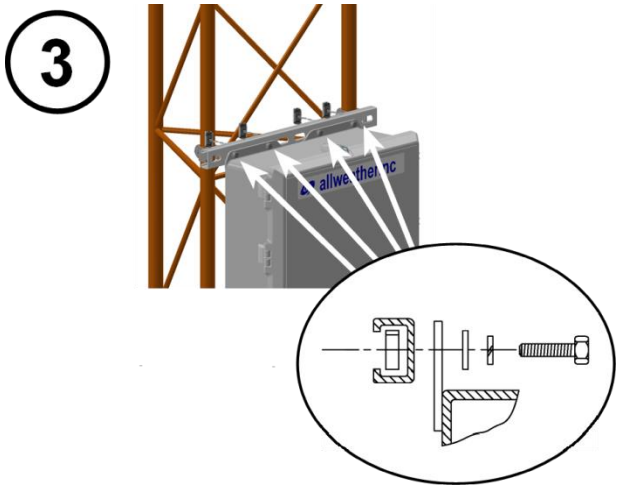


Figure 4. Secure Electronics Enclosure to Top Unistrut

4. Line up and center a Unistrut with the bottom of the DCP electronics enclosure and secure the enclosure to the Unistrut using the mounting hardware provided (Figure 5).

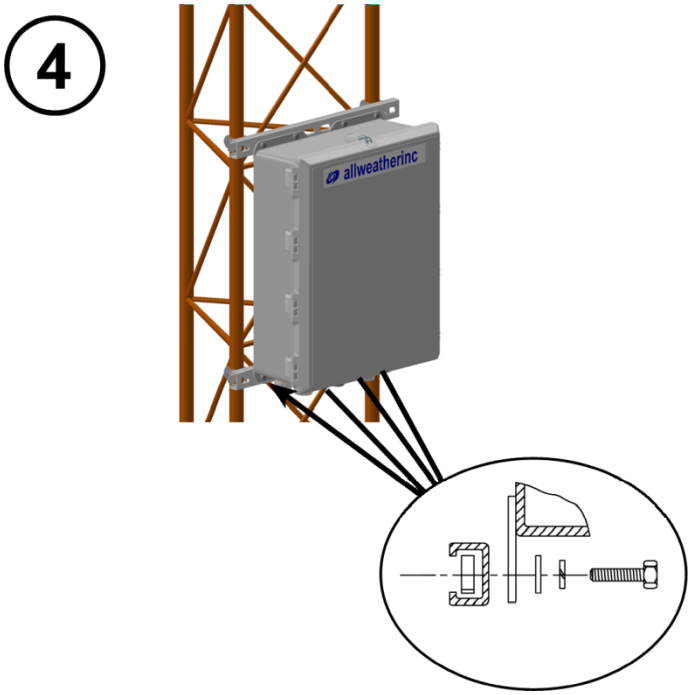


Figure 5. Secure Bottom Unistrut to Enclosure

5. Secure the lower Unistrut to the tower legs using the mounting hardware provided (Figure 6).

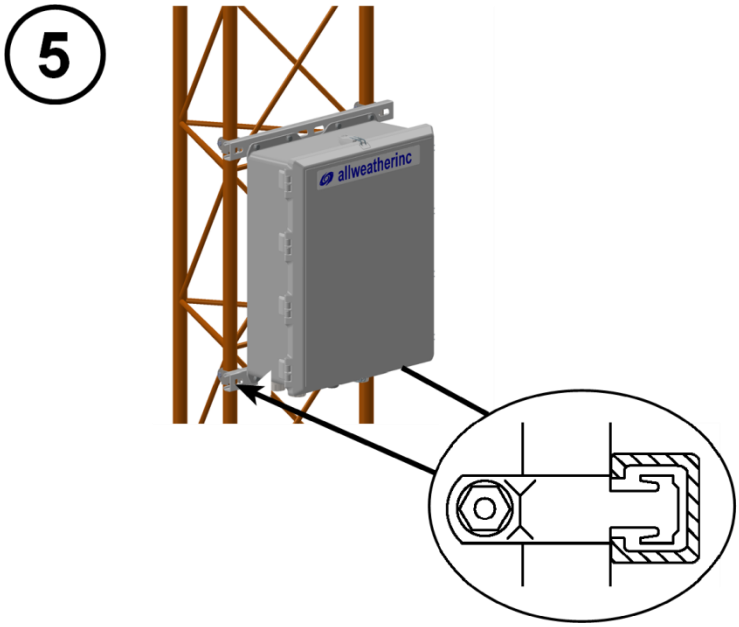


Figure 6. Secure Bottom Unistrut to Tower Leg

6. Apply a light spray of anti-corrosion to all the threaded fasteners. *Avoid spraying other areas such as the gasket surrounding the enclosure door.*

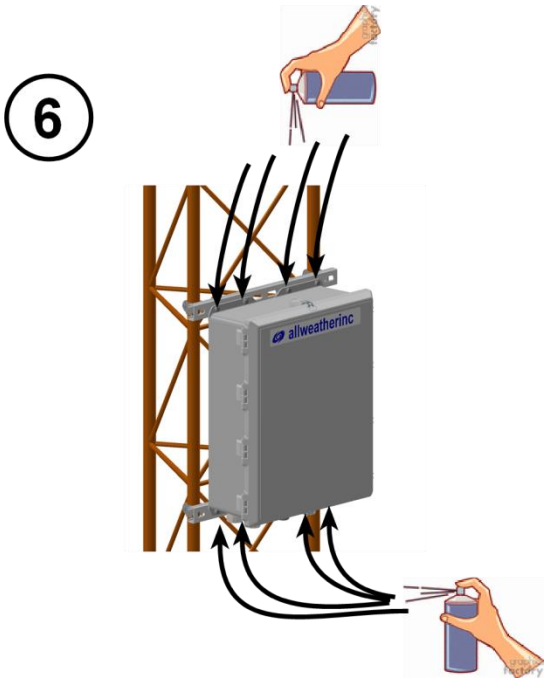


Figure 7. Apply Anti-Corrosion Spray to Threaded Fasteners

7. Tighten all the nuts.

Figure 8 shows the completed installation on a stacked tower as an example.

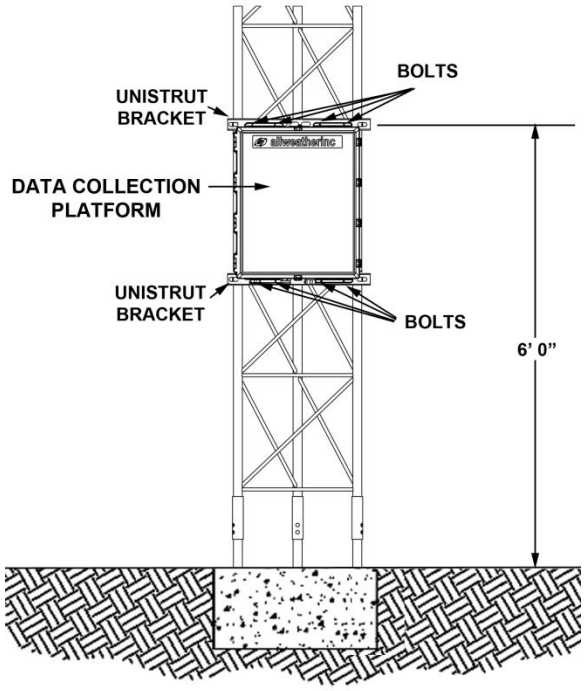


Figure 8. Completed Installation

2.1.1 Pole Mounting

The enclosure may also be mounted on a pole or mounting pipe with an outside diameter of 2"–3". Use a multi-strut pipe clamp to attach the Unistrut strips to the pole instead of a tower.

Figure 9. Multi-Strut Pipe Clamp

2.2 ELECTRICAL CONNECTIONS

Figure 10 shows the external connections at the bottom of the enclosure.

- AC power conduit.
- Signal cables from sensors.
- Serial connection to CDP.
- Ground lug.

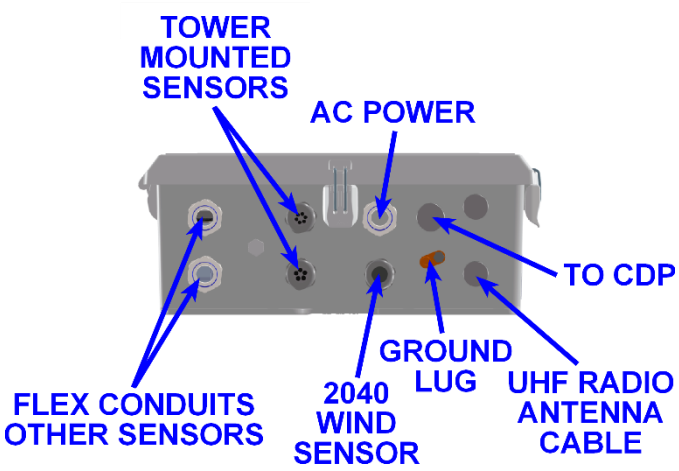


Figure 10. External Connections at Enclosure Bottom

The 1192 DCP must be properly grounded by taking a ground wire with a minimum conductor diameter of 2.9 mm (9 AWG) and maximum length of 5 m from the brass ground lug at the bottom of the electronics enclosure (Figure 11) to the ground clamp near the bottom of the tower or mounting pipe. Cut the end of the ground cable to length and connect this end that ground clamp.

Check that the contractor provided a ground connection from the ground rod to the tower or pipe. If not, that will have to be done using de-ox grease on the below-ground connections.

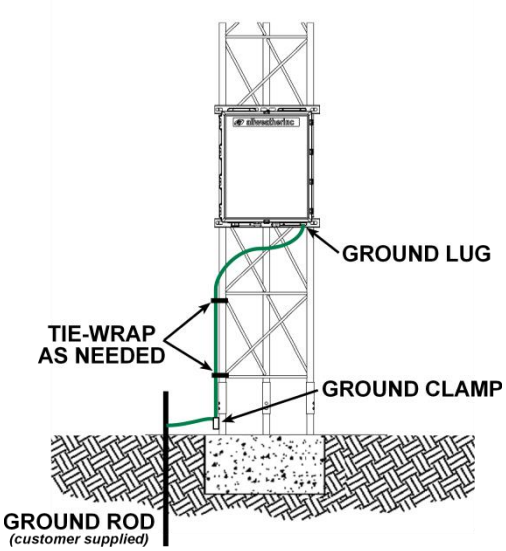


Figure 11. DCP Grounding

Sensor cables are from sensors not on the tower typically run to a junction box near the base of the tower or mounting pole and then underground in conduit according to local code requirements. Route the cables from the junction boxes to the bottom of the electronics enclosure and secure the cables and the ground wire to a tower leg with UV-resistant zip ties. Cables should be secured at least every 60 cm (2 ft). Do not cinch the zip ties so tightly that they deform the cable. Cut excess length off the zip ties with a flush cutter so that no sharp stubs are exposed.

1. Route the cables from the sensors into the electronics enclosure using the cable glands and grommets shown in Figure 10.

2. Connect the wires to the connectors shown in Figure 12 according to the wiring information provided in this chapter.

Figure 12 shows the layout of the various electronics subassemblies inside the electronics enclosure and the routing of cables from the cable glands.

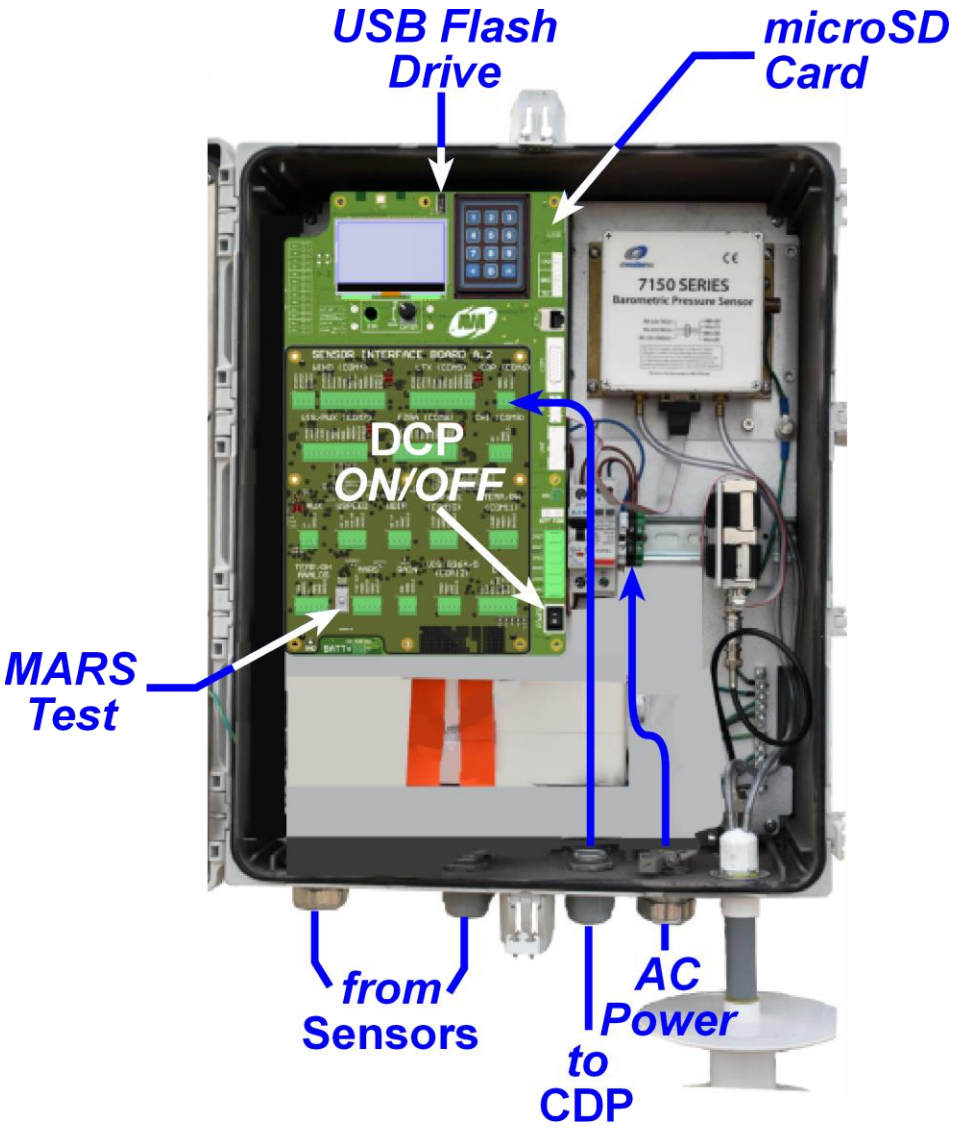


Figure 12. DCP Layout and Connections Inside Enclosure

2.3 CONNECTIONS

2.3.1 Main Board

Note that the AC power switch should be in the OFF position while connections are being made.

The terminal blocks use friction-lock plugs that can be unplugged from the terminal block headers to make connecting wires more convenient.

GPS

Figure 13. GPS Antenna Connector

The onboard GPS receiver has a built-in antenna and an SMA connector that can be used for an external antenna. This connector also provides power for active external GPS antennas. The system is configured to use the internal antenna by default. To use an external antenna, attach it to the SMA connector and route the cable through one of the gland seals provided for tower-mounted sensors (Figure 10). Section 3.8.7 explains how to change the system configuration when an external antenna is used. The antenna will likely be mounted near the enclosure on the tower.

COM 1 — UHF Radio

COM1 is a male DB15 COM port used to connect the UHF data radio to the DCP with a serial cable.

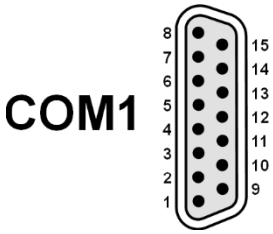


Figure 14. COM1 UHF Radio DB15 Connector

Ethernet

The **ETHERNET** jack is used to connect a network switch or fiber optic modem to the CDP as described in Section 2.5.

Figure 15. Ethernet Jack

BP

The **BP** header accommodates the barometric pressure sensor using a keyed prewired plug, and supports both RS-232 and RS-485.

Header Connections Summary

- RS-485 D– to Pin 6
- Ground to Pin 7
- RS-485 D+ to Pin 8
- +12 V DC to Pin 9
- RS-232 Tx to Pin 2
- RS-232 Rx to Pin 3

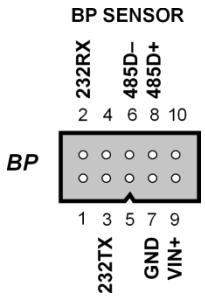


Figure 16. BP Sensor Connector Pinout

VHF — VHF Radio

VHF is a male DB9 port used to connect a VHF radio to the DCP. Power, keying, and audio are provided.

***NOTE**: This VHF output for the AWOS broadcast is not supported at this time.*

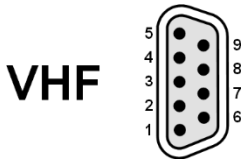


Figure 17. VHF Radio DB9 Connector

NTC — Battery Temperature Sensor

The **NTC** terminal block is reserved for a battery temperature sensor.

***NOTE**: The NTC connection for the battery temperature sensor is not supported at this time.*

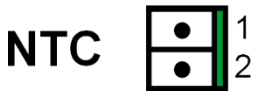


Figure 18. NTC Pinout

DC Outputs

The **DC Outputs** terminal block provides three 12 V DC outputs and one 5 V DC output.

- 12 V DC, 3 A total
- 5 V DC, 1.5 A

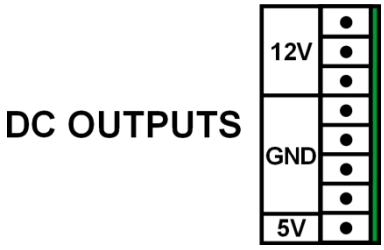


Figure 19. DC Outputs

External Power Inputs

The External Power Inputs terminal blocks allow external power to be provided to the DCP. Power from the **DCIN** and the **24 V AC** inputs is used to charge the backup battery.

- **BAT** external 12 V DC battery for current > 10 A
- **DCIN** 12–48 V DC
- **24 V AC** alternative to blade connectors on rear side

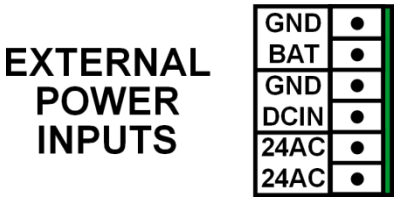


Figure 20. External Power Inputs

Backup Battery

The **BATT** terminal blocks allow the backup battery inside the enclosure to be connected to the DCP. *Use this backup battery connection only when the current supplied by the battery is less than 10 A.*

- RED wire to + pin
- BLACK wire to – pin

Figure 21. Backup Battery Connection

2.3.2 Sensor Interface Boards

The Sensor Interface Board is a modular assembly that plugs into the main board and can be changed to accommodate varying customer requirements. Two Sensor Interface Boards are available at this time.

- Sensor Interface Board A.2 (AWI sensors for use outside the U.S. — Section 2.3.2.1)
- Sensor Interface Board A.3 (AWI sensors for use with non-Federal AWOS systems in the U.S. — Section 2.3.2.2)

The general appearance of these boards is similar, but they are not interchangeable.

Section 3.3 provides specific configuration settings for the configurable COM ports and explains the DIP switch settings. Section 3.5.2 provides detailed information on how the Sensor Interface Boards are configured for the various sensors.

2.3.2.1 Sensor Interface Board A.2 (outside U.S.)

Sensor Interface Board A.2 supports AWI sensors used outside the U.S. See Section 3.5.2 for configuration information.

SIB A.2

COM4 — Wind (Model 2040/2041)

The **J5** terminal block accommodates ultrasonic wind sensors such as the Model 2040 series. The DIP switches at position S1D configure this terminal block for full duplex RS-485 serial communication (Table 4).

Terminal Block **J14** and Pins 1 and 2 on Terminal Block **J5** provide the 24 V AC power for the heaters in the heated ultrasonic wind sensors such as the Model 2040H and 2040HH.

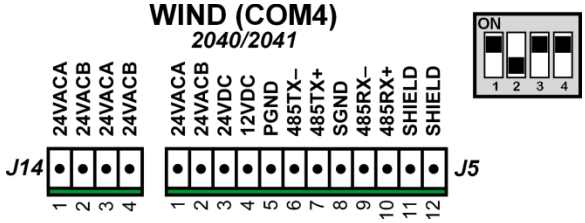


Figure 22. COM4 Ultrasonic Wind Sensors Pinout

Each twisted pair in a 2040 cable uses a black wire as power ground or RX–/TX–. The colored wire in the pair can be used to identify the pair's function. Make sure to dress the end of the cable so that it is clear which black conductor belongs with each pair.

Signals Terminal Block Wiring Summary

- RED wire (+24 VDC) to Pin 3
- BLACK wire (PGND) to Pin 5
- BLACK wire (RS-485 Rx–) to Pin 6
- WHITE wire (RS-485 Rx+) to Pin 7
- BLUE wire (SGND) to Pin 8
- BLACK wire (RS-485 Tx–) to Pin 9
- GREEN wire (RS-485 Tx+) to Pin 10
- SHIELD to Pin 11

Heaters Terminal Block Wiring Summary

All the 24VACA pins are wired to the same 24 VAC-L power source, and all the 24VACB pins are wired to 24 VAC-N.

- YELLOW wire (all models) to **J5** Pin 1
- BLACK wire (all models) to **J5** Pin 2
- BROWN wire (2040HH) to **J14** Pin 1
- BLACK wire (2040HH) to **J14** Pin 2
- ORANGE wire (2040HH) to **J14** Pin 3
- BLACK wire (2040HH) to **J14** Pin 4

COM4 — Wind (Model 9620)

The **J5** terminal block also accommodates the Model 9620 series of ultrasonic wind sensors. The DIP switches at position S1D must be set up for half duplex RS-485 (Table 4).

Terminal Block **J14** and Pins 1 and 2 on Terminal Block **J5** provide the 24 V AC power for the heaters in the heated ultrasonic wind sensors such as the Model 2040H and 2040HH.

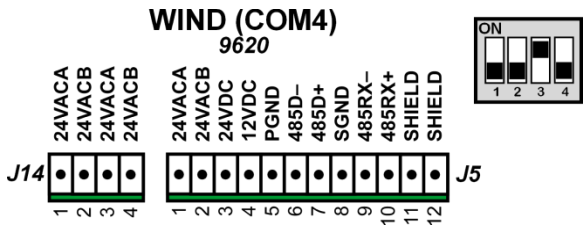


Figure 23. COM4 Ultrasonic Wind Sensors Pinout

Signal Terminal Block Wiring Summary

- BROWN wire (+24 VDC) to Pin 3
- WHITE wire (PGND) to Pin 5
- YELLOW wire (RS485D–) to Pin 6
- GREEN wire (RS485D+) to Pin 7

Heater Terminal Block Wiring Summary

- RED wire (all models) to **J5** Pin 3
- BLUE wire (all models) to **J5** Pin 5

SIB A.2

COM5 — Lightning (Model 6500)

The **J7** terminal block accommodates the Model 6500 lightning sensors. The DIP switches at position S1B are set up for *half duplex* RS-485 (Table 4).

Terminal Block Wiring Summary

- WHITE wire (RS-485 D+) to Pin 7
- BLACK wire (RS-485 D–) wire to Pin 6
- RED wire (SGND) to Pin 8

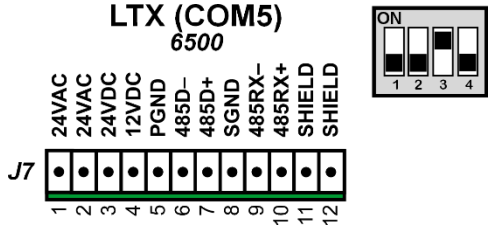


Figure 24. COM5 Lightning Sensors Pinout

COM5 — Lightning (Model 6500-DC)

The **J7** terminal block also accommodates the Model 6500-DC lightning sensors. The DIP switches at position S1B are set up for *full duplex* RS-485 (Table 4).

Terminal Block Wiring Summary

- BROWN wire (RS-422 Rx–) to Pin 6
- RED wire (RS-422 Rx+)to Pin 7
- GREEN wire (SGND) to Pin 8
- BLACK wire (RS-422 Tx–) to Pin 9
- WHITE wire (RS-422 Tx+) to Pin 10

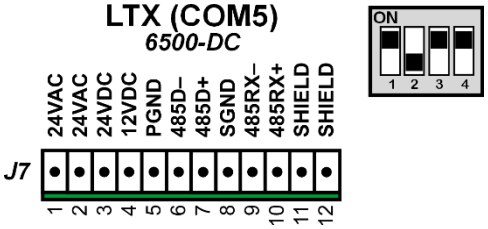


Figure 25. COM5 Lightning Sensors Pinout

- WHITE wire (24 VDC) to Pin 3
- BLACK wire (PGND) to Pin 5

COM6 — CDP

The **J13** terminal block is used to connect the DCP to the CDP over an RS-485 serial connection.

Terminal Block Wiring Summary

- WHITE wire (RS-485 D+) to Pin 1
- BLACK wire (RS-485 D–) to Pin 2
- RED wire/shield to Pin 3

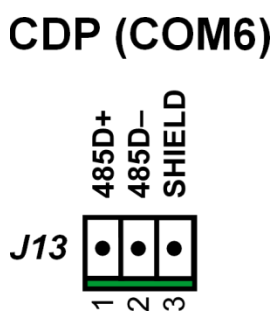


Figure 26. COM6 CDP Pinout

COM 7 — Visibility/Present Weather

Use the **J6** terminal block to connect either standalone Present Weather sensors or combined Present Weather/Visibility sensors.

- Model 6490 Present Weather sensor
- Model 6490-I Present Weather sensor
- Model 6498-P Present Weather sensor
- Model 6498-PV Present Weather/Visibility sensor

Use the **J10** terminal block described in **COM12** to connect standalone Visibility sensors.

- Model 6498-V Visibility sensor
- Model 8364/8365 Visibility sensor

The DIP switches at position S1C are set up for half duplex RS-485 (Table 4).

Terminal Block Wiring Summary

- WHITE wire (RS-485 D+) to Pin 7
- BLACK wire (RS-485 D–) wire to Pin 6
- RED wire (SGND) to Pin 8

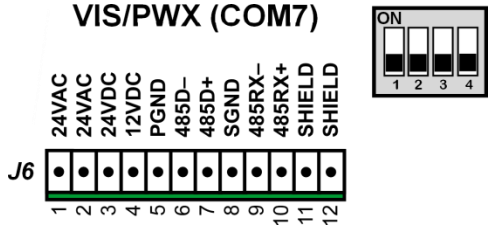


Figure 27. COM7 Visibility/ Present Weather Sensor Pinout

The following *Direct Connect* Present Weather/Visibility sensors are also connected to the **J6** terminal block. When present the corresponding Background Luminance sensor wires are connected to the same positions on the Terminal Block as the Model 6498-DC-PV Present Weather/Visibility sensor.

- Model 6498-DC-P Present Weather sensor
- Model 6498-DC-PV Present Weather/Visibility sensor
- Model 6498-DC-V Visibility sensor

Note that a Model 6490/Model 6490-I Present Weather sensor cannot be used when one of the *Direct Connect* Present Weather/Visibility sensors is connected to the **J6** terminal block. If a

Model 6490/Model 6490-I Present Weather sensor is used, then the Model 6498-V or the Model 8364/8365 Visibility sensor connected to the **J10** terminal block must be used.

Direct Connect Terminal Block Wiring Summary

- BLUE wire (RS-485 A) to Pin 7
- WHITE wire (RS-485 B) wire to Pin 6
- GREEN wire (SGND) to Pin 8
- RED wire (DC +) to Pin 3
- BLACK wire (PGND) to Pin 5
- RED wire (24 VAC Hood Power) to Pin 1
- BLACK wire (24 VAC Hood Power) to Pin 2
- SCREEN wire (SHIELD) to Pin 11
- SCREEN wire (SHIELD) to Pin 12
- Connect a ground wire from the ground lug(s) of the Model 6498-DC series sensor and Background Luminance sensor (if present) to the ground bus inside the DCP enclosure.

COM8 — Freezing Rain

The **J8** terminal block accommodates the Model 6495 Freezing Rain sensor. The DIP switches at position S1A are set up for RS-232 (Table 4).

Note that the silkscreen shows the default half-duplex RS-485 pinouts — see Section 3.3 for more information.

Terminal Block Wiring Summary

- WHITE wire (RS-232 Tx) to Pin 10
- RED wire (RS-232 Rx) wire to Pin 6
- BLACK wire/shield (SGND) to Pin 8

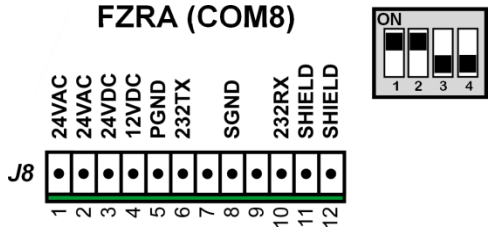


Figure 28. COM8 Freezing Rain Sensor Pinout

COM9 — CHI

The **J22** terminal block is used to connect the 84e39/8340 Ceilometer to the DCP over an RS-232 serial connection.

Terminal Block Wiring Summary

- WHITE wire (RS-232 Tx) to Pin 1
- RED wire (RS-232 Rx) to Pin 2
- BLACK wire (SGND) to Pin 3
- SHIELD wire to Pin 4

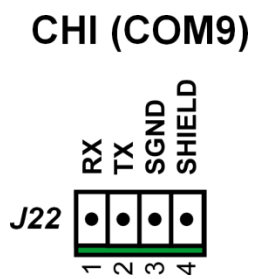


Figure 29. COM9 Ceilometer Pinout

COM10 — SURFACE

The **J4** terminal accommodates the Model 6900 surface condition sensors over an RS-485 serial connection.

***NOTE**: This serial port is not supported at this time.*

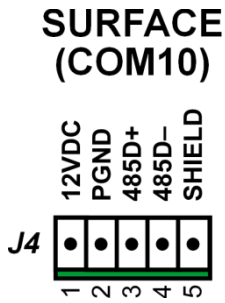


Figure 30. COM10 Surface Sensors Pinout

COM11 — TEMP/RH PROBE

The **J9** terminal accommodates the serial Model 5190-G and Model 5191Temperature/Relative Humidity probe over an RS-485 serial connection.

Terminal Block Wiring Summary

- (12VDC) to Pin 1
- (PGND) to Pin 2
- (RS-485 D+) to Pin 3
- (RS-485 D–) to Pin 4
- SHIELD wire to Pin 5

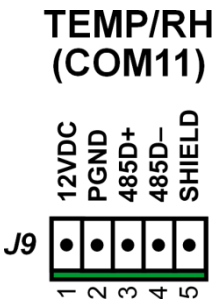


Figure 31. COM11 Serial Temperature/ Relative Humidity Probe Pinout

COM12 — VIS 8364/5

Use the **J10** terminal block to connect standalone Visibility sensors over an RS-485 serial connection.

- Model 6498-V Visibility sensor
- Model 8364/8365 Visibility sensor

Use the **J6** terminal block described in **COM 7** to connect either standalone Present Weather sensors or combined Present Weather/Visibility sensors.

- Model 6490 Present Weather sensor
- Model 6490-I Present Weather sensor
- Model 6498-P/6498-DC-P Present Weather sensor
- Model 6498-PV/6498-DC-PV Present Weather/Visibility sensor

Terminal Block Wiring Summary

- WHITE wire (RS-485 D+) to Pin 1
- BLACK wire (RS-485 D–) to Pin 2
- RED wire (SGND) to Pin 3

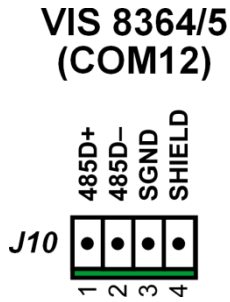


Figure 32. COM12 8364/8365 Visibility Sensors Pinout

AUX — Pyranometer

The **J16** terminal block accommodates a solar radiation sensor. The circuitry measures the voltage output of the pyranometer. The voltage depends on the solar radiation intensity.

Table 5 explains the DIP switch settings, which are used to set the auxiliary voltage gain. The gain is normally set to 50

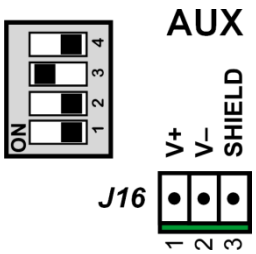


Figure 33. Pyranometer Pinout

Terminal Block Wiring Summary

- V+ wire to Pin 1
- V– wire to Pin 2
- SHIELD (if present) to Pin 3

WSPEED — Wind Speed Sensor

The **J17** terminal block accommodates the Model 2030. The circuitry measures the frequency information from the wind speed sensor. The frequency depends on the wind speed.

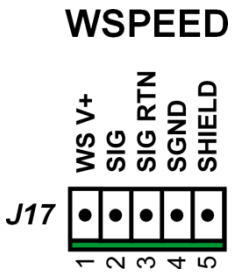


Figure 34. WSPEED Wind Speed Sensor Pinout

2030 Terminal Block Wiring Summary

- BLACK positive wire (WS V+) to Pin 1
- WHITE wire (SIG) to Pin 2
- GREEN wire (SIG RTN) to Pin 3
- RED ground or common wire (SGND) to Pin 4
- SHIELD (if present) to Pin 5

WDIR — Wind Direction Sensor

The **J18** terminal block accommodates the Model 2020 wind direction sensor. The circuitry measures the voltage across a variable resistor on the wind direction sensor. The resistance depends on the wind direction.

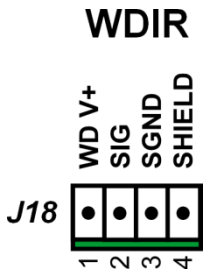


Figure 35. WDIR Wind Direction Sensor Pinout

2020 Terminal Block Wiring Summary

- WHITE positive wire (WD V+) to Pin 1
- RED wire (SIG) to Pin 2
- BLACK common wire (SGND) to Pin 3
- SHIELD (if present) to Pin 4

TEMP/RH ANALOG — Analog Temperature/Relative Humidity Probe

The **J11** terminal block accommodates the analog Model 5190-F Temperature/Relative Humidity Probe. The probe needs to have a 0–1 VDC output for both temperature and relative humidity. The range needs to correspond to -40°C to 60°C.

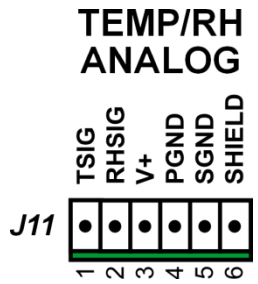


Figure 36. Analog Temp/RH Probe Pinout

Terminal Block Wiring Summary

- BROWN wire (TSIG) to Pin 1
- WHITE wire (RHSIG) to Pin 2
- GREEN wire (V+) to Pin 3
- GRAY and BLUE or YELLOW wire to (V–) Pin 4 and to (SGND) Pin 5; a jumper wire between Pin 4 and Pin 5 may be used
- SHIELD wire to Pin 6

MARS — MARS Radiation Shield

The **J12** terminal block accommodates the Motor Aspirated Radiation Shield MARS). It provides power to the MARS.

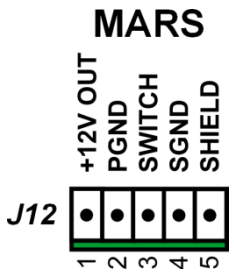


Figure 37. MARS Pinout

Terminal Block Wiring Summary

- WHITE wire of the MARS power cable (+12V OUT) to Pin 1
- BLACK wire of the MARS power cable (PGND) to Pin 2
- TACH or RPM wire (if present) to Pin 3
- Switch ground (if present) to Pin 4
- MARS power cable SHIELD (if present) to Pin 5

***NOTE**: The SWITCH and SGND terminals are not supported at this time.*

RAIN — Rain Gauge

The **J19** terminal block accommodates the Model 6011/6012, Model 6021/6022, and the Model RGTE series of rain gauges. The circuitry counts bucket tips from the rain gauge.

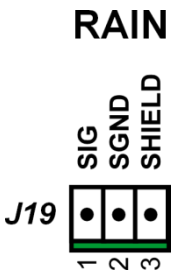


Figure 38. Rain Gauge Pinout

Terminal Block Wiring Summary

- Either wire to Pin 1
- Remaining wire to Pin 2
- SHIELD to Pin 3

D/N — Day/Night

The **J15** terminal block accommodates the M482297-00 Day/Night sensor.

Terminal Block Wiring Summary

- RED wire (+24 VDC) to Pin 5
- BLACK (GND) wire to Pin 2
- GREEN wire (NTC GND) to Pin 4
- WHITE wire (NTC) to Pin 3
- BARE wire (SHIELD) to Pin 7

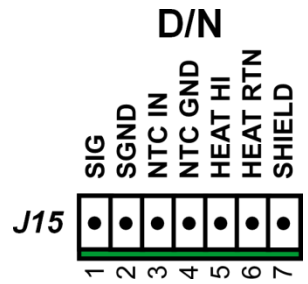


Figure 39. Day/Night Pinout

2.3.2.2 Sensor Interface Board A.3 (U.S. Nonfederal AWOS)

Sensor Interface Board A.3 supports AWI sensors for U.S. non-Federal AWOS systems. See Section 3.5.2 for configuration information.

COM4 — Wind (Model 2040/2041)

The **J5** terminal block accommodates ultrasonic wind sensors such as the Model 2040 series. The DIP switches at position S1D configure this terminal block for full duplex RS-485 serial communication (Table 4).

Terminal Block **J14** and Pins 1 and 2 on Terminal Block **J5** provide 24 V AC power for the heaters in the heated ultrasonic wind sensors such as the Model 2040H and 2040HH.

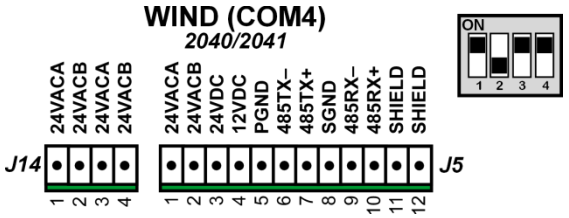


Figure 40. COM4 Ultrasonic Wind Sensors Pinout

Each twisted pair in a 2040 cable uses a black wire as power ground or RX–/TX–. The colored wire in the pair can be used to identify the pair's function. Make sure to dress the end of the cable so that it is clear which black conductor belongs with each pair.

SIB A.3

Signals Terminal Block Wiring Summary

- RED wire (+24 VDC) to Pin 3
- BLACK wire (PGND) to Pin 5
- BLACK wire (RS-485 Rx–) to Pin 6
- WHITE wire (RS-485 Rx+) to Pin 7
- BLUE wire (SGND) to Pin 8
- BLACK wire (RS-485 Tx–) to Pin 9
- GREEN wire (RS-485 Tx+) to Pin 10
- SHIELD to Pin 11

Heaters Terminal Block Wiring Summary

All the 24VACA pins are wired to the same 24 VAC-L power source, and all the 24VACB pins are wired to 24 VAC-N.

- YELLOW wire (all models) to **J5** Pin 1
- BLACK wire (all models) to **J5** Pin 2
- BROWN wire (2040HH) to **J14** Pin 1
- BLACK wire (2040HH) to **J14** Pin 2
- ORANGE wire (2040HH) to **J14** Pin 3
- BLACK wire (2040HH) to **J14** Pin 4

COM4 — Wind (WAC155)

The DIP switches at position S1D are set up for *half duplex* RS-485 (Table 4).

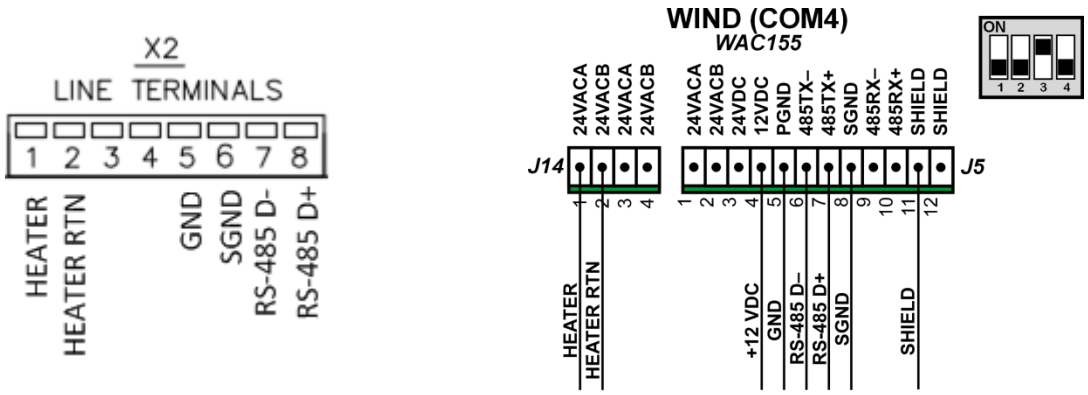


Figure 41. WAC155 Serial Wind Transmitter Connections to 1192 DCP

COM4 — Wind (Model WMT702)

The DIP switches at position S1D are set up for *half duplex* RS-485 (Table 4).

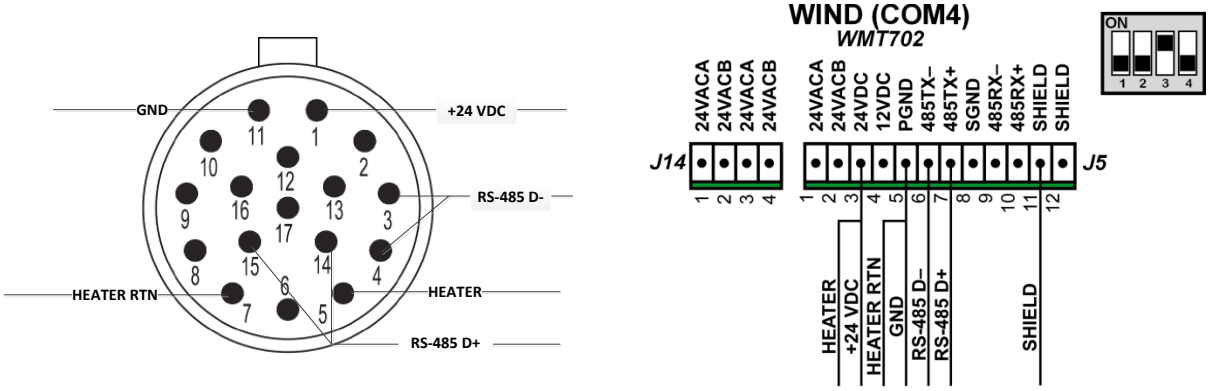


Figure 42. WMT702 Ultrasonic Wind Sensor Connections to 1192 DCP

COM5 — Lightning (Model 6500)

The **J7** terminal block accommodates the Model 6500 lightning sensors. The DIP switches at position S1B are set up for *half duplex* RS-485 (Table 4).

Terminal Block Wiring Summary

- WHITE wire (RS-485 D+) to Pin 7
- BLACK wire (RS-485 D–) wire to Pin 6
- RED wire (SGND) to Pin 8

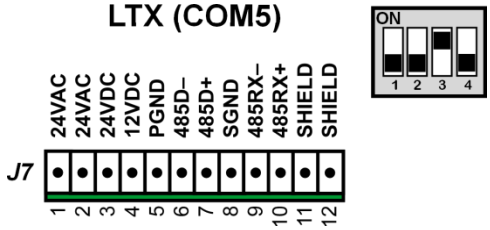


Figure 43. COM5 Lightning Sensor Pinout

COM5 — Lightning (Model 6500-DC)

The **J7** terminal block also accommodates the Model 6500-DC lightning sensors. The DIP switches at position S1B are set up for RS-232 (Table 4).

Terminal Block Wiring Summary

- BROWN wire (RS-422 Rx–) to Pin 6
- RED wire (RS-422 Rx+)to Pin 7
- GREEN wire (SGND) to Pin 8
- BLACK wire (RS-422 Tx–) to Pin 9
- WHITE wire (RS-422 Tx+) to Pin 10

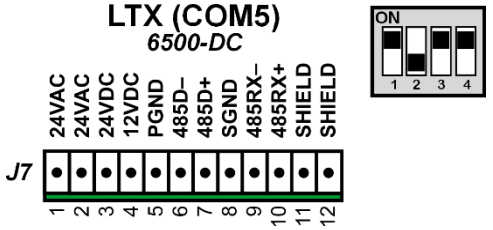
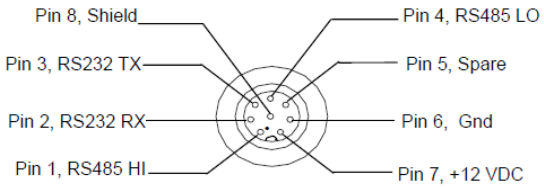


Figure 44. COM5 Lightning Sensors Pinout

- WHITE wire (24 VDC) to Pin 3
- BLACK wire (PGND) to Pin 5

COM5 — Lightning (Model SA20)

The DIP switches at position S1B are set up for RS-232 (Table 4).



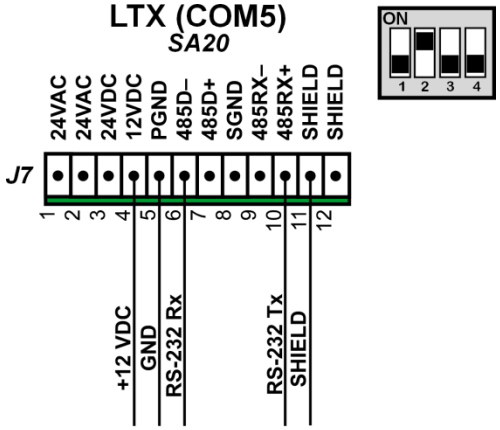


Figure 45. SA20 Lightning Sensor Connections to 1192 DCP

COM6 — CDP

The **J13** terminal block is used to connect the DCP to the CDP over an RS-485 serial connection.

Terminal Block Wiring Summary

- RED wire (RS-485 D+) to Pin 1
- WHITE wire (RS-485 D–) to Pin 2
- BLACK wire/shield to Pin 3

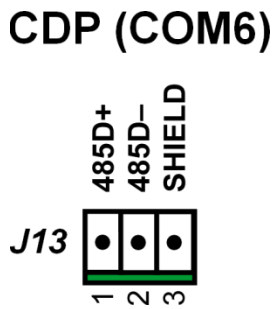


Figure 46. COM6 CDP Pinout

SIB A.3

COM7 — Visibility/Present Weather (Models 6490 and 6498 Series)

Use the **J6** terminal block to connect either standalone Present Weather sensors or combined Present Weather/Visibility sensors.

- Model 6490 Present Weather sensor
- Model 6498-P Present Weather sensor
- Model 6498-PV Present Weather/Visibility sensor

Use the **J10** terminal block described in **COM12** to connect standalone Visibility sensors.

- Model 6498-V Visibility sensor
- Model 8364/8365 Visibility sensor

The DIP switches at position S1C are set up for *half duplex* RS-485 (Table 4).

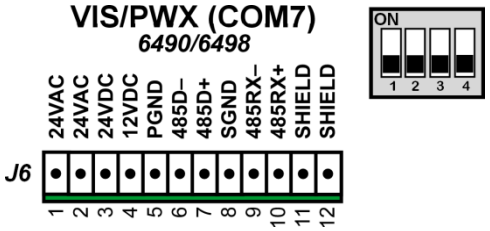


Figure 47. COM7 6490/6498 Visibility/ Present Weather Sensor Pinout

Terminal Block Wiring Summary

- WHITE wire (RS-485 D+) to Pin 7
- BLACK wire (RS-485 D–) wire to Pin 6
- RED wire (SGND) to Pin 8

The following *Direct Connect* Present Weather/Visibility sensors are also connected to the **J6** terminal block. When present the corresponding Background Luminance sensor wires are connected to the same positions on the Terminal Block as the Model 6498-DC-PV Present Weather/Visibility sensor.

- Model 6498-DC-P Present Weather sensor
- Model 6498-DC-PV Present Weather/Visibility sensor
- Model 6498-DC-V Visibility sensor

Note that a Model 6490 Present Weather sensor cannot be used when one of the *Direct Connect* Present Weather/Visibility sensors is connected to the **J6** terminal block. If a Model 6490 Present Weather sensor is used, then the Model 6498-V or the Model 8364-E Visibility sensor connected to the **J10** terminal block must be used.

Direct Connect Terminal Block Wiring Summary

- BLUE wire (RS-485 A) to Pin 7
- WHITE wire (RS-485 B) wire to Pin 6
- GREEN wire (SGND) to Pin 8
- RED wire (DC +) to Pin 3
- BLACK wire (PGND) to Pin 5
- RED wire (24 VAC Hood Power) to Pin 1
- BLACK wire (24 VAC Hood Power) to Pin 2
- SCREEN wire (SHIELD) to Pin 11
- SCREEN wire (SHIELD) to Pin 12
- Connect a ground wire from the ground lug(s) of the Model 6498-DC series sensor and Background Luminance sensor (if present) to the ground bus inside the DCP enclosure.

SIB A.3

COM7 — Visibility/Present Weather (PWD22-CFG06)

The **J6** terminal block also accommodates the PWD22-CFG06 Present Weather/Visibility sensor. The DIP switches at position S1C are set up for RS-232 (Table 4).

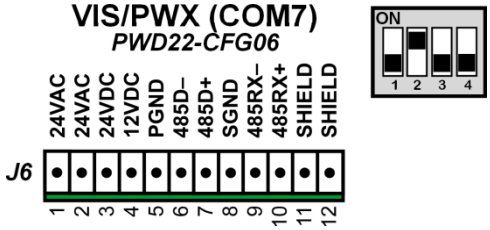


Figure 48. COM7 PWD22 Visibility/ Present Weather Sensor Pinout

Terminal Block Wiring Summary

- WHITE/GREEN and BROWN/GREEN wires (HEATER 24 VAC) to Pin 1
- WHITE/YELLOW and YELLOW/BROWN wires (HEATER RTN) to Pin 2
- RED wire (+24 VDC) to Pin 3
- BLACK wire (power GND) to Pin 5
- YELLOW wire (RS-232 Rx) to Pin 6
- GREEN wire (RS-232 Tx) to Pin 7
- GREY wire (RS-232 GND) to Pin 8
- SHIELD wire (SHIELD) to Pin 11

COM8 — Freezing Rain

The **J8** terminal block accommodates the Model 6495 Freezing Rain sensor. The DIP switches at position S1A are set up for RS-232 (Table 4).

Note that the silkscreen shows the default half-duplex RS-485 pinouts — see Section 3.3 for more information.

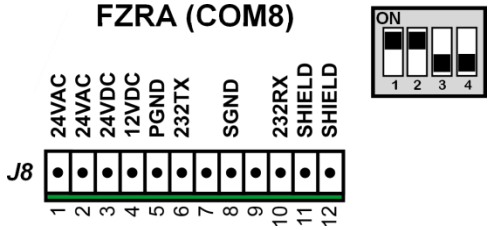


Figure 49. COM8 Freezing Rain Sensor Pinout

Terminal Block Wiring Summary

- WHITE wire (RS-232 Tx) to Pin 10
- RED wire (RS-232 Rx) wire to Pin 6
- BLACK wire/shield (SGND) to Pin 8

COM9 — CHI

Use the **J22** terminal block to connect the Ceilometers.

- 8339-FAA Ceilometer
- CL25K Ceilometer
- CL31-CFG01Ceilometer

The **J22** terminal block is used to connect the Ceilometer to the DCP over an RS-232 serial connection.

Terminal Block Wiring Summary (8339-FAA)

- WHITE wire (RS-232 Tx) to Pin 1
- RED wire (RS-232 Rx) to Pin 2
- BLACK wire (SGND) to Pin 3
- SHIELD wire to Pin 4

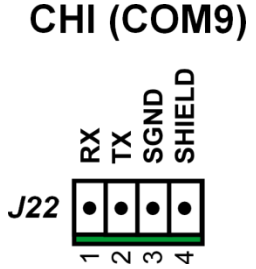


Figure 50. COM9 Ceilometer Pinout

Figure 51 shows the wiring for the Vaisala CL25K and CL31 Ceilometers used to connect them to **J22** (COM9).

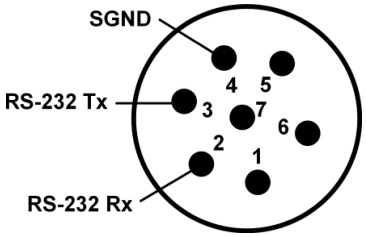


Figure 51. CL25K and CL31 Ceilometer Wiring

COM11 — TEMP/RH PROBE (HMP155-CFG06)

The **J9** terminal accommodates the serial Vaisala HMP155-CFG06 Temperature/Relative Humidity probe over an RS-485 serial connection.

Figure 52 shows the pinout for the HMP155-CFG-06 Temperature/Relative Humidity probe connector used to connect it to the **J22** (COM11) terminal block (Figure 53).

HMP155-CFG06

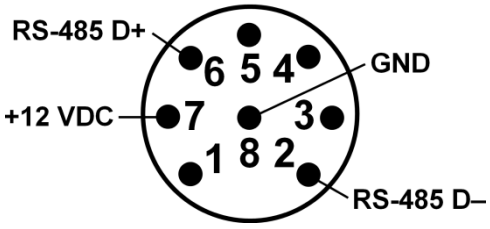


Figure 52. HMP155-CFG-06 Connector Pinout

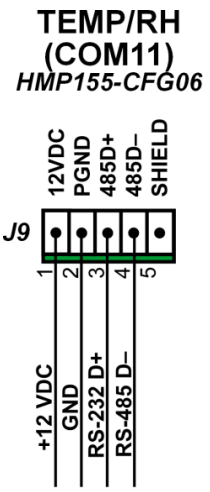


Figure 53. COM11 Wiring for HMP155-CFG-06 Temperature/ Relative Humidity Probe

COM12 — VIS 8364

Use the **J10** terminal block to connect standalone Visibility sensors over an RS-485 serial connection.

- Model 6498-V Visibility sensor
- Model 8364-E Visibility sensor

Use the **J6** terminal block described in COM7 to connect either standalone Present Weather sensors or combined Present Weather/Visibility sensors.

- Model 6490 Present Weather sensor
- Model 6498-P Present Weather sensor
- Model 6498-PV Present Weather/Visibility sensor

Terminal Block Wiring Summary

- WHITE wire (RS-485 D+) to Pin 1
- BLACK wire (RS-485 D–) to Pin 2
- RED wire (SGND) to Pin 3

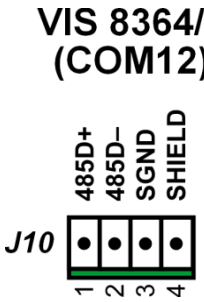


Figure 54. COM12 8364/8365 Visibility Sensors Pinout

WSPEED — Wind Speed Sensor

The **J17** terminal block accommodates the Model 2030. The circuitry measures the frequency information from the wind speed sensor. The frequency depends on the wind speed.

2030 Terminal Block Wiring Summary

- BLACK positive wire (WS V+) to Pin 1
- WHITE wire (SIG) to Pin 2
- GREEN wire (SIG RTN) to Pin 3
- RED ground or common wire (SGND) to Pin 4
- SHIELD (if present) to Pin 5

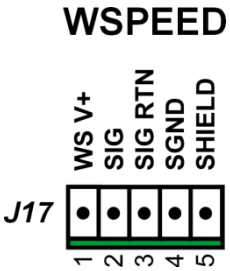


Figure 55. WSPEED Wind Speed Sensor Pinout

WDIR — Wind Direction Sensor

The **J18** terminal block accommodates the Model 2020 wind direction sensor. The circuitry measures the voltage across a variable resistor on the wind direction sensor. The resistance depends on the wind direction.

2020 Terminal Block Wiring Summary

- WHITE positive wire (WD V+) to Pin 1
- RED wire (SIG) to Pin 2
- BLACK common wire (SGND) to Pin 3

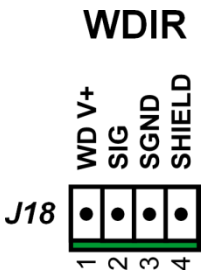


Figure 56. WDIR Wind Direction Sensor

- SHIELD (if present) to Pin 4

Pinout

TEMP/RH ANALOG — Analog Temperature/Relative Humidity Probe

The **J11** terminal block accommodates the analog Model 5190-F Temperature/Relative Humidity Probe. The probe needs to have a 0–1 VDC output for both temperature and relative humidity. The range needs to correspond to -40°C to 60²C.

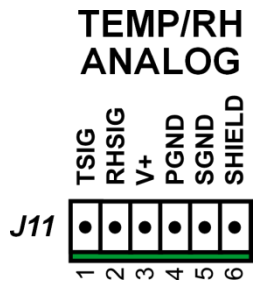


Figure 58. Analog Temp/RH Probe Pinout

Terminal Block Wiring Summary (Model 5190-F)

- BROWN wire (TSIG) to Pin 1
- WHITE wire (RHSIG) to Pin 2
- GREEN wire (V+) to Pin 3
- GRAY and BLUE or YELLOW wire to (V–) Pin 4 and to (SGND) Pin 5; a jumper wire between Pin 4 and Pin 5 may be used
- SHIELD wire to Pin 6

Wiring Summary (Models HMP 45 and HMP155-CFG04)

Figure 57 shows the pinout for the HMP155-CFG04 and HMP45 Temperature/Relative Humidity connectors used to connect them to the **J22** (COM11) terminal block (Figure 59).

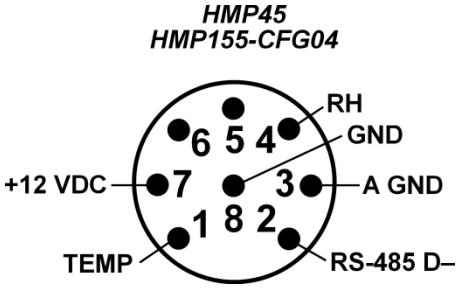


Figure 57. HMP45/HMP155-CFG04 Connector Pinout

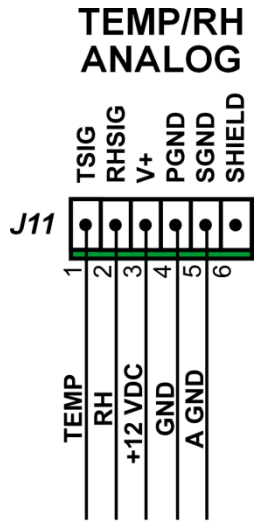


Figure 59. Analog Wiring for HMP45/HMP155-CFG04 Temperature/RH Probe

MARS — MARS Radiation Shield

The **J12** terminal block accommodates the Motor Aspirated Radiation Shield (MARS). It provides power to the MARS.

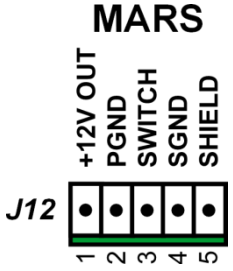


Figure 60. MARS Pinout

Terminal Block Wiring Summary (8190)

- WHITE wire of the MARS power cable (+12V OUT) to Pin 1
- BLACK wire of the MARS power cable (PGND) to Pin 2
- TACH or RPM wire (if present) to Pin 3
- Switch ground (if present) to Pin 4

SIB A.3

- MARS power cable SHIELD (if present) to Pin 5

Terminal Block Wiring Summary (43408F-4A RM Young MARS)

Figure 61 shows the wiring from the 43408F-4A RM Young MARS to connect it to the **J12** terminal block.

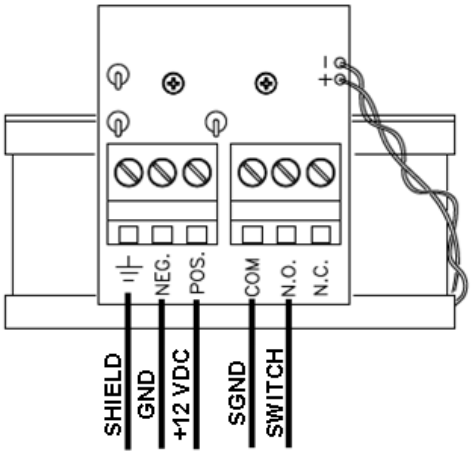


Figure 61. 43408F-4A RM Young MARS Wiring

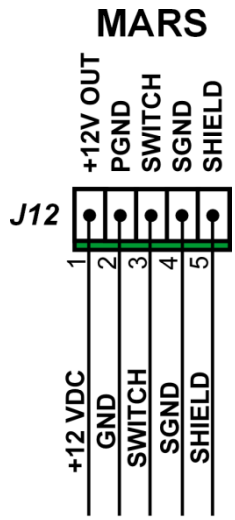


Figure 62. 1192 DCP Wiring 43408F-4A RM Young MARS

RAIN — Rain Gauge

The **J19** terminal block accommodates the Model 6011/6012, Model 6021/6022 rain gauges. The circuitry counts bucket tips from the rain gauge.

Terminal Block Wiring Summary

- Either wire to Pin 1
- Remaining wire to Pin 2
- SHIELD to Pin 3

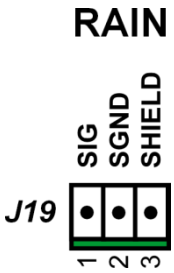


Figure 63. Rain Gauge Pinout

D/N — Day/Night

The **J15** terminal block accommodates the M403572-00 Day/Night sensor.

Terminal Block Wiring Summary

- RED wire (+24 VDC) to Pin 5
- BLACK (GND) wire to Pin 2
- GREEN wire (NTC GND) to Pin 4
- WHITE wire (NTC) to Pin 3
- BARE wire (SHIELD) to Pin 7

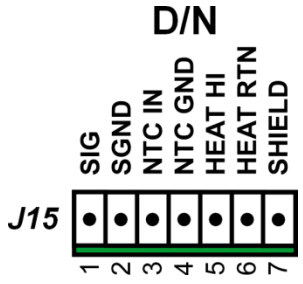


Figure 64. Day/Night Pinout

2.3.3 AC Power Line

AC power connections are made inside the electronics enclosure. A 3-wire, single-phase AC source is required consisting of hot, neutral, and earth ground connections.

CAUTION

There are 120 VAC and 240 VAC models of the Model 1192 Data Collection. Check the local power supply voltage being connected to ensure the correct model is being wired based on the local voltage.

WARNING

Turn off electrical power at the source before making the electrical connections to the DCP!

1. Install a conduit fitting at the location shown in Figure 10. Feed the power cable through the conduit fitting. A 3-wire 16 to 18 AWG cable is recommended.
2. Connect the three power cable wires to the DIN rail terminal blocks to the side of the circuit breaker and surge suppressor (Figure 65).
   - LINE to BLACK or BROWN
   - NEUTRAL to WHITE or BLUE
   - GROUND/EARTH to GREEN or GREEN/YELLOW

   If there is no green terminal block, connect the green power cable wire to the ground bar at the bottom right of the enclosure.

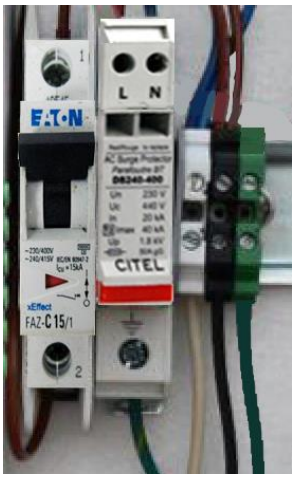


Figure 65. AC Wiring to Terminal Blocks

2.4 BAROMETRIC PRESSURE SENSORS

A Barometric Pressure sensors is installed inside the DCP enclosure using one of the 11926 series of Barometric Sensor Kits from Section 1.2.

1. Install the Pressure Port at the bottom of the enclosure as shown in Figure 66.

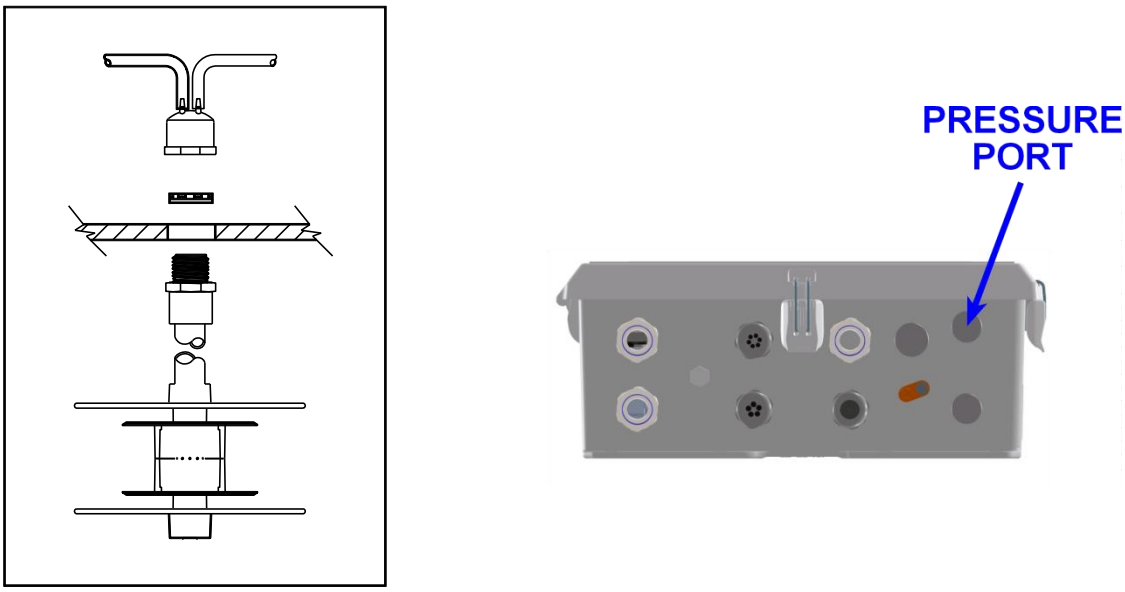


Figure 66. Install Pressure Port at Bottom of DCP Enclosure

2. Attach the Barometric Pressure sensor to the enclosure backplane using the hardware supplied.
3. Connect the Pressure Port tubes from the pressure port to the pressure ports on the Barometric Pressure sensor.
4. Run the M493090-00 cable from the DB9 connector on the Barometric Pressure sensor to the **BP** header on the main board as explained in Section 2.3.

Figure 67 shows the installed Barometric Pressure sensor.

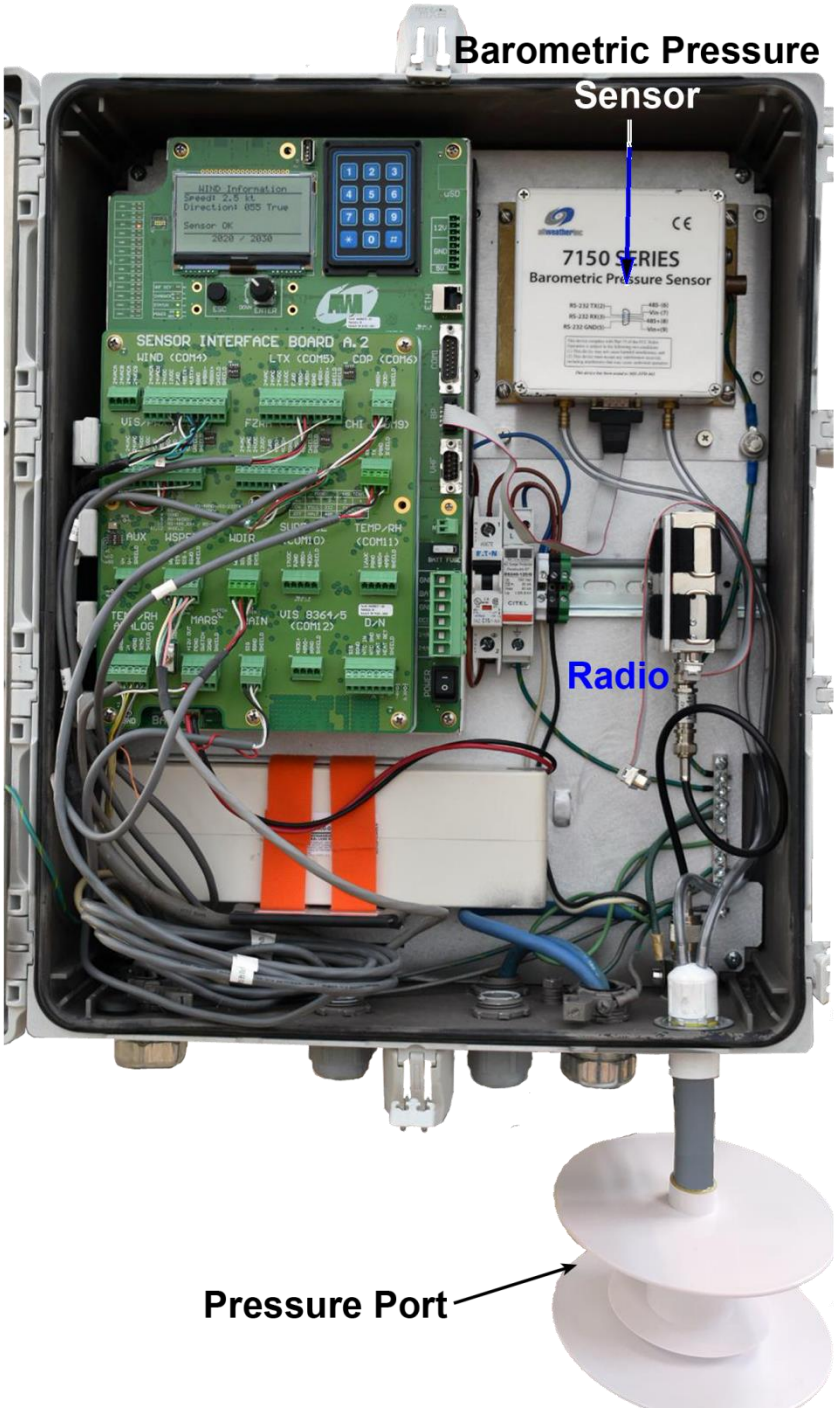


Figure 67. Locations of Barometric Pressure Sensor and Radio Inside DCP Enclosure

2.5 CDP COMMUNICATION OPTIONS

The maximum distance for the RS-485 serial line accessed via COM6 on the Sensor Interface Board is 4000 ft (1200 m).

Other options may be used for longer distances. These are the possible communication options.

- UHF radio (this is the only option authorized besides the RS-485 serial line for non-Federal AWOS systems in the United States)
- Spread spectrum radio
- Point-to-Point Wi-Fi radio
- Short Haul modem
- Fiber optic modem

Figure 67 shows a UHF radio installed inside the DCP enclosure to allow the DCP to communicate with the Central Data Processor (CDP) running the MetObserver display software.

The radio options require an antenna to be mounted nearby, usually on the tower above the DCP as shown in Figure 68. Figure 10 shows the location on the bottom of the enclosure that would be used for the antenna cable. The radio options usually require the antenna on the tower to be in a line of sight with the other antenna connected to the corresponding radio for the CDP.

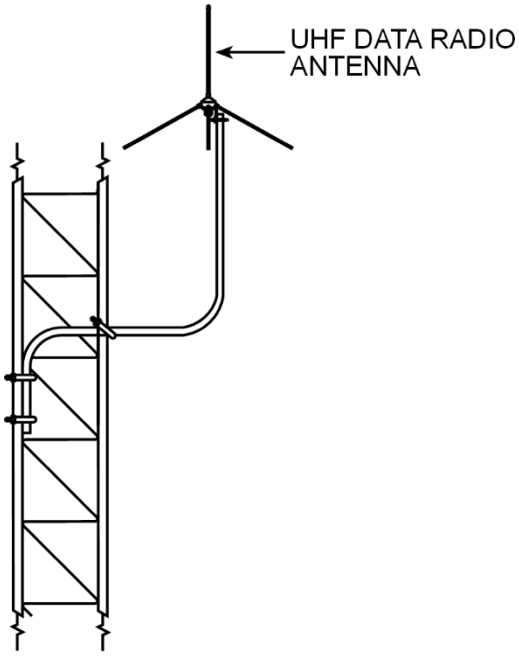


Figure 68. UHF Antenna Mounted to Tower

3. OPERATION

3.1 GENERAL

The Model 1192 Data Collection Platform (DCP) is designed for use with the All Weather, Inc. AWOS aviation weather systems. The DCP collects data from the AWOS sensors, performs error detection on the received information, converts the sensors' data into engineering units, and transmits a message packet containing sensor data and status information to the Central Data Platform (CDP) upon request.

3.2 LED INDICATORS

LED indicators are located to the left of the LCD/keypad on the Main Board. The functions are described in detail below.

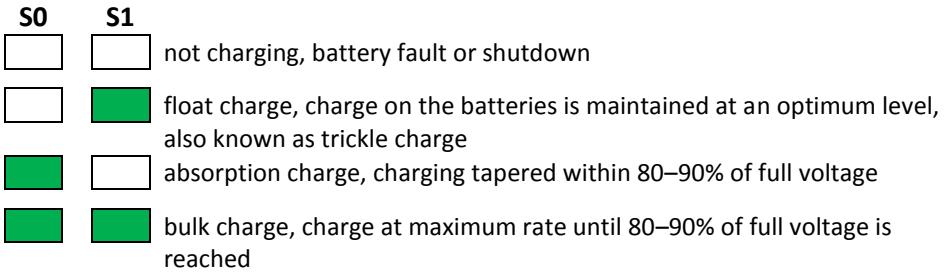
COM Port Activity

The COM LEDs illuminate to indicate Tx or Rx activity on the respective serial COM ports.

- COM 1 — UHF radio or RS-232 CDP connection
- BP —Barometric Pressure sensors
- GPS — GPS receiver
- COM4 — Serial based wind sensors
- COM5 —Thunderstorm/Lightning Detector
- COM6 — CDP RS-485 connection
- COM7 —Combined Present Weather/Visibility sensor or standalone Present Weather sensor
- COM8 —Freezing Rain sensor
- COM9 —Ceilometer
- COM10 —Surface Condition sensors
- COM11 — Serial Temperature/Relative Humidity probe
- COM12 — Standalone Visibility sensor
- COM13 — *not supported at this time*

Performance LEDs

- **VHF KEY** — VHF radio keying
- **CHARGER** — The two LEDs indicate the charging status for the backup battery; see Section 3.3 for more information



- **Status** — Normal operation, flashes twice a second
- **Power** — Separate LEDs indicates the DCP is powered and/or AC power is present
  SYS indicates that the DCP is powered
  HEAT means that AC power is present

3.3 BATTERY-CHARGING CIRCUIT

The battery charger for the backup battery supports a three-stage lead-acid charging profile, and is enabled/disabled using the Factory System Configuration described in Section 3.8.10. The default is for the battery charger to be turned on.

The bulk charging stage of the charge profile, the first stage of three-stage battery charging, is a constant-current charging stage, with the maximum programmed charge current forced into the battery. This continues until the battery voltage approaches the absorption voltage set in the charger configuration.

As the bulk charging stage completes and the battery voltage rises to approach the configured value, the charger transitions into the absorption stage, the second stage of three-stage battery charging. During the absorption stage, the required charge current is steadily reduced. This is a constant-voltage charging stage, as the battery voltage is maintained close to the required value.

When the absorption stage charge current is reduced to one-tenth of the maximum charger current (5 A/10 = 500 mA), the charger will initiate the third stage in the charge profile, the float charging stage. Once the float charging stage is initiated, the battery reference voltage is reduced to 92.5% of the configured voltage. The maximum charge current is reduced to one-fifteenth of the programmed maximum (5 A/15= 333 mA). Once float charging is achieved, the charger remains active and will attempt to maintain the float voltage on the battery indefinitely.

The typical absorption voltage for a six cell lead-acid battery is 14.4 VDC. This corresponds to a 13.3 VDC float voltage. The charge current can be set up to a maximum of 5 A.

A peak power voltage can be set in the charger configuration. This is useful in solar-powered systems or with poorly regulated external supplies. When the input voltage begins to collapse below this preset value, the charger will reduce the charge current to maintain the voltage. When this functionality is not needed, set the maximum power voltage to 14.4 VDC.

3.4 SERIAL SETTINGS

Some serial ports have fixed serial configurations; others may be configured using DIP switches. The configurable serial ports are set at the factory for the sensors described in this manual. Table 2 identifies the serial protocols used by sensors currently supported by the Model 1192 Data Collection Platform.

Table 2. Serial Protocols Used by Sensors

Protocol	Sensor	DCP COM Port
RS-422 (RS-485 Full Duplex)	Model 2040/2041 Ultrasonic Wind Sensor	COM4*
RS-485 (Half Duplex)	Model 5190-G/5191 Temperature/Relative Humidity Probe	COM11
	HMP155-CFG06 Temperature and Relative Humidity Probe	COM11
	WAC155 Serial Wind Transmitter	COM4*
	WMT702 Ultrasonic Wind Sensor	COM4*
	Model 9620 Ultrasonic Wind Sensor	COM4*
	Model 6490/6490-I/6498-P Present Weather Sensor	COM7*
	Model 6498-PV Present Weather/Visibility Sensor	COM7*
	Model 6498-V Visibility Sensor	COM12
	Model 6500 Thunderstorm/Lightning Detector	COM5*
	Model 7150/7190 Barometric Pressure Sensor	BP
	Model 8339/8340 Ceilometer	COM9†
	Model 8364/8365 Visibility Sensor	COM12
	Model 9620 Compact Weather Sensors	COM4
RS-232	SA20 Thunderstorm/Lightning Sensor	COM5*
	PWD22 Present Weather and Visibility Sensor	COM7*
	Model 6495 Freezing Rain Sensor	COM8*
	Model 7150/7190/PTB330 Barometric Pressure Sensor	BP
	Model 8339/8340/ CT25K/ CL31K Ceilometer	COM9

* These COM ports are configurable for various serial protocols (see Table 3)

† Although the Model 8339/8340 Ceilometers output both RS-232 and RS-485 (half duplex), the default Ceilometer COM port (COM9) is RS-232 only

3.4.1 DIP Switches

Note: The DIP switch assemblies are set at the factory for the connections described in Section 2.3.2.

Two sets of DIP switch assemblies on the Sensor Interface Board (SIB) are used to set configuration parameters for the DCP. The configuration and setting of these switches are outlined below.

The four S1A to S1D switches specify RS-232 or RS-485 communication between the DCP and a particular serial COM port. Table 3 identifies the serial protocols for the pins on the terminal blocks that can be set with these DIP switches.

Table 3. Serial Protocol Options for COM4, COM5, COM7, COM8

Pin	RS-485 (Full Duplex)	RS-485 (Half Duplex)	RS-232
6	RS-485 Tx–	RS-485 D–	RS-232 Tx
7	RS-485 Tx+	RS-485 D+	—
8	SGND	SGND	SGND
9	RS-485 Rx–	—	—
10	RS-485 Rx+	—	RS-232 Rx

Table 4 shows the switch settings for each serial protocol option. The specific settings set at the factory are shown in Section 2.3.2 and should not need to be changed.

Table 4. S1A–S1D DIP Switch Settings

DIP Switch Setting	Mode		RS-485 Termination	
	1	2	3	4
ON	Full Duplex	RS-232	Tx	Rx
OFF	Half Duplex	RS-485	OFF	OFF

The S2 switches are used to set the auxiliary voltage gain for the solar radiation sensor connected to the AUX terminal block. The gain is normally set to 50.

Table 5 shows the switch settings. DIP Switch 4 is not used.

Table 5. S2 DIP Switch Settings for Solar Radiation Sensor

Selection	DIP Switch Setting			
	1	2	3	4
Aux Gain 1	ON	OFF	OFF	
Aux Gain 10	OFF	ON	OFF	
Aux Gain 50	OFF	OFF	ON	

3.5 DISPLAY SCREENS

An LCD display screen and a keypad inside the enclosure are used to view sensor data, perform maintenance checks, and configure the specific Sensor Interface Board (SIB) installed in the DCP. The DCP screens are explained in the following sections.

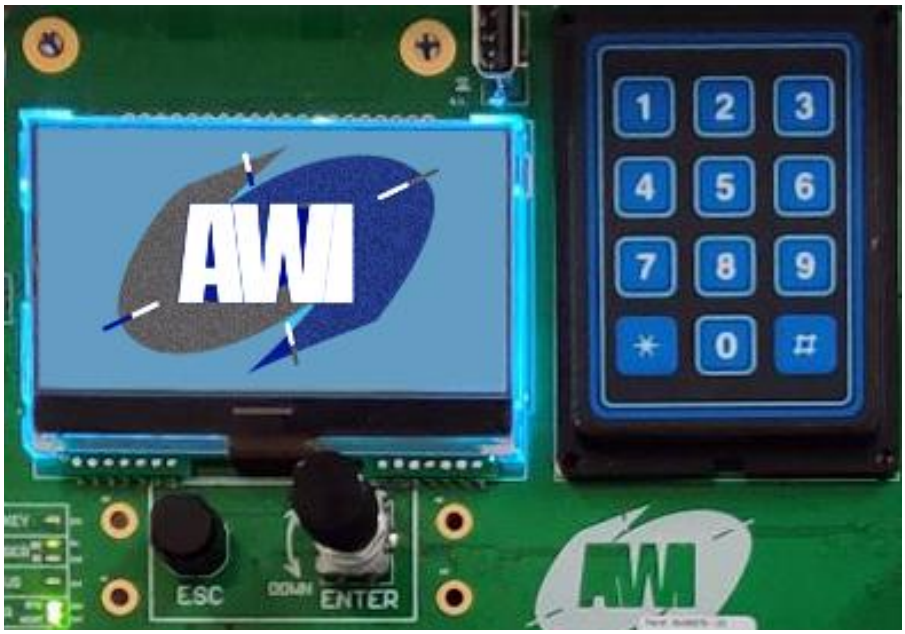


Figure 69. LCD Screen and Keypad

Navigation

It is possible to move through the screens using either by rotating the **ENTER** button below the LCD screen or by using the ***** and **#** keys on the keypad.

- When using the **ENTER** button, rotate the **ENTER** button either clockwise or counterclockwise as shown by the arrow. Each subsequent click will display the next screen.
- When using the ***** and **#** keys on the keypad, press the **#** key to move to the next screen or press the ***** key to move to the previous screen.
- Follow the prompt on the LCD screen to confirm the selection by either clicking the **ENTER** button or touching the number indicated on the keypad.

The screens that are displayed subsequently have been customized to the Sensor Interface Board being used on that DCP. These Sensor Interface Boards are currently available.

- Sensor Interface Board A.2 (AWI sensors for use outside the U.S. — Section 3.5.1)
- Sensor Interface Board A.3 (AWI sensors for use with non-Federal AWOS systems in the U.S. — Section 3.5.2)

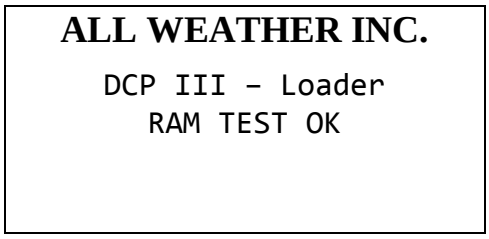
Section 3.5.2 explains how the sensors displayed in these screens are selected and configured.

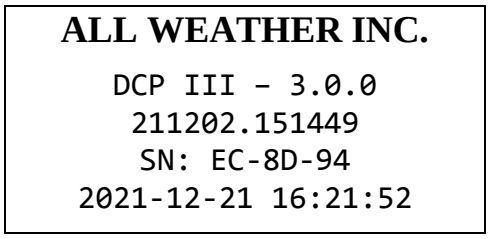
3.5.1 Sensor Interface Board A.2 *(outside U.S.)*

Launch Screen

A RAM test is performed when the DCP is turned on, and the results are displayed. If the RAM test fails, no further screens can be displayed; this indicates a fault in the Main Board.

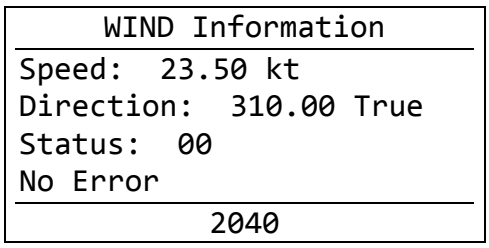
The AWI will appear after a successful RAM test. As the AWI logo fades, the next screen displays the firmware version, the firmware build date, the serial number, and the UTC time.

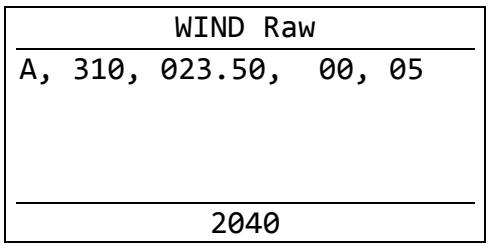




Wind Sensor Screens

The Wind sensor screens display the processed (wind information) and the raw (wind string) sensor data. The status of the wind sensor is shown on the wind information screen. The specific sensor is identified at the bottom of the screen; the screens are slightly different for the 2020/2030.





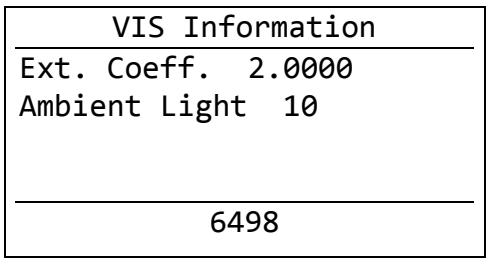
If there is a broken wire in the connection between the wind sensor and the DCP, the message `Sensor Disconnected` will appear on the `WIND Information` screen.

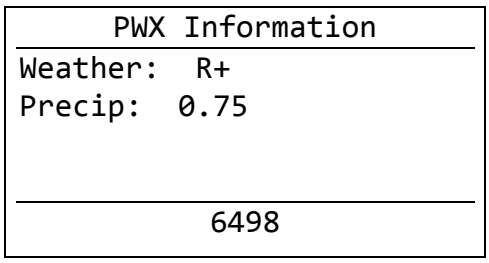
Visibility and Present Weather Sensor Screens

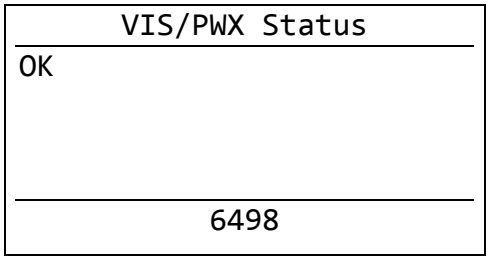
The Visibility and Present Weather sensor screens display the processed sensor data (visibility and present weather information), the sensor status, and the raw sensor data (visibility and present weather strings). The specific sensor is identified at the bottom of the screen.

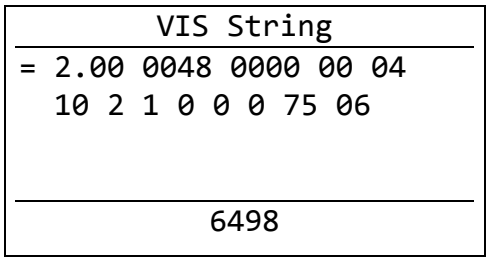
The specific information shown depends on the sensor connected to the **VIS/PWX COM7** terminal block at **J6**.

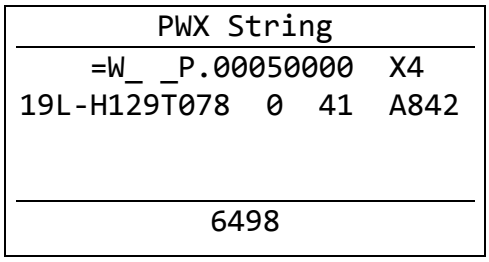
This information will be shown for a sensor capable of reporting both Present Weather and Visibility.





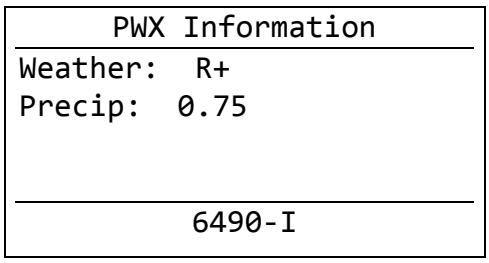


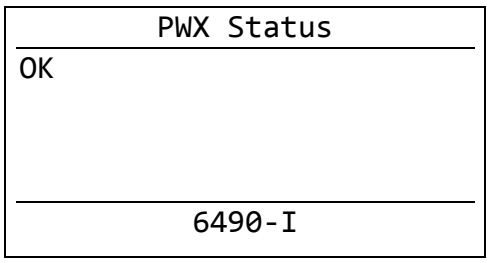


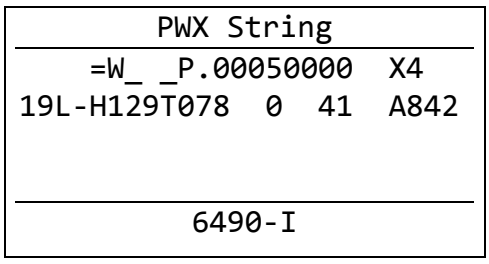


SIB A.2

This information will be shown for a sensor capable of reporting only Present Weather.







The PWX weather information shown is truncated to the first two characters of the Precipitation Intensity being reported if the Precipitation Intensity is more than two characters. For example, +RA would just be shown as R+ on the PWX weather information screen. The complete Precipitation Intensity is processed by the DCP and is forwarded to the CDP.

Table 6 provides the present weather codes that can be reported.

Table 6. Presented Weather Codes
Reported by Present Weather Sensors

Code	Meaning	Code	Meaning	Code	Meaning
L-	Light Drizzle	P-	Light Precipitation	ZL	Freezing Drizzle
L	Moderate Drizzle	P	Moderate Precipitation		Freezing Rain
L+	Heavy Drizzle	P+	Heavy Precipitation		No Precipitation
R-	Light Rain	I-	Light Ice Pellet (optional)	—	Start-Up Indicator
R	Moderate Rain	I	Moderate Ice Pellet (optional)	ER	Error Condition
R+	Heavy Rain	I+	Heavy Ice Pellet (optional)	CL	Lenses require cleaning
S-	Light Snow	A-	Light Hail (optional)		
S	Moderate Snow	A	Moderate Hail (optional)		
S+	Heavy Snow	A+	Heavy Hail (optional)		

Ceilometer Screens

The Ceilometer screens display the processed cloud heights for up to four cloud layers, the sensor status (cloud status), and the raw data (cloud string). The specific sensor is identified at the bottom of the screen.

SIB A.2

```
    Cloud Information
CLD 1:      6500 ft
CLD 2:      8000 ft
CLD 3:     10200 ft
CLD 4:     12500 ft
       8339 / 8340
```

```
       Cloud Status
Status:  000000

System  OK

       8339 / 8340
```

```
       Cloud String
TR100  000000  06500  0125
08000  0250  10200  0100
12500 0075  0000  00000
c097
       8339 / 8340
```

Temperature/Relative Humidity Screens

The Temperature/Relative Humidity screens display information supporting the collection of temperature and relative humidity data. The specific sensor is identified at the bottom of the screen.

- Processed data (T / RH information), including the MARS status
- Raw data (T / RH voltages), including the current through the MARS

```
    T / RH Information
T:    -20.2C / -4.3F
DP:   -28.4C / -19.2F
RH:   47.4
MARS  OK
          5190-F
```

```
     T / RH Voltages
Temp:  0.198 [V]
RH:  0.474 [V]
MARS:  0.15 [A]

          5190-F
```

The MARS fan may fail, there might be a break or short circuit in its wires, or the air flow may become obstructed. When it happens the current draw will differ from the factory-calibrated value (Section 3.8.10 ***MARS Configuration***) and a `Mars FAN FAIL` message will be displayed.

Barometric Pressure Screens

The Barometric Pressure sensor screens display the processed (BP information) and the raw (BP string) sensor data. The specific sensor (7150 or PTB330) is identified at the bottom of the screen.

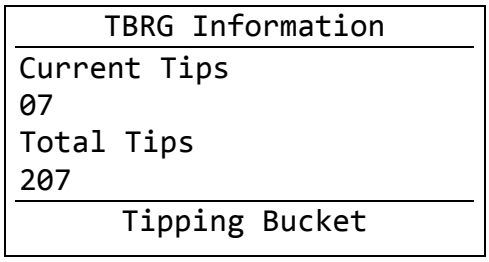
```
      BP Information
S1:         29.920
S2:         29.920


        7150 Dual
```

```
        BP Offsets
RAW  +  OFFSET  =  BP
29.920+0.000=29.920
29.920+0.000=29.920

        7150 Dual
```

```
         BP String
29.920  29.920  **.***
 00  00.000  00


         7150 Dual
```

Rain Gauge Screen

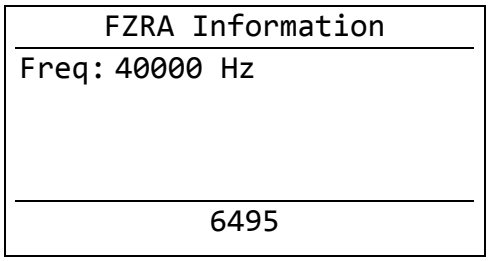
The Rain Gauge screen displays the raw (TBRG information) sensor data consisting of the number of tips and the total tips. The current tip number counts from 0 to 99 and will roll over from 99 to 0.

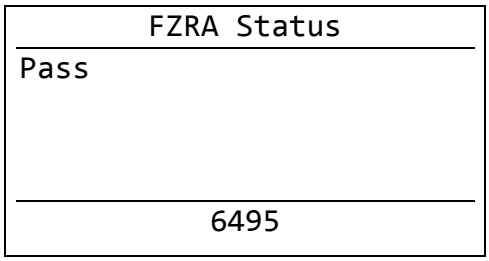


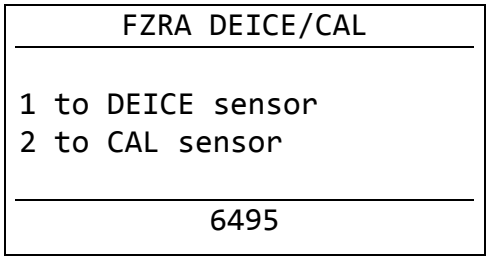
Freezing Rain Screens

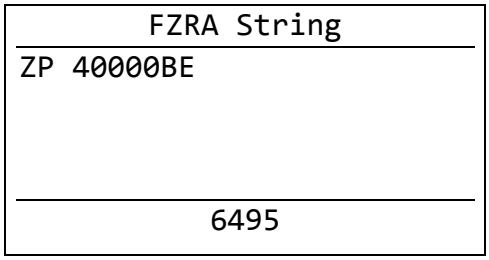
The Freezing Rain screens display the processed sensor data (FZRA information, the vibration frequency of the freezing rain sensor probe), the sensor status, and the raw sensor data (FZRA string). The specific sensor is identified at the bottom of the screen.

The options are also provided to deice or calibrate the sensor. Sensor calibration only done at the factory and should not be performed in the field.





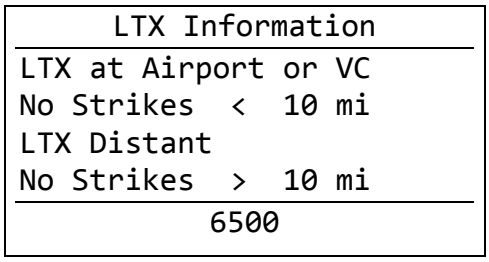


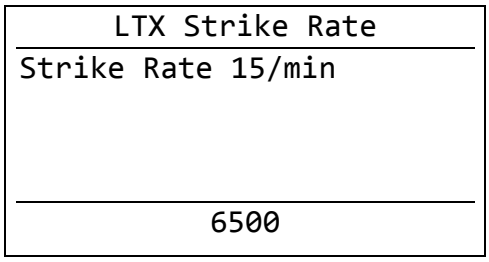


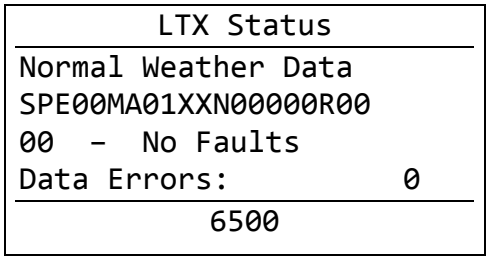
The FZRA calibration screen display used to calibrate the Freezing Rain Sensor is intended for factory use only. ***Do not attempt to calibrate the Freezing Rain sensor in the field.***

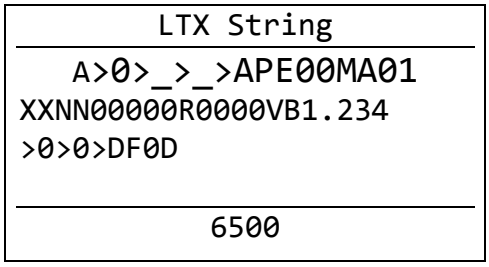
Lightning Screens

The Lightning screens display the processed sensor data (LTX information), the sensor status, and the raw sensor data (LTX string). The specific sensor is identified at the bottom of the screen.



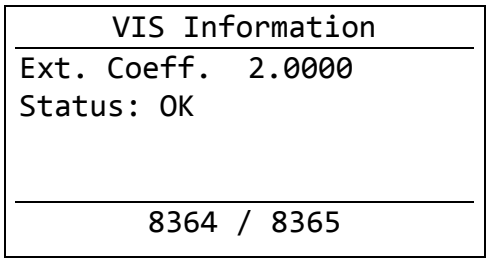


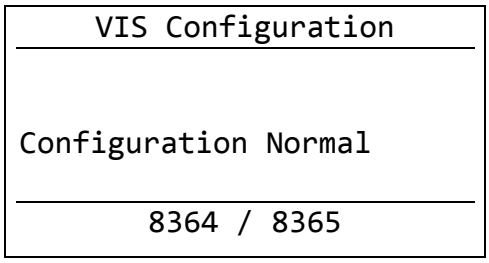




Visibility Sensor Screens

The Visibility sensor screens display the processed sensor data (visibility information), the sensor status, and the raw sensor data (visibility strings). The specific sensor is identified at the bottom of the screen.





If an error is detected, the VIS Configuration screen will display one of the following messages.

8364/8365	Other Sensors
Setup Error	Clean Lenses
Clean Lenses	Data Missing
Configuration Error	Vis Conf Err. Use STD
Data Missing	10s, 3min, ext, mi, 1200
3 Headed Operation	CHECK Visibility
Other Error	POWER and COMM LINES

```
        VIS Status

Status Normal

        8364 / 8365
```

If the screen shows `Visibility Failure`, one of the following error codes will also be displayed.

Code	Meaning
MODE0D	Mode 0 direct error
MODE0I	Mode 0 indirect error
MODE1D	Mode 1 direct error
MODE1I	Mode 1 indirect error
D0	Detector 0 failure
D1	Detector 1 failure
D0HT	Detector 0 heater failure
D1HT	Detector 1 heater failure

Code	Meaning
E0	Emitter 0 failure
E1	Emitter 1 failure
E0HT	Emitter 0 heater failure
E1HT	Emitter 1 heater failure
ALHT	ALS head or Day/Night Sensor heater failure
XCHK	Crosscheck error
PS	Power supply failure


```
        VIS Power

On AC Power

        8364 / 8365
```

```
        VIS String
= 2.00 0048 0000 00 04
  10 2 1 0 0 0 75 06

        8364 / 8365
```

The VIS Power display may also show `On Battery Power` or `Sensor Not Installed`.

```
   VIS Calibration/Test

1 to Calibrate Sensor
2 to Test, # to Exit

        8364 / 8365
```

Enter the desired character on the keypad to continue when this screen is reached.

Section 3.9 provides additional information on using these screens to calibrate

Solar Radiation Screen

The Solar Radiation screen displays the current value in volts of the auxiliary input channel.

```
      AUX Information
Input:  0.041 [V]




      AUX / SOLAR RAD
```

Section 3.13describes how to increase the precision of the solar radiation measurements if this is needed.

GPS Screen

The GPS screen displays GPS information, the GSV string for GPS satellites in view (GSV), and the recommended minimum specific GPS/transit data (RMC) string.


```
      GPS Information
GPS Signal Acquired
Time:
2021/01/23 18:23:16Z


       ON-BOARD GPS
```

```
        GSV String
  $GPVSV,3,1,11,04,71
,014,20,03,58,178,17
,1648,099,22,09,45,
306,18*77
       ON-BOARD GPS
```

```
        RMC String
  $GNRMC,182333.000,A
,3906.1353,N,12133.9
666,W,0.10,179.20,23
0121,,,A*69
       ON-BOARD GPS
```

System Status Screens

The System Status screens display the DCP status.

```
      System Status
Status:  OK
Battery Chg:  Idle
Network:  DOWN
SD Card:  Searching . .
USB:  OK
```

The main System Status screen shows the DCP status, whether the battery charger is active or idle, whether the network is up or down, and the status for the SD card and the USB drive (Searching…, Mounting…, or OK).

```
      System Detail
VIN:  36.3 V
FET Temp:  28.0 degC
CHG Cur:  -0.09 A
CPU Temp:  37.3 degC
RTC:  3.24 V
```

The System Detail screen shows the detailed system diagnostic information.

- Main input voltage – the highest voltage among the AC input (rectified), DC input, and battery voltages
- FET temperature – Main DC/DC power supply operating temperature
- Battery charger current
- CPU temperature
- RTC battery voltage

The RTC backup battery should be replaced when the RTC battery voltage drops below 2.0 V. See Section 4.2.


```
     Battery Charger

FLOAT CHARGE
Current:  -0.09 A
Voltage:  12.79 V
```

The Battery Charger screen shows the detailed battery charging information.

- FLOAT CHARGE is displayed when the rechargeable battery (if used) is in the final charging stages or when no battery is connected; see Section 3.3 for additional information
- The current and the voltage indicate the current and voltage being supplied by the battery charger

```
          Network
Link Up
IP:  192.168.5.5
NM:  255.255.255.0
GW:  192.168.5.1
          STATIC
```

The Network screen shows the Network stratus.

- Network link Up or Down
- IP address
- Net Mask
- Gateway
- Whether IP address is static or DHCP

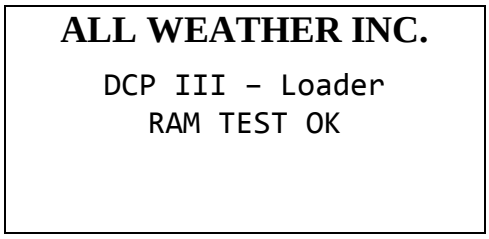
There are also Logging Status screens, which are described in Section 3.8.7.

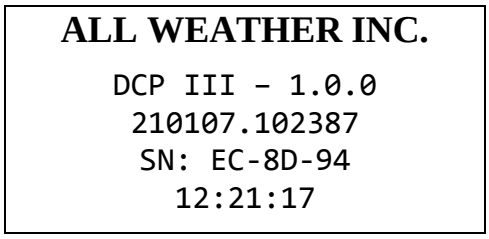
3.5.2 Sensor Interface Board A.3 *(U.S. non-Federal AWOS)*

Launch Screen

A RAM test is performed when the DCP is turned on, and the results are displayed. If the RAM test fails, no further screens can be displayed; this indicates a fault in the Main Board.

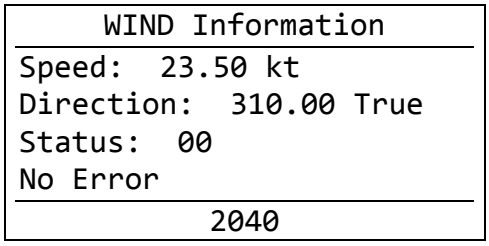
The AWI will appear after a successful RAM test. As the AWI logo fades, the next screen displays the firmware version, the firmware build date, the serial number, and the UTC time.

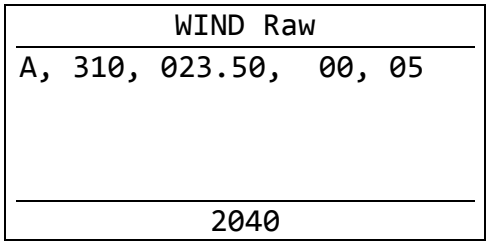




Wind Sensor Screens

The Wind sensor screens display the processed (wind information) and the raw (wind string) sensor data. The status of the wind sensor is shown on the wind information screen. The specific sensor is identified at the bottom of the screen; the screens are slightly different for the 2020/2030.





If there is a broken wire in the connection between the wind sensor and the DCP, the message `Sensor Disconnected` will appear on the `WIND Information` screen.

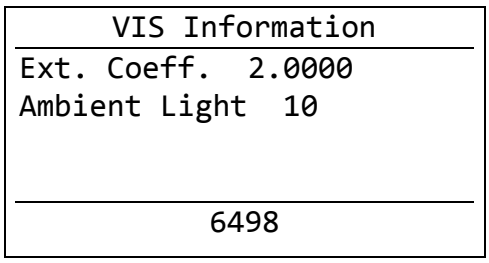
Visibility and Present Weather Sensor Screens

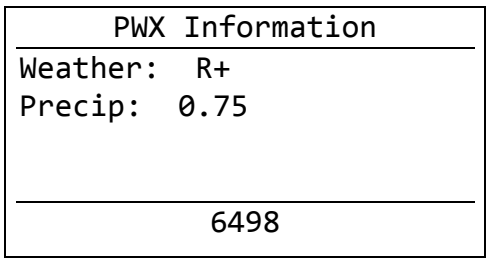
The Visibility and Present Weather sensor screens display the processed sensor data (visibility and present weather information), the sensor status, and the raw sensor data (visibility and present weather strings). The specific sensor is identified at the bottom of the screen.

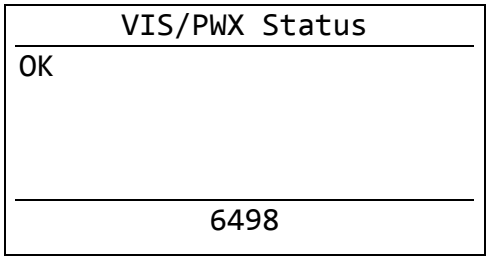
The specific information shown depends on the sensor connected to the **VIS/PWX COM7** terminal block at **J6**.

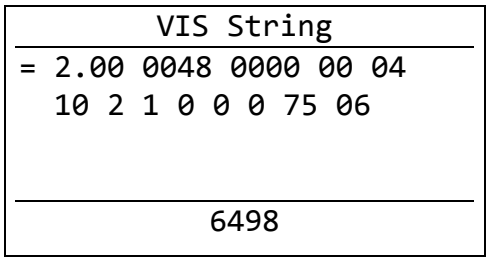
- Model 6490 Present Weather sensor
- Model 6498-P Present Weather sensor
- Model 6498-PV Present Weather/Visibility sensor
- PWD22-CFG06 Present Weather/Visibility sensor

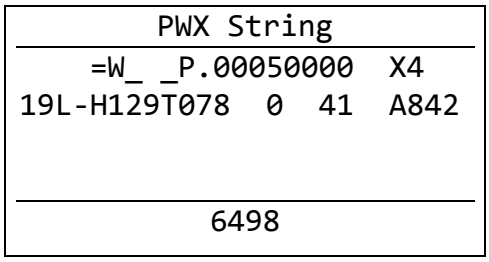
This information will be shown for a sensor capable of reporting both Present Weather and Visibility.





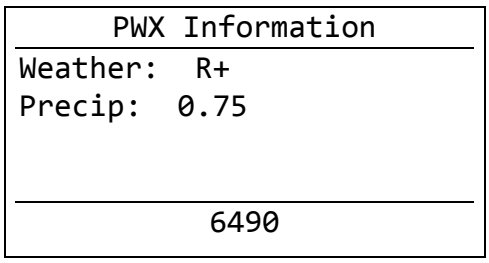


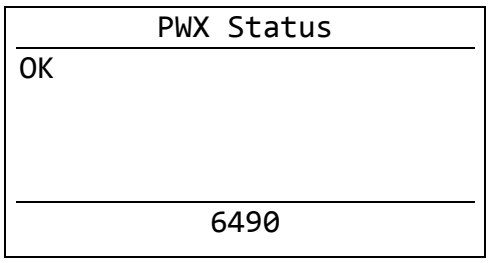


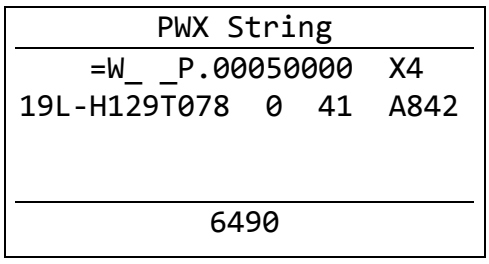


SIB A.3

This information will be shown for a sensor capable of reporting only Present Weather.







The PWX weather information shown is truncated to the first two characters of the Precipitation Intensity being reported if the Precipitation Intensity is more than two characters. For example, +RA would just be shown as R+ on the PWX weather information screen. The complete Precipitation Intensity is processed by the DCP and is forwarded to the CDP.

Table 7 provides the present weather codes that can be reported.

Table 7. Presented Weather Codes
Reported by Present Weather Sensors

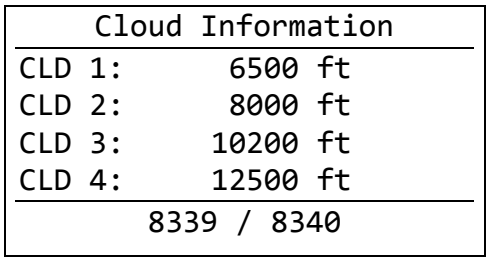
Code	Meaning	Code	Meaning	Code	Meaning
L-	Light Drizzle	P-	Light Precipitation	ZL	Freezing Drizzle
L	Moderate Drizzle	P	Moderate Precipitation		Freezing Rain
L+	Heavy Drizzle	P+	Heavy Precipitation		No Precipitation
R-	Light Rain	I-	Light Ice Pellet (optional)	—	Start-Up Indicator
R	Moderate Rain	I	Moderate Ice Pellet (optional)	ER	Error Condition
R+	Heavy Rain	I+	Heavy Ice Pellet (optional)	CL	Lenses require cleaning
S-	Light Snow	A-	Light Hail (optional)		
S	Moderate Snow	A	Moderate Hail (optional)		
S+	Heavy Snow	A+	Heavy Hail (optional)		

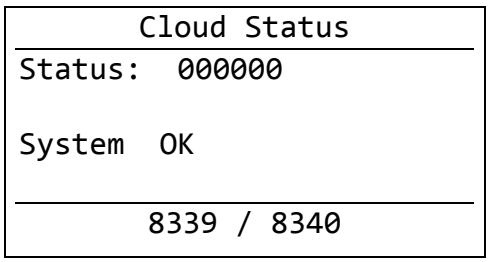
Ceilometer Screens

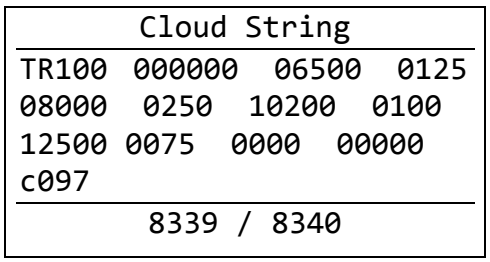
The Ceilometer screens display the processed cloud heights for up to four cloud layers, the sensor status (cloud status), and the raw data (cloud string). The specific sensor is identified at the bottom of the screen.

SIB A.3

- 8339-FAA Ceilometer
- CL25K Ceilometer
- CL31-CFG01Ceilometer







Temperature/Relative Humidity Screens

The Temperature/Relative Humidity screens display information supporting the collection of temperature and relative humidity data. The specific sensor is identified at the bottom of the screen.

- Processed data (T / RH information), including the MARS status
- Raw data (T / RH voltages), including the current through the MARS

```
    T / RH Information
T:    -20.2C / -4.3F
DP:   -28.4C / -19.2F
RH:   47.4
MARS  OK
          5190-F
```

```
      T / RH Voltages
Temp:  0.198 [V]
RH:  0.474 [V]
MARS:  0.15 [A]

          5190-F
```

The MARS fan may fail, there might be a break or short circuit in its wires, or the air flow may become obstructed. When it happens the current draw will differ from the factory-calibrated value (Section 3.8.10 ***MARS Configuration***) and a `Mars FAN FAIL` message will be displayed.

Barometric Pressure Screens

The Barometric Pressure sensor screens display the processed (BP information) and the raw (BP string) sensor data. The specific sensor (7150 or PTB330) is identified at the bottom of the screen.


```
      BP Information
S1:        29.924
S2:        29.926


          7150
```

```
          BP String
29.924  29.926  **.***
 19  0.044  00


          7150
```

Rain Gauge Screen

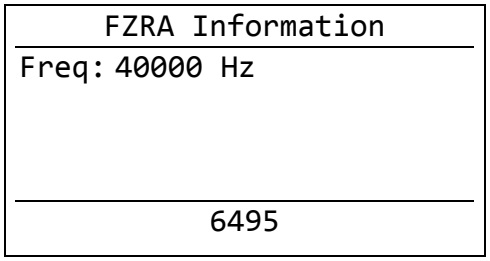
The Rain Gauge screen displays the raw (TBRG information) sensor data consisting of the number of tips and the total tips. The current tip number counts from 0 to 99 and will roll over from 99 to 0.

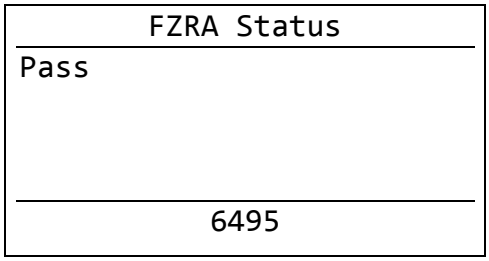
```
     TBRG Information
Current Tips
07
Total Tips
207
      Tipping Bucket
```

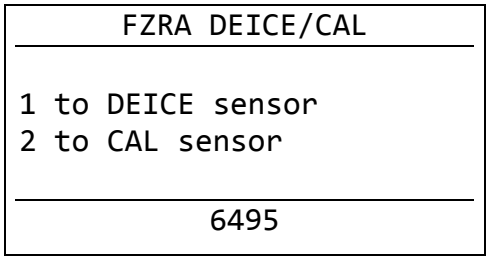
Freezing Rain Screens

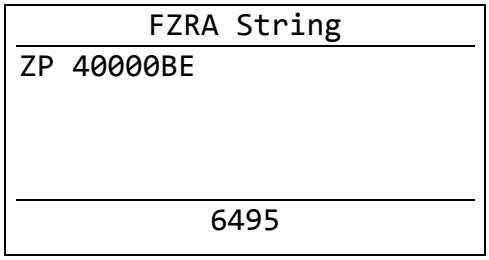
The Freezing Rain screens display the processed sensor data (FZRA information, the vibration frequency of the freezing rain sensor probe), the sensor status, and the raw sensor data (FZRA string). The specific sensor is identified at the bottom of the screen.

The options are also provided to deice or calibrate the sensor. Sensor calibration only done at the factory and should not be performed in the field.





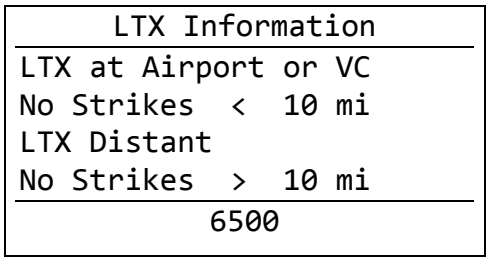


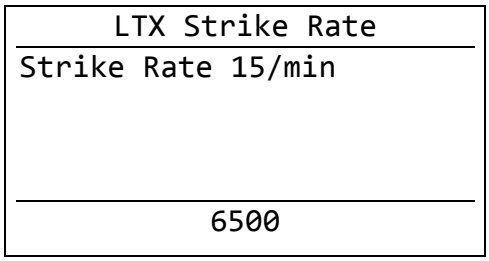


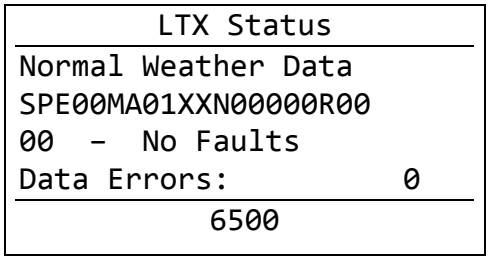
The FZRA calibration screen display used to calibrate the Freezing Rain Sensor is intended for factory use only. ***Do not attempt to calibrate the Freezing Rain sensor in the field.***

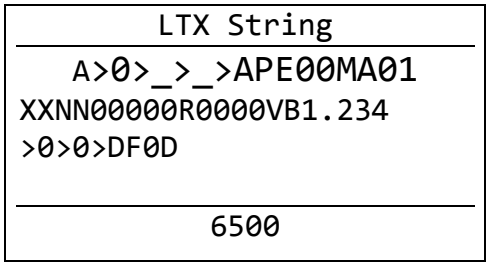
Lightning Screens

The Lightning screens display the processed sensor data (LTX information), the sensor status, and the raw sensor data (LTX string). The specific sensor is identified at the bottom of the screen.



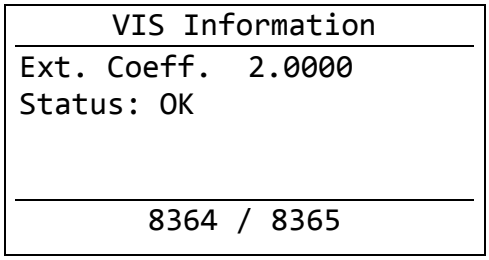


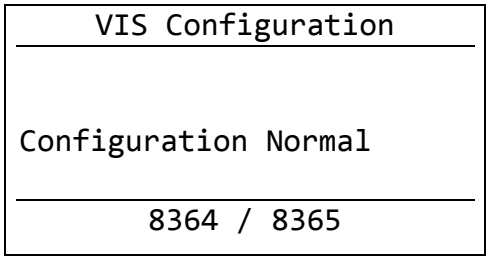




Visibility Sensor Screens

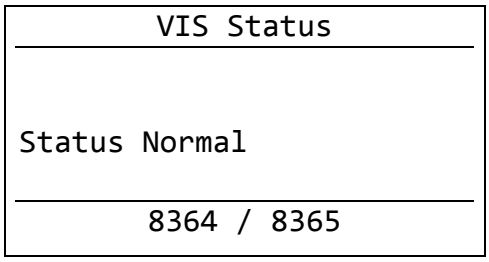
The Visibility sensor screens display the processed sensor data (visibility information), the sensor status, and the raw sensor data (visibility strings). The specific sensor is identified at the bottom of the screen.





If an error is detected, the VIS Configuration screen will display one of the following messages.

8364/8365	Other Sensors
Setup Error	Clean Lenses
Clean Lenses	Data Missing
Configuration Error	Vis Conf Err. Use STD
Data Missing	10s, 3min, ext, mi, 1200
3 Headed Operation	CHECK Visibility
Other Error	POWER and COMM LINES



If the screen shows Visibility Failure, one of the following error codes will also be displayed.

Code	Meaning
MODE0D	Mode 0 direct error
MODE0I	Mode 0 indirect error
MODE1D	Mode 1 direct error
MODE1I	Mode 1 indirect error
D0	Detector 0 failure
D1	Detector 1 failure
D0HT	Detector 0 heater failure
D1HT	Detector 1 heater failure

Code	Meaning
E0	Emitter 0 failure
E1	Emitter 1 failure
E0HT	Emitter 0 heater failure
E1HT	Emitter 1 heater failure
ALHT	ALS head or Day/Night Sensor heater failure
XCHK	Crosscheck error
PS	Power supply failure

```
        VIS Power
─────────────────────────
On AC Power
─────────────────────────
       8364 / 8365
```

```
        VIS String
─────────────────────────
= 2.00 0048 0000 00 04
  10 2 1 0 0 0 75 06
─────────────────────────
       8364 / 8365
```

The VIS Power display may also show `On Battery Power` or `Sensor Not Installed`.

```
   VIS Calibration/Test
─────────────────────────
1 to Calibrate Sensor
2 to Test, # to Exit
─────────────────────────
       8364 / 8365
```

Enter the desired character on the keypad to continue when this screen is reached.

Section 3.9 provides additional information on using these screens to calibrate.

GPS Screen

The GPS screen displays GPS information, the GSV string for GPS satellites in view (GSV), and the recommended minimum specific GPS/transit data (RMC) string.

```
      GPS Information
─────────────────────────
GPS Signal Acquired
Time:
2021/01/23 18:23:16Z
─────────────────────────
       ON-BOARD GPS
```

```
        GSV String
─────────────────────────
  $GPVSV,3,1,11,04,71
,014,20,03,58,178,17
,1648,099,22,09,45,
306,18*77
─────────────────────────
       ON-BOARD GPS
```

```
        RMC String
─────────────────────────
  $GNRMC,182333.000,A
,3906.1353,N,12133.9
666,W,0.10,179.20,23
0121,,,A*69
─────────────────────────
       ON-BOARD GPS
```

System Status Screens

The System Status screens display the DCP status.

```
      System Status
Status:  OK
Battery Chg:  Idle
Network:  DOWN
SD Card:  Searching . .
USB:  OK
```

The main System Status screen shows the DCP status, whether the battery charger is active or idle, whether the network is up or down, and the status for the SD card and the USB drive (Searching…, Mounting…, or OK).

```
      System Detail
VIN:  36.3 V
FET Temp:  28.0 degC
CHG Cur:  -0.09 A
CPU Temp:  37.3 degC
RTC:  3.24 V
```

The System Detail screen shows the detailed system diagnostic information.

- Main input voltage – the highest voltage among the AC input (rectified), DC input, and battery voltages
- FET temperature – main DC/DC power supply operating temperature
- Battery charger current
- CPU temperature
- RTC battery voltage

The RTC backup battery should be replaced when the RTC battery voltage drops below 2.0 V. See Section 4.2.


```
     Battery Charger

FLOAT CHARGE
Current:  -0.09 A
Voltage:  12.79 V
```

The Battery Charger screen shows the detailed battery charging information.

- FLOAT CHARGE LED is displayed when the rechargeable battery (if used) is in the final charging stages or when no battery is connected; see Section 3.3 for additional information
- The current and the voltage indicate the current and voltage being supplied by the battery charger

```
         Network
Link Up
IP:  192.168.5.5
NM:  255.255.255.0
GW:  192.168.5.1
         STATIC
```

The Network screen shows the Network stratus.

- Network link Up or Down
- IP address
- Net Mask
- Gateway
- Whether IP address is static or DHCP

There are also Logging Status screens, which are described in Section 3.8.7.

3.6 CONFIGURATION INFORMATION

The configuration information is stored in EEPROMs on the main board and on the Sensor Interface Board.

- The EEPROM on the Sensor Interface Board stores configuration information, including the SIB number (shown on the Sensor Interface Board as A.x, where x is the SIB number),
- The Main Board has 2 EEPROMs. One stores the system configuration and the other is used to store the MAC address assigned to the Sensor Interface Board (the last three octets of this MAC address are shown on the LCD Display as the serial number). The EEPROM storing the MAC address is read only and cannot be configured.

The Main Board supports both microSD cards and USB flash drives for the purpose of updating the configuration. These devices can be used to import or export the configuration information stored in the EEPROMs using the configuration menus on the LCD Display. Figure 12 shows the locations of the microSD card slot and the USB port. Sections 3.8.5 and 3.8.6 explain how to save or import the calibration information using a microSD card or a USB drive respectively.

Note that the microSD card slot is on the back side of the Main Board.

There are two configuration files.

- **`configuration_x.properties`** resides in the EEPROM on the Main Board, where **`x`** is the SIB number, A.2 or A.3).
- **`configuration_sib.properties`** resides in the EEPROM on the Sensor Interface Board and stores the System/Factory settings, including the SIB number. This file can only be set by the Factory and cannot be saved, changed, or imported by the user.

The microSD card and USB flash drive have to be formatted as FAT, FAT32, or exFAT in order to be recognized by the system.

Section 3.7.2 explains how the system configurations are set.

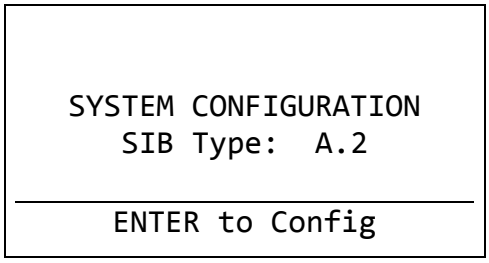
3.7 SENSOR CONFIGURATION SCREENS

The System Configuration screens are Display screens used to configure the Sensor Interface Board (SIB) for the sensors connected to it. These screens follow the Display screens described in Section 3.5 and may be accessed by scrolling through the screens (Figure 69). The configuration data are stored in the configuration EEPROM on the Sensor Interface Board.

Power cycle the DCP to reboot it once the configuration changes are made in order for the changes to take effect.

3.7.1 Sensor Interface Board A.2 *(outside U.S.)*

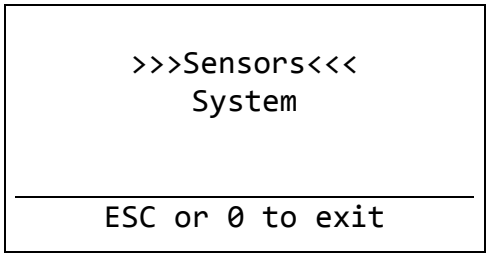
The launch screen for the System Configuration screens identifies the SIB type (see Section 2.3.2), which is also stored in the EEPROM. Press the **ENTER** button below the LCD screen (Figure 69) to begin the configuration.



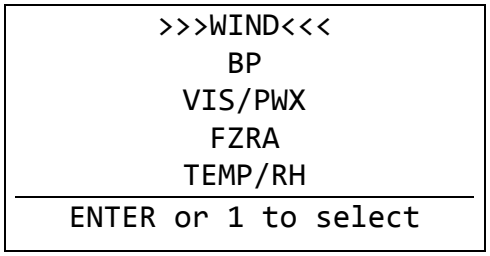
SIB A.2

Once the configuration process is under way, the `ESC or 0 to exit` and `ENTER or 1 to select` options will alternate at the bottom of the screen. Either click the **ESC** or **ENTER** button below the LCD display or click the number on the keypad to make the selection.

Rotate the **ENTER** button below the LCD display or use the ***** and **#** keys on the keypad to scroll through the options. The option selected is between the `>>>` `<<<` symbols.



Select `Sensors` to configure the sensors.



Select the sensor that will be configured.

`Wind`	`VIS`
`BP`	`SOLAR`
`VIS/PWX`	`LTX`
`FZRA`	`TBRG`
`TEMP/RH`	`DAY/NIGHT`
`RAD`	`SURFACE`
`CEILO`	

3.7.1.1 Wind Sensor

```
WIND SENSOR
None
2020/2030
>>>2040/2041<<<
962x
ENTER or 1 to select
```

Select the Wind sensor connected to the DCP from the available options.

3.7.1.2 Barometric Pressure Sensor

```
BP SENSOR
None
>>>7150 Dual<<<
7150-A Triple
7150-B Single
ENTER or 1 to select
```

Select the BP sensor connected to the DCP from the available options.

- 7150 Dual
- 7150-A Triple
- 7150-B Single
- PTB330 Dual
- PTB330-A Triple
- PTB330-B Single

SIB A.2

3.7.1.3 Present Weather Sensors

```
PWX SENSOR
None
6490
6490-I
>>>6498 Legacy<<<
ENTER or 1 to select
```

Select the Present Weather sensor connected to the DCP from the available options.

- 6490
- 6490-I
- 6498 Legacy
- 6498 Direct

- The 6498 Legacy option refers to a sensor in the Model 6498 series connected to the DCP via the Model 2715 Universal Power and Communication Module
- The 6498 Direct option refers to a sensor in the Model 6498 series connected using the Model 1192 DCP for power and communication

3.7.1.4 Freezing Rain Sensor

```
FZRA SENSOR
None
>>>6495/872C3<<<


ENTER or 1 to select
```

Select the Freezing Rain sensor connected to the DCP from the available options.

3.7.1.5 Temperature/Relative Humidity Probes

```
TRH SENSOR
None
>>>5190-F<<<
5190-G
5191
ENTER or 1 to select
```

Select the Temperature/Relative Humidity probe connected to the DCP from the available options.

5190-F
5190-G
5191
962x

3.7.1.6 MARS Radiation Shield

```
RAD SHIELD
None
>>>MARS 8190<<<
SARS
ENTER or 1 to select
```

Select the Radiation Shield for the Temperature/ Relative Humidity probe connected to the DCP from the available options.

3.7.1.7 Ceilometers

```
CEILOMETER
None
>>>8339/8340<<<
ENTER or 1 to select
```

Select the Ceilometer connected to the DCP from the available options.

8339 all variants
8340 all variants

3.7.1.8 Visibility Sensors

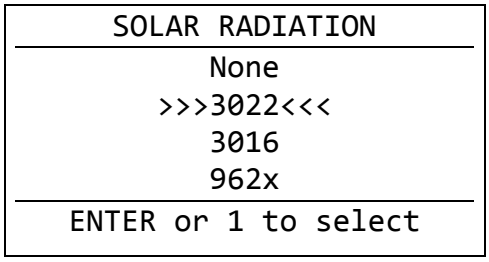
```
VIS SENSOR
None
8364 / 8365
>>>6498 Legacy<<<
6498 Direct
ENTER or 1 to select
```

Select the Visibility sensor connected to the DCP from the available options.

- The 6498 Legacy option refers to a sensor in the Model 6498 series connected to the DCP via the Model 2715 Universal Power and Communication Module
- The 6498 Direct option refers to a sensor in the Model 6498 series connected using the Model 1192 DCP for power and communication

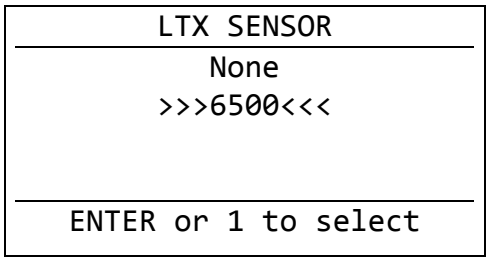
SIB A.2

3.7.1.9 Solar Radiation



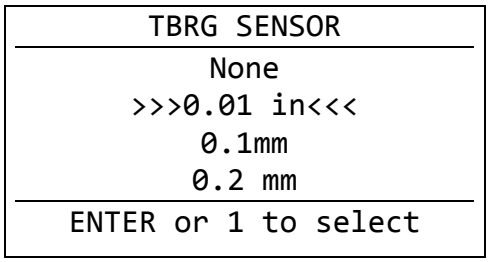
Select the Solar Radiation sensor connected to the DCP from the available options.

3.7.1.10 Thunderstorm/Lightning Detector



Select the Lightning sensor connected to the DCP from the available options.

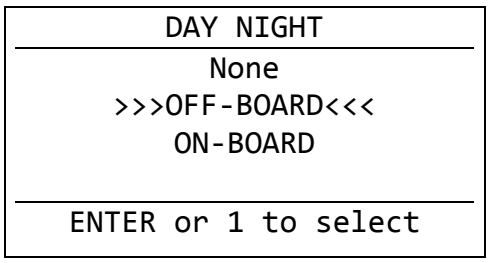
3.7.1.11 Tipping Bucket Rain Gauges



Select the Tipping Bucket Rain Gauge connected to the DCP from the available options.

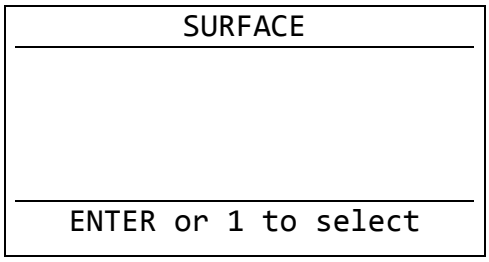
0.01 in
0.1 mm
0.2 mm
962x

3.7.1.12 Day/Night Sensor



Select the Day/Night sensor connected to the DCP from the available options.

3.7.1.13 Surface Sensor

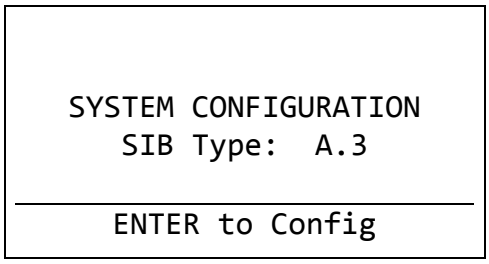


Surface sensors are not supported at this time.

SIB A.2

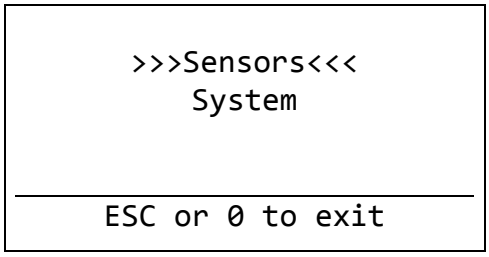
3.7.2 Sensor Interface Board A.3 *(U.S. non-Federal AWOS)*

The launch screen for the System Configuration screens identifies the SIB type (see Section 2.3.2), which is also stored in the EEPROM. Press the **ENTER** button below the LCD screen (Figure 69) to begin the configuration.

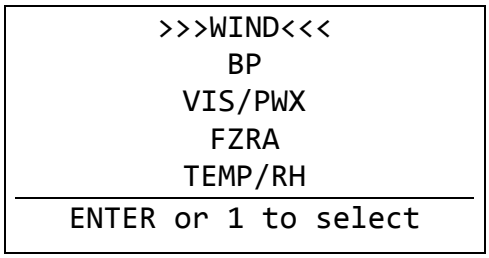


Once the configuration process is under way, the `ESC or 0 to exit` and `ENTER or 1 to select` options will alternate at the bottom of the screen. Either click the **ESC** or **ENTER** button below the LCD display or click the number on the keypad to make the selection.

Rotate the **ENTER** button below the LCD display or use the ***** and **#** keys on the keypad to scroll through the options. The option selected is between the >>> <<< symbols.



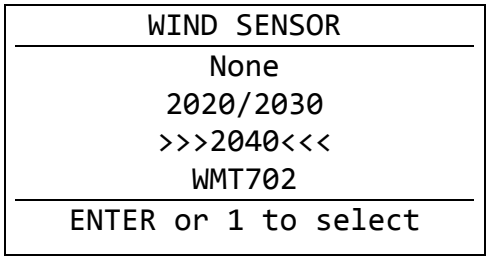
Select `Sensors` to configure the sensors.



Select the sensor that will be configured.

`Wind`	`CEILO`
`BP`	`VIS`
`VIS/PWX`	`SOLAR`
`FZRA`	`LTX`
`TEMP/RH`	`TBRG`
`RAD`	`DAY/NIGHT`

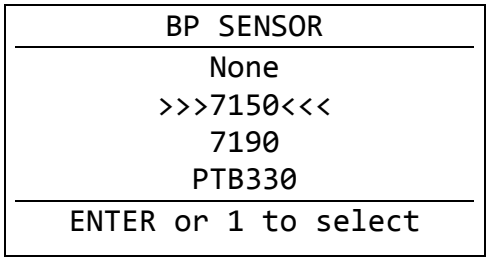
3.7.2.1 Wind Sensor



Select the Wind sensor connected to the DCP from the available options.

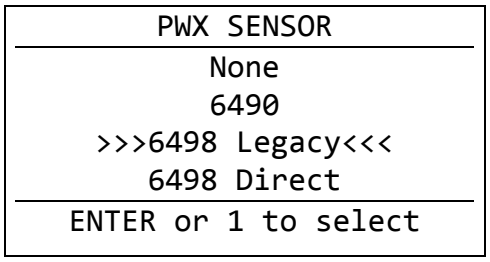
`2020/2030`
`2040`
`WMT702`
`WAC155`

3.7.2.2 Barometric Pressure Sensor



Select the BP sensor connected to the DCP from the available options.

3.7.2.3 Present Weather Sensors



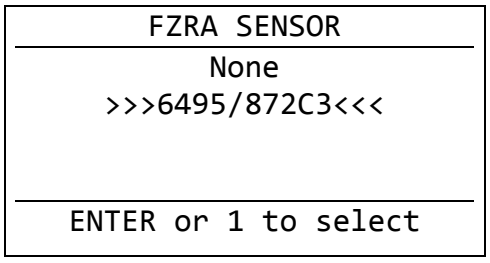
Select the Present Weather sensor connected to the DCP from the available options.

6490
6498 Legacy
6498 Direct
PWD22-CFG06

The 6498 Legacy option refers to a sensor in the Model 6498 series connected to the DCP via the Model 2715 Universal Power and Communication Module.

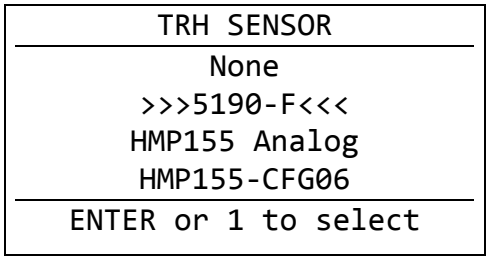
SIB A.3

3.7.2.4 Freezing Rain Sensor



Select the Freezing Rain sensor connected to the DCP from the available options.

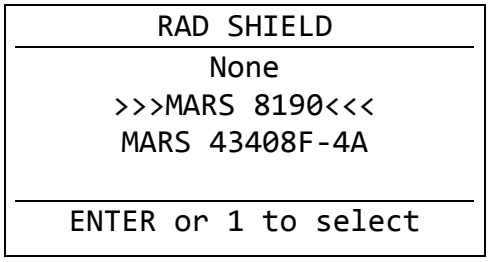
3.7.2.5 Temperature/Relative Humidity Probes



Select the Temperature/Relative Humidity probe connected to the DCP from the available options.

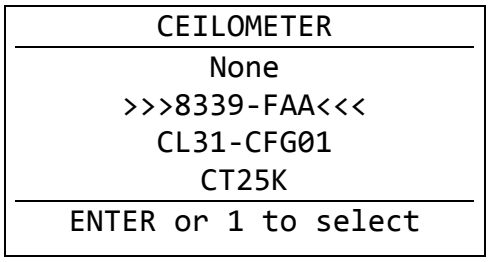
5190-F
HMP155 Analog
HMP155-CFG06
HMP45

3.7.2.6 MARS Radiation Shield



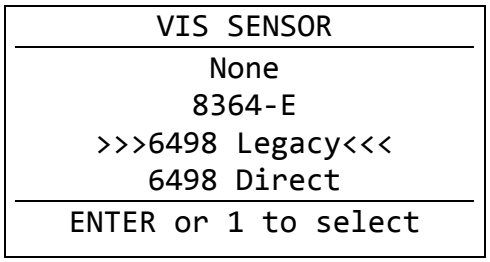
Select the Radiation Shield for the Temperature/ Relative Humidity probe connected to the DCP from the available options.

3.7.2.7 Ceilometers



Select the Ceilometer connected to the DCP from the available options.

3.7.2.8 Visibility Sensors

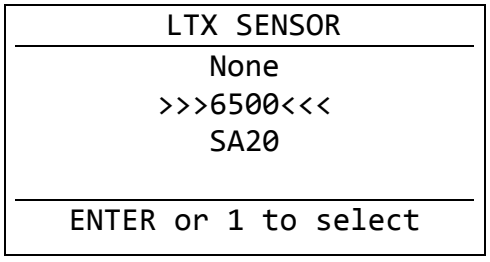


Select the Visibility sensor connected to the DCP from the available options.

8364-E
6498 Legacy
6498 Direct
PWD22-CFG06

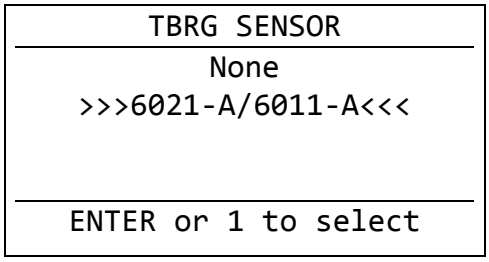
The 6498 Legacy option refers to a sensor in the Model 6498 series connected to the DCP via the Model 2715 Universal Power and Communication Module

3.7.2.9 Thunderstorm/Lightning Detector



Select the Lightning sensor connected to the DCP from the available options.

3.7.2.10 Tipping Bucket Rain Gauges

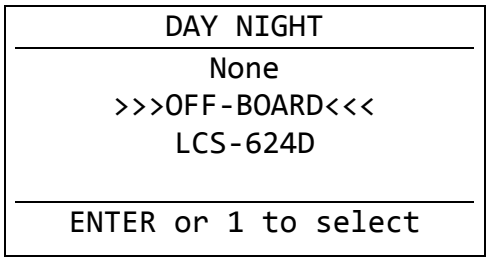


Select the Tipping Bucket Rain Gauge connected to the DCP from the available options.

Select the same option for a Model 6022-A/ 6012-A rain gauge.

Note that a waiver is required to use the Model 6011-A/ 6012-A rain gauges since they do not have a heater.

3.7.2.11 Day/Night Sensor



Select the Day/Night sensor connected to the DCP from the available options.

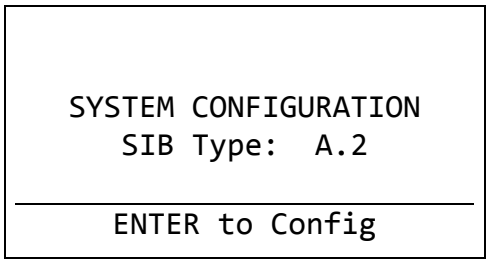
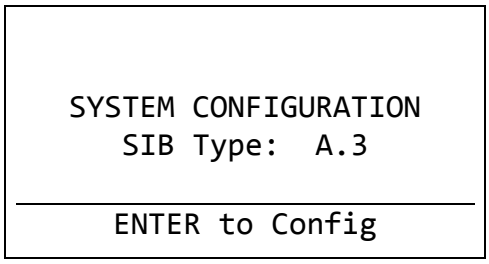
3.8 SYSTEM CONFIGURATION SCREENS

The System Configuration screens are Display screens used to configure system-specific settings. These screens follow the Display screens described in Section 3.5 and may be accessed by scrolling through the screens (Figure 69). The configuration data are stored in the configuration EEPROM on the Sensor Interface Board.

Power cycle the DCP to reboot it once the configuration changes are made in order for the changes to take effect.

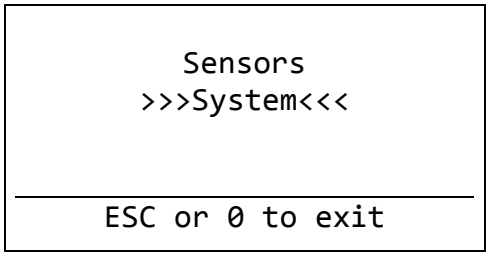
The launch screen for the System Configuration screens identifies the SIB type (see Section 2.3.2), which is stored in one of the EEPROMs on the Sensor Interface Board. The launch screen for each SIB type is shown.

Press the **ENTER** button below the LCD screen (Figure 69) to begin the configuration.

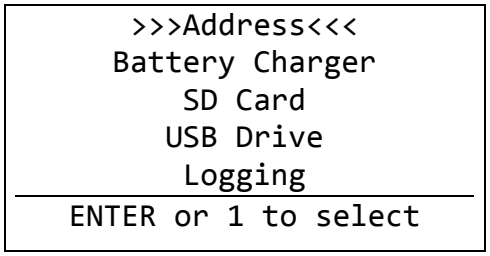
Sensor Interface Board A.2	Sensor Interface Board A.3
	

Once the configuration process is under way, the `ESC or 0 to exit` and `ENTER or 1 to select` options will alternate at the bottom of the screen. Either click the **ESC** or **ENTER** button below the LCD display or click the number on the keypad to make the selection.

Rotate the **ENTER** button below the LCD display or use the ***** and **#** keys on the keypad to scroll through the options. The option selected is between the `>>>` `<<<` symbols.



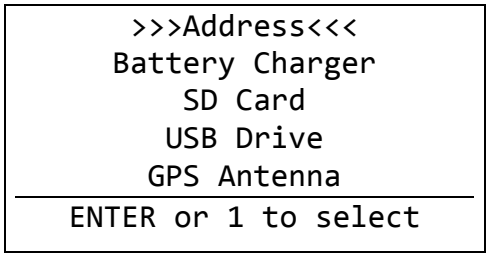
Select `System` to configure the system.



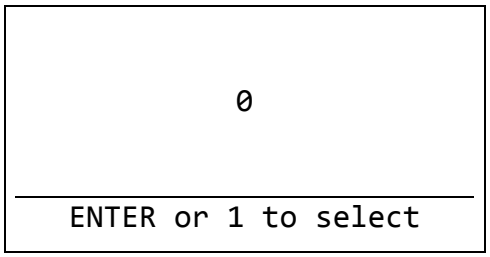
Select which feature will be configured.

`Address`	`Logging`
`Battery Charger`	`GPS Antenna`
`SD Card`	`UHF Radio`
`USB Drive`	`Factory`

3.8.1 System Address



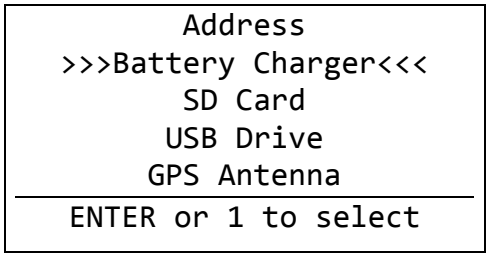
Select Address to set the system address.



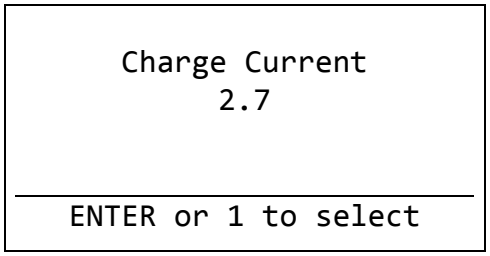
Rotate the **ENTER** button below the LCD screen (Figure 69) until the desired address is reached for the DCP.

The address is always 0 for non-Federal AWOS systems in the U.S.

3.8.2 Battery Charger



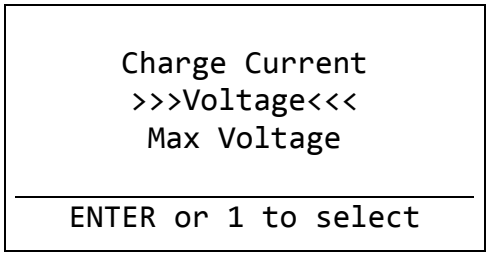
Select Battery Charger to configure the Battery Charger.



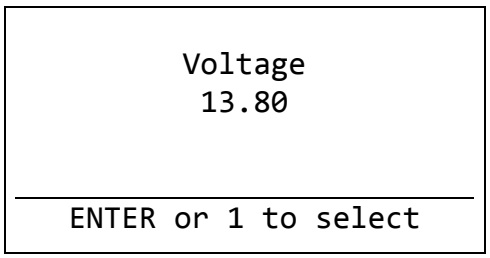
Rotate the **ENTER** button below the LCD screen (Figure 69) until the desired current is for the backup battery.

Refer to Section 3.3 for more detailed information about the battery charging circuit.

3.8.3 Voltage



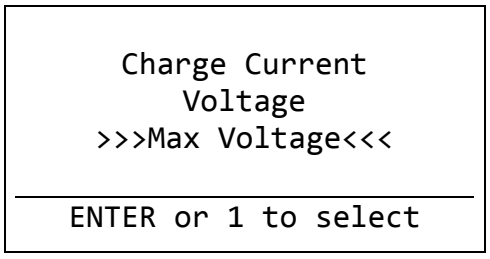
Select the Voltage for the Battery Charger.



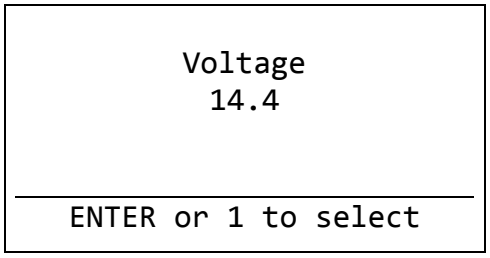
Rotate the **ENTER** button below the LCD screen (Figure 69) until the desired voltage is reached for the backup battery.

Refer to Section 3.3 for more detailed information about the battery charging circuit.

3.8.4 Maximum Voltage



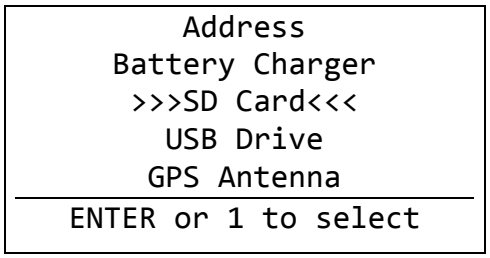
Select the maximum voltage for the Battery Charger.



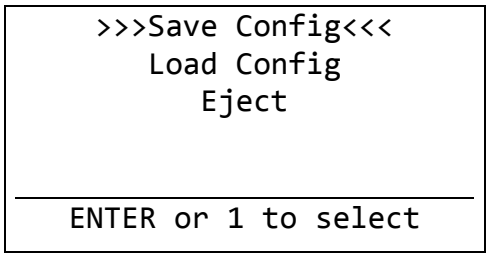
Rotate the **ENTER** button below the LCD screen (Figure 69) until the desired voltage is reached for the backup battery.

Refer to Section 3.3 for more detailed information about the battery charging circuit.

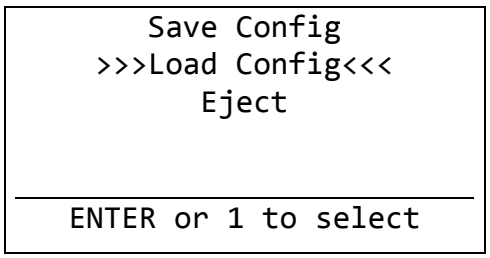
3.8.5 SD Card



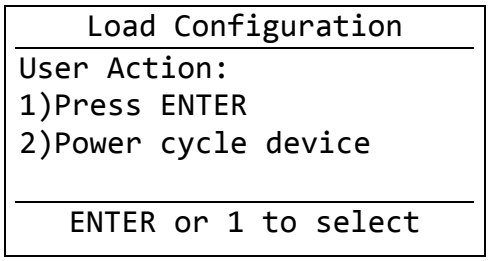
Select if the microSD Card will be used to save or load configuration files.



Select Save Config to save the existing configuration from the DCP EEPROM to the microSD card.

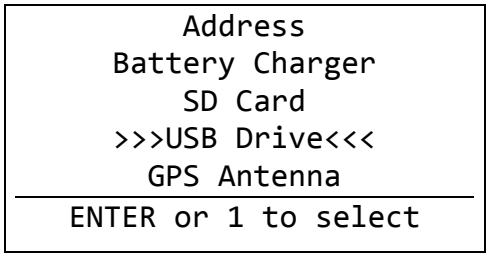


Select Load Config to load the configuration from the microSD card to the DCP EEPROM.

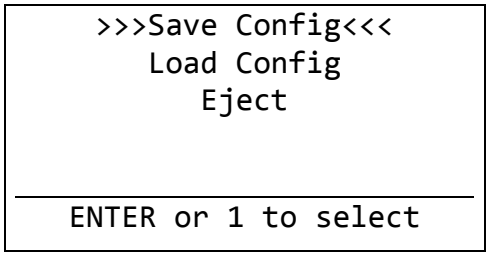


Follow these instructions to complete loading the configuration from the microSD card to the DCP EEPROM. A reboot of the system is required for the changes to take effect.

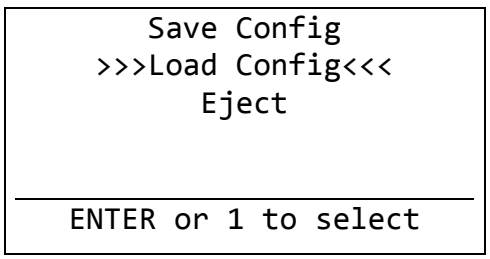
3.8.6 USB Drive



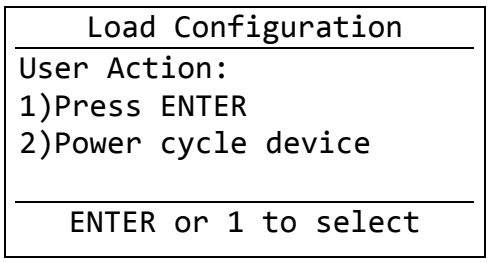
Select if the USB Drive will be used to save or load configuration files.



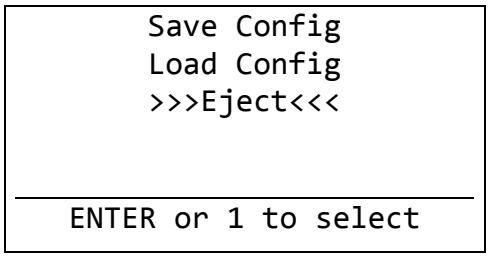
Select Save Config to save the existing configuration from the DCP EEPROM to the USB Drive.



Select Load Config to load the configuration from the USB Drive to the DCP EEPROM.



Follow these instructions to complete loading the configuration from the USB Drive to the DCP EEPROM. A reboot of the system is required for the changes to take effect.

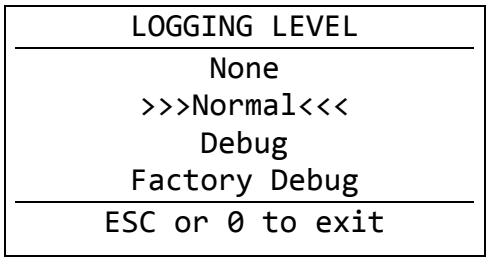


It is good practice to `Eject` the USB Drive once the configuration files have been saved or loaded.

3.8.7 Logging

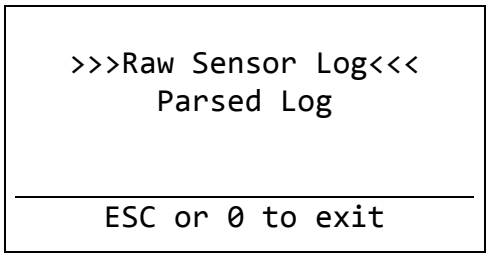
Logging enables sensor data being exchanged with the DCP to be logged. Two types of log files are generated for each sensor.

- Raw sensor logs collect the data sent to and received back from the sensor.
- Parsed logs are logs that are written periodically in CSV format. The configuration screen allows the logging period to be set between 1 second and 60 minutes.



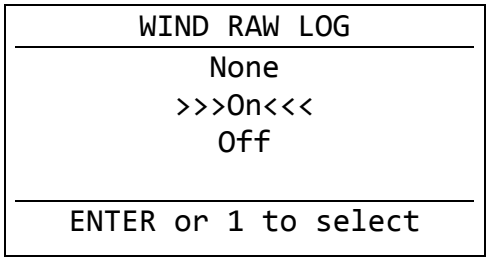
Select the Logging Level.

- None — no logging will be done.
- Normal — normal logging selection.
- Debug and Factory Debug — Reserved for factory use.

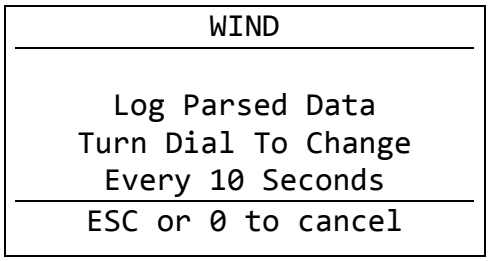


Select `Raw Sensor Log` or `Parsed Log`.

The remaining screens are similar for each sensor.



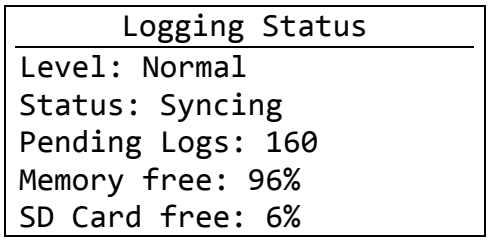
If raw sensor logs were selected, this screen is used to select whether sensor logs will be collected for the sensor shown. The default value is On.



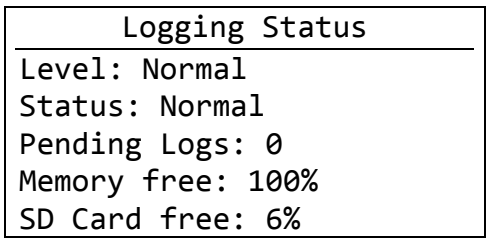
If parsed logs were selected, this screen is used to select to select the logging period, which can be from 1 second to 60 minutes. Rotate the selection knob until the desired logging period is shown, then click or press 1 on the keypad to finalize the selection.

Log files can only be stored on a microSD card; the microSD card must be inserted. Follow the instructions in Section 3.8.5 to eject the microSD card when you need to review the logs.

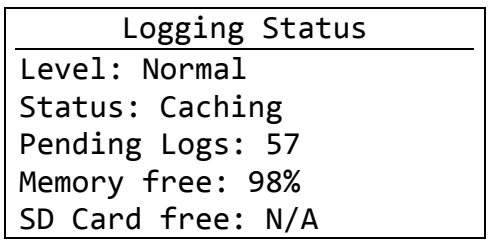
The following Logging Status screens can be accessed along with the other A.2 System Status Screens or A.3 System Status Screens.



This status screen is displayed when a microSD card is inserted while the DCP is already on and set up for logging. This means logs are being synchronized from the internal storage to the microSD card.

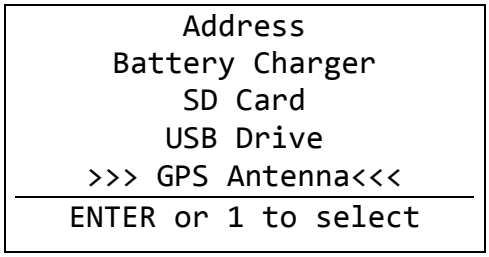


This status screen is displayed once all the cached log files have been written to the microSD card and logging is taking place normally.

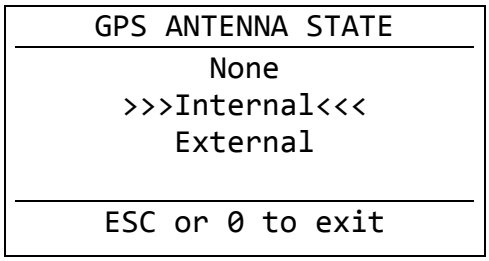


This status screen is displayed once the microSD card is ejected.

3.8.8 GPS Antenna

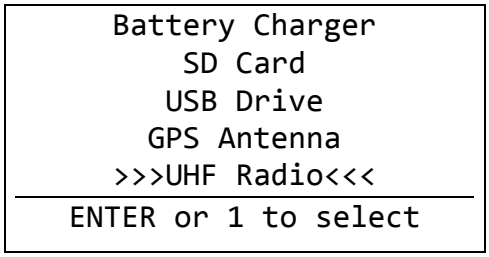


Select to set the GPS Antenna.



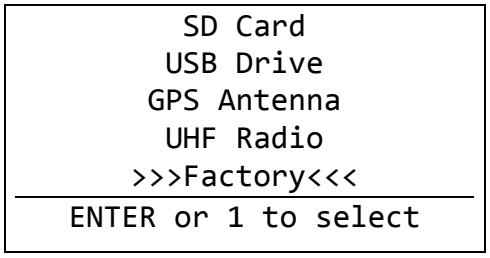
Select `Internal` or `External` GPS antenna. The default selection is `Internal`.

3.8.9 UHF Radio



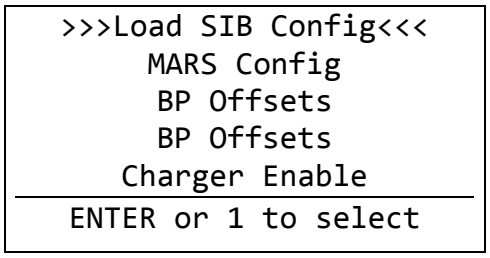
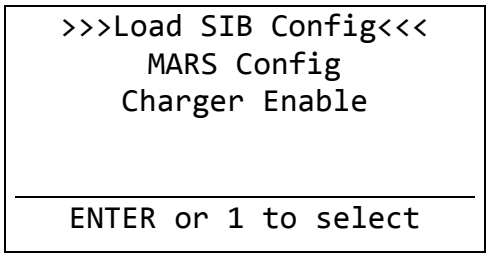
Select to send data to test the UHF radio. Section 3.10 explains the steps in the test.

3.8.10 Factory

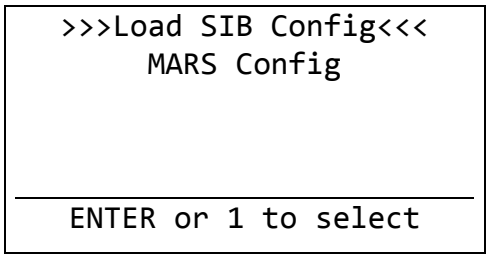


Select Factory to set the configurations normally set at the Factory.

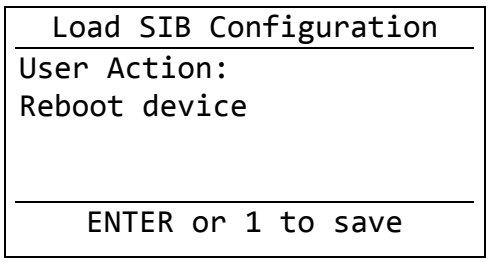
Select which Factory configuration to set up. *Note that* BP Offsets *are not available on SIB Type A.3 since they are not used with domestic non-Federal AWOS systems.*

Sensor Interface Board A.2	Sensor Interface Board A.3
	

SIB Configuration

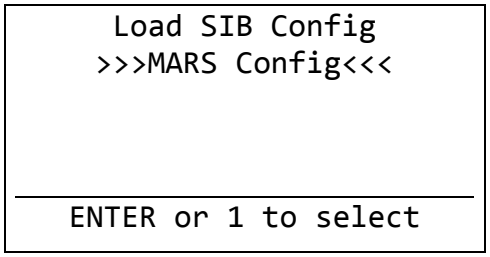


Select Load SIB Config to load the SIB configuration files.

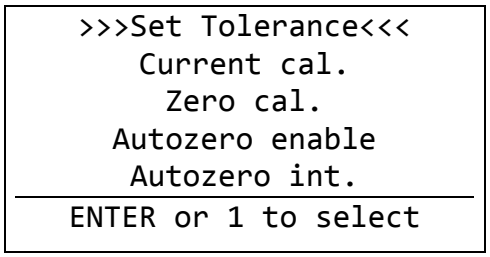


Follow these instructions to complete loading the configuration files.

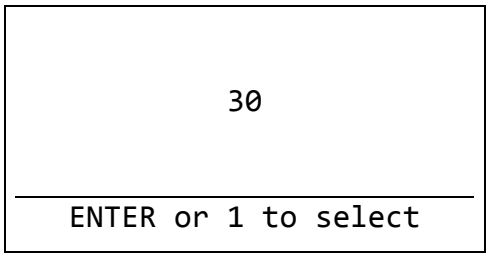
MARS Configuration



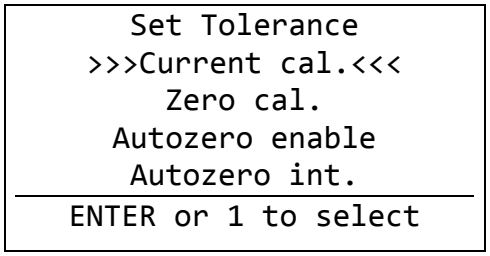
Select MARS Config to configure the MARS.



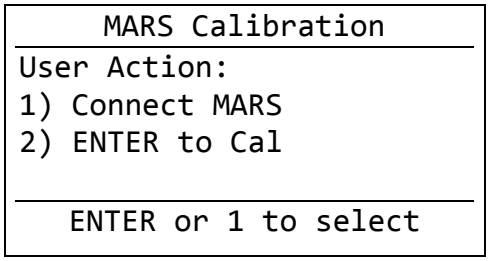
First, Set Tolerance.



Rotate the **ENTER** button below the LCD screen (Figure 69) until the desired tolerance (30 is recommended) is reached.



Now select Current cal..



Follow these instructions to complete calibrating the MARS. The calibration is complete when the screen returns to the previous menu.

Set Tolerance Current cal. >>>Zero cal.<<< Autozero enable Autozero int.
ENTER or 1 to select

Select `Current cal.` to tell the DCP what the current reading is when there is no current. You will be prompted to disconnect the MARS (holding the MARS test switch has the same effect) and press **ENTER**.

Set Tolerance Current cal. Zero cal. >>>Autozero enable<<< Autozero int.
ENTER or 1 to select

Use `Autozero enable` to enable or disable the DCP to shut down the 12V rail (which disables the MARS) periodically and read the "zero current" value.

Set Tolerance Current cal. Zero cal. Autozero enable >>>Autozero int.<<<
ENTER or 1 to select

Now select `Autozero int.` to specify the interval between autozero attempts; it can be set between 1 and 24 hours. When `Autozero enable` is disabled, this setting has no effect.

BP Offsets

Note that `BP Offsets` *are not available on SIB Type A.3 since they are not used with domestic non-Federal AWOS systems.*

>>>BP Offset 1<<< BP Offset 2 BP Offset 3
ENTER or 1 to select

Select BP Offset to set. Note that the number of offsets depends on which BP sensor was configured (Section 3.7.2.2).

Units inHg 0.005
ENTER or 1 to accept

Rotate the **ENTER** button below the LCD screen (Figure 69) until the desired offset is showing.

The instructions for all the offsets are the same.

Charger Enable

```
BATTERY CHARGE ENABLE
        None
         OFF
      >>>ON<<<

ENTER or 1 to select
```

Select whether to enable the Battery Charger.

The Battery Charger should be enabled if a backup battery is present.

3.8.11 Network Parameters

The network parameters shown on the System Status screens in Sections 3.5.1 and 3.5.2 cannot be set through the System Configuration screens in Section 0.

The network parameters are stored in the **configuration_x.properties** file described in Section 3.6, where **x** is the SIB number, and can only be set or changed in this configuration file by editing the file. Follow the instructions in Section 3.8.5 or 3.8.6, depending on whether a microSD card or a USB drive is used to copy or load the configuration files.

NOTE: The default settings for the device are to look for a DHCP address and if one cannot be found, the device will be assigned its default IP Address.

These are the network parameters found in the **configuration_x.properties** configuration file.

```
CDP TCP PORT=2101
IP_ADDR_0=192
IP_ADDR_1=168
IP_ADDR_2=5
IP_ADDR_3=10
SUBNET_MASK_0=255
SUBNET_MASK_1=255
SUBNET_MASK_2=255
SUBNET_MASK_3=0
GW_ADDR_0=192
GW_ADDR_1=168
GW_ADDR_2=5
GW_ADDR_3=1
IP_MODE=0
```

For DHCP IP_MODE=1, no IP_ADDR, SUBNET_MASK, or GW_ADDR is needed.

The CDP TCP PORT defaults to 2101 and network parameters shown above provide the override to change it.

3.9 MODEL 8364-E/8365 VISIBILITY SENSOR CALIBRATION AND TESTING

This section explains how to use the built-in features of the Model 1192 Data Collection Platform to calibrate and test Model 8364-E/8365 Visibility Sensors.

Start by accessing the Visibility Sensor display screens as described in Section 3.5.1 (***Visibility Sensor Screens***) or Section 3.5.2 (***Visibility Sensor Screens***). Continue until The Test or Calibrate options are presented.

```
   VIS Calibration/Test

1 to Calibrate Sensor
2 to Test, # to Exit

       8364 / 8365
```

Press the desired character on the keypad to continue when this screen is reached.

- 1 to calibrate
- 2 to test
- 0 to exit

3.9.1 Calibrate

Follow the instructions on the LCD screen, which match the calibration instructions in the User's Manual for the corresponding Visibility Sensor. This feature allows the DCP to be used to calibrate the Visibility Sensor in lieu of the handheld terminal.

```
   VIS Calibration/Test

Enter Cal Id * for .
# when done  xx.xxx

       8364 / 8365
```

Enter the Cal ID # shown on the calibration paddle's label using the keypad, then press # when done. Use the * key to enter a decimal point.

```
   VIS Calibration/Test

Clean windows.
# when done

       8364 / 8365
```

Clean windows, then press # when done.

```
   VIS Calibration/Test

Insert paddle.
# when done

       8364 / 8365
```

The calibration averaging cycle is started. The progress is indicated on the display. When complete, a prompt to insert the calibration paddle is displayed. Press # to when the paddle is inserted.

```
   VIS Calibration/Test

Remove paddle.
# when done

       8364 / 8365
```

The calibration averaging cycle is started. The progress is indicated on the display. When complete, a prompt to remove the calibration paddle is displayed. Press # to when the paddle is removed.

```
   VIS Calibration/Test

Cover emitters.
# when done

       8364 / 8365
```

Cover the emitters and press # when done.

```
   VIS Calibration/Test

Remove covers.
# when done

       8364 / 8365
```

The calibration averaging cycle is started. The progress is indicated on the display. When complete, a prompt to remove the covers is displayed. Press # to when the covers are removed.

```
   VIS Calibration/Test

Cal Fctr:  Old = 54.908
New = 54.738  # when done

       8364 / 8365
```

Old and new calibration factors are displayed. Press # to continue.

```
   VIS Calibration/Test

% Change = 0.3
# = Accept  * = Reject

       8364 / 8365
```

A percentage change in calibration factor is displayed. Press # accept the change or press * to reject the change.

```
   VIS Calibration/Test

1 to Calibrate Sensor
2 to Test, # to Exit

       8364 / 8365
```

The calibration/test prompt is displayed again. Calibration is complete. Press the desired character on the keypad to continue when this screen is reached.

- 1 to calibrate
- 2 to test
- # to exit

3.9.2 Test Mode

The various tests made in isolating a problem are initiated through the Test Mode. Follow the instructions on the LCD screen, which match the Test Mode instructions in the User's Manual for the corresponding Visibility Sensor. This feature allows the DCP to be used to test the Visibility Sensor in lieu of the handheld terminal.

Test Menu

First, the Test menu is displayed. Press the desired character on the keypad to select the desired test.

1 Sensor status
2 Diagnostic menu
3 Test Mode 0
4 Test Mode 1
0 to exit

A test result will be displayed. Press # when finished viewing the test result to return to this Test menu.

Instead of a test result, selecting the Diagnostic menu will provide additional test options as explained below.

Diagnostic Menu

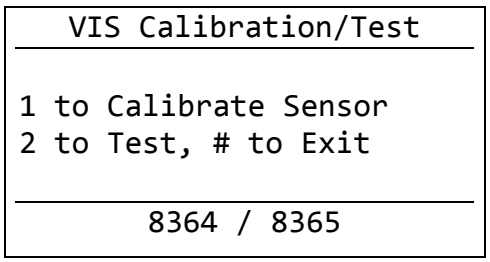
The Diagnostic menu is displayed. Press the desired character on the keypad to select the desired test.

1 RAM test
2 ROM test
3 Power data
4 Nonvolatile memory
0 to exit

The test result will be displayed. Press **#** when finished viewing the test result to return to the Diagnostic menu.

Press **0** when finished to return to the Test menu.

Press **0** when finished to exit the Test menu.



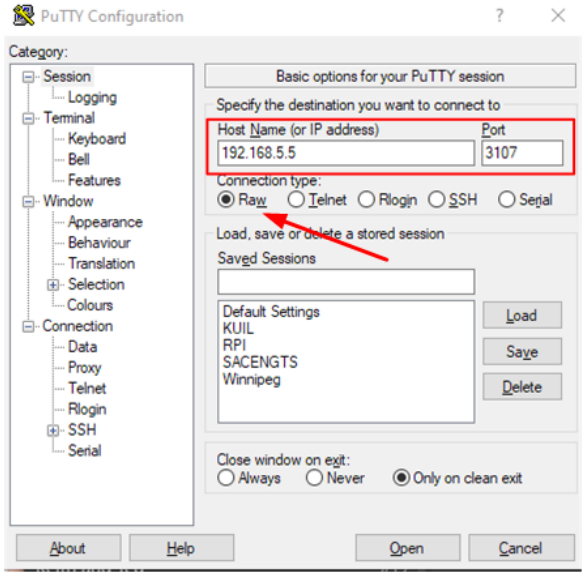
The calibration/test prompt is displayed when you exit the Test menu. Press the desired character on the keypad to continue when this screen is reached.

1 to calibrate
2 to test
to exit

3.10 MODEL 6498-DC-V/6498-DC-PV VISIBILITY SENSOR CALIBRATION

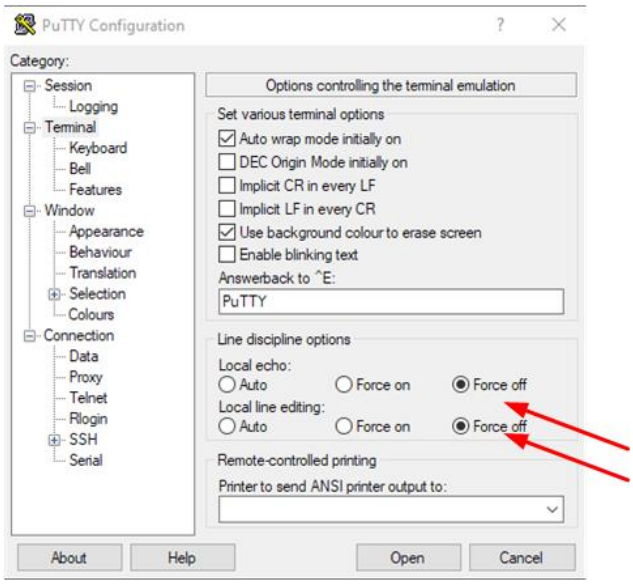
This section explains how to use the built-in features of the Model 1192 Data Collection Platform to perform visibility calibrations for the 6498-DC series of Present Weather/Visibility sensors. *Note that these instructions apply only to the Direct Connect sensors, which have DC in their model number.*

1. Connect a laptop to the DCP using a standard CAT5/6 cable. (Administrator access is required to perform the steps in this procedure.)
2. Navigate to the *Control Panel > Network and Sharing Center* and then click on **Change Adapter** settings.
3. Right-click on the network adapter connected to the DCP and click **Properties**.
4. Select **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**.
5. Enter the information shown here.
   IP Address: 192.168.5.20
   Subnet mask: 255.255.255.0
   Default gateway: 192.168.5.1
   DNS information can be left blank.
   Click **OK**.
6. Click **Close**.
7. Open a terminal emulation utility such as Putty on the test computer.
8. Enter 192.168.5.5 for the host name and 3107 for the port.



The screenshots were obtained using Putty v 0.71 on a Windows 10 computer. Other terminal emulation utilities and operating systems may be used. Please contact AWI Customer Service for additional assistance if needed.

9. Click on Terminal in the list on the left and set Local echo to **Force off** and Local line editing to **Force off**.



10. Click **Open**. The 6498 setup menu will appear. Follow the instructions in the ***Model 6498 User's Manual*** or the ***Model 6498 Calibration Technical Bulletin*** to perform the calibration.

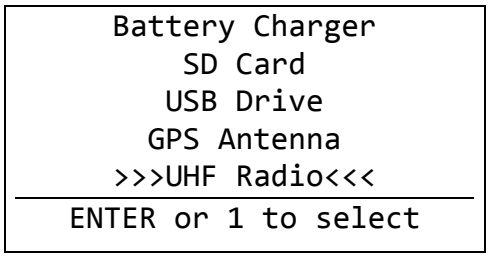
```
WELCOME TO THE AWI 6498 SETUP
MENU
ID 0
S/N 1003
(1) Message output menu
(2) User alarm menu
(3) Calibrate AWI 6498
(4) System information
(5) Communications setup
(6) System configuration

(9) Exit and save
(0) Exit and don't save
->
```

3.11 PWD22-CFG06 VISIBILITY SENSOR CALIBRATION

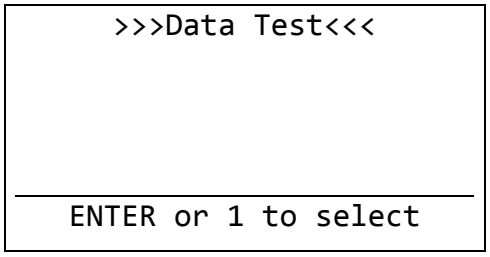
Refer to the ***M210543EN-F Vaisala PWD22 Present Weather Detector User's Guide*** for details on how to check the visibility calibration using the PWA12 calibration kit.

3.12 UHF RADIO DATA TEST

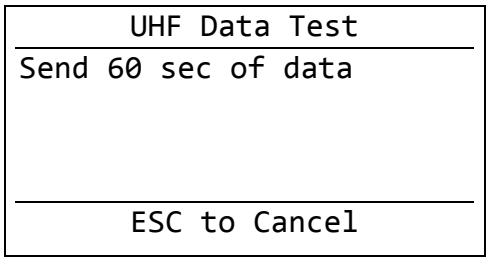
Select the `UHF Radio` option as explained in Section 3.8.9 to send data to test the UHF radio.



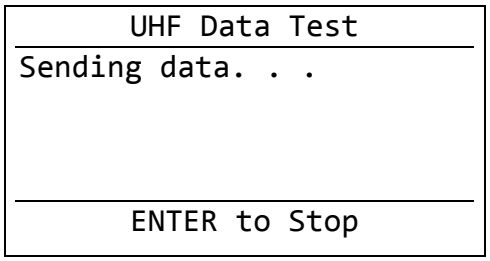
Select to send data to test the UHF radio.



Press **ENTER** or press **1** on the keypad to start the data test; press **ESC** or press **0** on the keypad to exit.



Press **ESC** to cancel the request to send data if this is not needed.



Click the **ENTER** button below the LCD screen (Figure 69) to stop sending data or wait for 60 seconds.

3.13 INCREASE PRECISION OF AUX INPUT GAIN SETTINGS

The precision for the default gain settings is limited by the cumulative precision of the components in the circuit. If a specific application requires a better precision, the R1 trimmer resistor can be used to do that.

Trimmer resistor R1 located above the DIP switches for the **AUX** terminal block **J16** (Figure 70) can be used to fine-tune the x10 and x50 gain values.

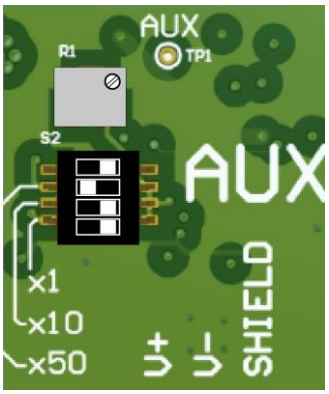


Figure 70. Location of Trimmer Resistor R1

Follow these instructions to adjust the gain.

1. Connect a known reference voltage to the **AUX** input.
2. Adjust the trimmer resistor until the desired value is displayed on the AUX Information screen (see ***Solar Radiation Screen***).

4. MAINTENANCE

No regular maintenance is required with the Model 1192 Data Collection Platform, other than verifying periodically that all cables are connected and in good condition and checking the real-time clock battery voltage.

The test points shown in Figure 71 allow the Sensor Interface Board and its associated circuits to be checked for troubleshooting.

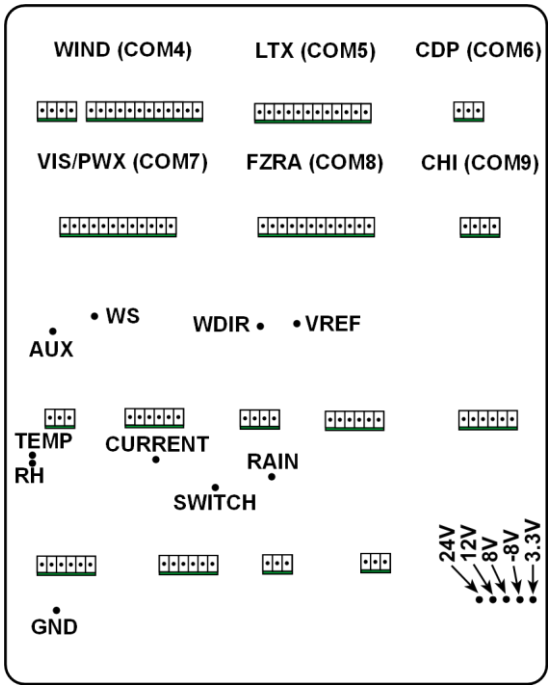


Figure 71. Sensor Interface Board A.2 and A.3 Test Points

The measurements are made between the test point and GND.

- **AUX** is the analog voltage level (V+) for the solar radiation sensor after conditioning circuits as supplied to the A/D converter (not used on Sensor Interface Board A.3) to verify that the analog input works as expected.
- **WS** is the wind speed frequency signal (SIG).
- **WDIR**, **TEMP**, and **RH** are analog voltages after conditioning circuits as supplied to the A/D converter. These are useful to verify that the analog inputs work as expected.
- **VREF** is a reference voltage that should be 3.000 ± 0.005 V.
- **CURRENT** is a voltage signal, V_{out}, proportional to the MARS fan current.

$$V_{out} = (0.4\ \mathrm{V}/A) \times \mathrm{I} + 0.25\ \mathrm{V} \quad \text{where } I \text{ is the current in A}$$

- **SWITCH** signal is not available from the AWI MARS.

- **RAIN** is the rain gauge signal. When the tipping bucket is tipping, a pulse should be observed on the test point.
- **24V** or **12V** are for powering external sensors. So if a sensor is not working, these are good to check.
- **+8 V** and **-8V** power the analog conditioning circuits.
- **3.3V** is the voltage source for most of the digital circuitry.

4.1 DIAGNOSTIC SUPPORT

Diagnostic support is provided by the DCP for other equipment.

- Hold the spring-loaded **MARS TEST** switch next to the MARS terminal block down to turn the MARS fan off to simulate a fan failure. The switch is normally up, the ON position.

  The simulated fan failure is part of the MARS triannual maintenance checks with an AWOS to make sure the diagnostic system is reporting failures correctly.

- Access the UHF radio data test using the Display screens as explained in Section 3.10 to send test data. This feature is used in the annual revalidation check for the UHF radio and is useful for troubleshooting UHF radio problems and issues with the associated cables and antennas.

4.2 REAL-TIME CLOCK BATTERY

Check the battery voltage for the real-time clock by looking at the `System Detail` screen as explained in Sections 3.5.1 (***System Status Screens***) and 3.5.2 (***System Status Screens***). This maintenance step should be performed triannually, and the RTC backup battery should be replaced when the RTC battery voltage drops below 2.0 V.

The real-time clock CR2032 battery (M438159-00) is located in a battery holder on the Main Board. The Serial Interface Board has to be removed to access the battery holder.

3. Turn the power off to the DCP with both the circuit breaker and the ON/OFF switch.
4. The Serial Interface Board is secured to the Main Board using spacers and screws. Remove the screws and unplug the Serial Interface Board, being careful not to bend the pins that are plugged into the Main Board sockets. The terminal block plugs for the sensors may be left plugged in. Set the screws and washers aside.
5. Slide out the old CR2032 battery and replace it with a fresh battery.
6. Align the pins of the Serial Interface Board with their sockets on the Main Board and carefully plug the Serial Interface Board into the sockets on Main Board.
7. Secure the Serial Interface Board using the screws and washers set aside previously.
8. Turn the circuit breaker and the ON/OFF switch on to restore power to the DCP.
9. Check the RTC voltage to verify the battery was replaced correctly and is working.

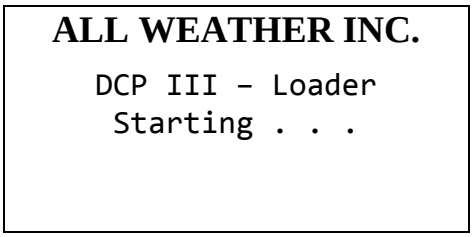
4.3 FIRMWARE UPDATES

Install firmware updates using the built- in boot loader on the Model 1192 Data Collection Platform. The firmware update must be on a microSD card, which is inserted into the microSD card slot near the top right of the Main Board (Figure 12). The firmware update file must be named `dcp3.bin` and must be in the root of the microSD card's file system. The microSD card must be formatted as FAT, FAT32 or exFAT. A successful boot loader session will end with a confirmation message and the background of the LCD will be green. If a failure occurs during the boot loader session, an error message will be displayed and the background of the LCD will be red.

Upon each boot, the bootloader runs a series of memory tests on the processors' internal memory. The result of the test is displayed before jumping to the main application. Should a memory error be detected, the processor will not boot and will stay on the boot loader's test screen.

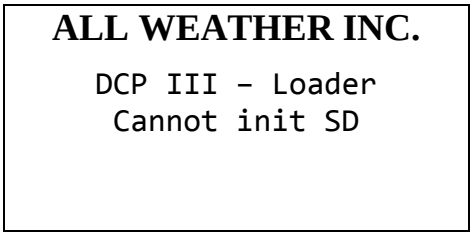
Follow these instructions once the microSD card with the firmware update has been inserted,

1. Press and hold down the ESC button while turning on the DCP.

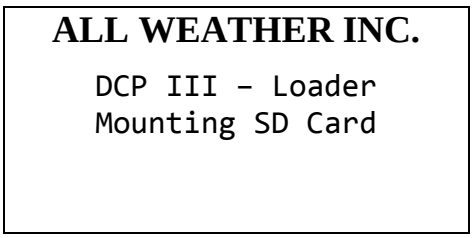


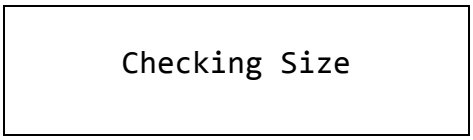
2. This screen will display if there is a problem with the microSD card, for example, it has not been inserted.

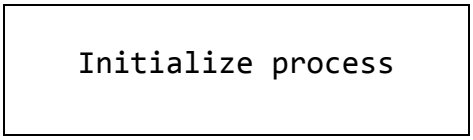
   If this happens, turn the DCP off and insert or reinsert the microSD card before turning it back on.

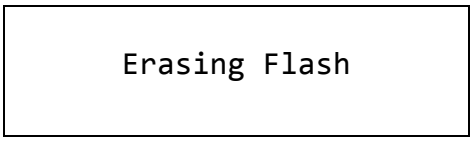


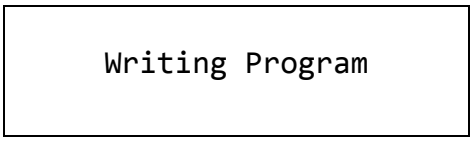
3. Once the microSD card is being read correctly, a series of screens will be displayed as the firmware update progresses.

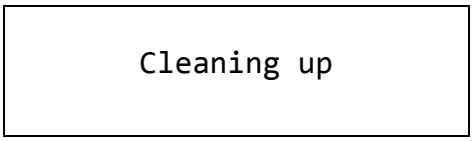




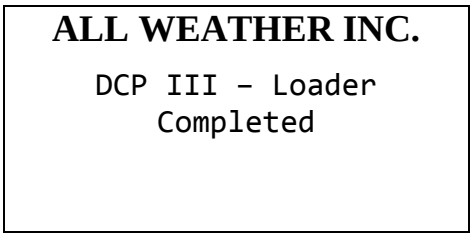








4. Once the final screen has displayed, the regular launch screen (Section 3.5) will appear, indicating that the firmware update is complete.



5. SPECIFICATIONS

Parameter	Specification	
	1192 & 1192-120	1192-240
Display	64 × 128 Graphic LCD Display backlit and heated	
Keypad	12-character keypad	
Connectors	Pluggable Terminal Blocks	
GPS	Onboard GPS receiver	
Real-Time Clock	32.768 kHz crystal	
Processor	32-bit ARM with Real-Time Operating System, 1.5 MB Internal RAM, up to 400 MHz	
External Memory (FAT, FAT32, and exFAT file systems supported)	microSD Card or USB Flash Drive up to 32 GB	
Electrical		
AC Voltage	108–132 V AC, 2.5 A 55–65 Hz	216–264 V AC, 1.25 A 55–65 Hz
	Protected by 15 A circuit breaker	
External Supply Voltage *(optional)*	24 V AC	
	12–48 V DC	
	12 V Battery	
Backup Battery	12 V DC, 5 A•h	
	Protected by 7.5 A mini ATC/ATO fuse	
Individually Configurable Serial Ports		
Serial Ports	13 (10 available for Sensor Interface Board)	
Serial Protocols	RS-485 (half duplex) RS-485 (full duplex) 3-wire RS-232 (no flow control)	
Serial Baud Rates	300 to 115200 bps	
Other I/O		
General Purpose I/O	25	
Analog Inputs	Eight 24-bit oversampled channels: 0 V to 3 V	

Parameter		Specification	
		1192 & 1192-120	1192-240
Ethernet Port			
TCP/IP		10/100Base-T	
Connector		RJ-45 Jack	
Environmental			
Operating Temperature		-40 to +70ºC (-40 to +158ºF)	
Storage Temperature		-40 to +85ºC (-40 to +185ºF)	
Humidity		0–100% (noncondensing)	
Mechanical			
Enclosure		NEMA 4X (IP 66)	
Dimensions	Polycarbonate Enclosure	14" W × 20" H × 6" D (36 cm W × 51 cm H × 15 cm D)	
	Aluminum, Stainless Steel Enclosure	24" W × 24" H × 6" D (61 cm W × 61 cm H × 15 cm D)	
Mounting	Enclosure	Tower/Pole Mount (2" to 3" O.D.)	
Weight		12 kg (26 lb)	
Shipping Weight		16 kg (35 lb)	
Compliance			
EMI/RFI		MIL-STD-461G	
ESD/Surge/Overvoltage Protection		IEC 61000-4-2, IEC 61000-4-4, IEC 61000-4-5)	

6. WARRANTY

This equipment has been manufactured and will perform in accordance with requirements of FAA Advisory Circular 150/5220-16B. Any defect in design, materials, or workmanship which may occur during proper and normal use during a period of 1 year from date of installation or a maximum of 2 years from shipment will be corrected by repair or replacement by All Weather Inc.

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