INSTALLATION INSTRUCTIONS

NMEA 0183 *to* USB

Data Converter

04/06/21

for WeatherStation® Instrument, GPS Receiver, *or* Heading Sensor — 33-1081-01

for WeatherStation® 120WXH *or* 220WXH & cable run >20m (60′) — 33-801-01

Patent http://www.airmar.com/patent.html

17-491-01-rev.8

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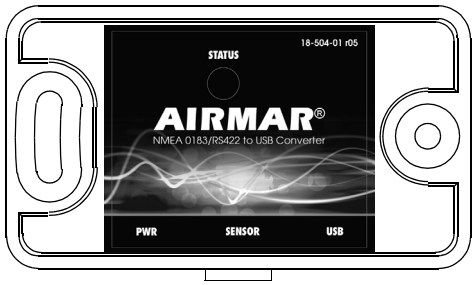

Follow the safety precautions below to reduce the risk of poor product performance, property damage, personal injury, and/or death.

WARNING: Always wear safety glasses, a dust mask, and ear protection when installing.

WARNING: The power supply must be OFF before proceeding with the installation.

WARNING: The power supply voltage must be that specified for the product and model. Refer to the owner's guide that came with the product.

WARNING: A safe installation requires a 0.5amp fast-blow fuse or circuit breaker.
WeatherStation® Instrument with Heater requires a 3amp fast-blow fuse or circuit breaker.

WARNING: Make power connections to a power source that is isolated from the engine start battery(s). Voltage drops may cause the WeatherStation Instrument, GPS Receiver, or Heading Sensor to lose information and/or change operating mode.

CAUTION: **WeatherStation Instrument with Heater**— It is recommended to use the same 24VDC power supply for both the WeatherStation Instrument and the heater. If using separate power sources, ensure that the supply grounds are common.

CAUTION: **WeatherStation Instrument with Heater**— The power to the heater is greatly affected by the length of the cable. If the total cable run is greater than 20m (60′), use a junction box and 14AWG wire to connect to the 24VDC power supply. This will ensure there is enough power for the heater to function properly.

IMPORTANT: Read the instructions completely before proceeding with the installation. These instructions supersede any other instructions in your instrument manual if they differ.

NOTE: The WeatherStation® Instrument, GPS Receiver, and Heading Sensor will sometimes be refereed to as "sensor" in this owner's guide.

Applications

The Data Converter allows information from a WeatherStation Instrument, GPS Receiver, or Heading Sensor to be displayed on a PC by converting the data from NMEA 0183 to USB format.

Specifications

Standard: RS-422
Baud rate: 4,800

Tools & Materials

Safety glasses
Dust mask
Ear protection
Pencil
Electric drill
Drill bit: 3mm *or* 1/8"
Grommets (some installations)
Cutting pliers
Wire strippers
Heat-shrink tubing
Heat gun
Screwdrivers
Multimeter
Installation of WeatherStation Instrument with heater and cable longer than 20m (60′)
- Junction box with 9 terminals
- Power wire (14AWG, color red)
- Power wire (14AWG, color black
- Cable ties

Cable Routing & Connecting Guidelines

CAUTION: To reduce electrical interference from other electrical wiring and any on-board equipment with strong magnetic fields such as radar equipment, radio transmitters, engines, generators, etc., separate the cables by at least 1m (3'). Ensure that all the cable shields are appropriately grounded.

CAUTION: Do not remove the waterproof connector(s) to ease cable routing. Removing the waterproof connector will void the warranty.

CAUTION: Be careful not to tear the cable jackets when passing them through compartments, bulkheads, or walls. Use grommets to prevent chaffing.

CAUTION: Use a multimeter to check the polarity and the connections to the power supply before applying power to the sensor.

CAUTION: Coil any excess cable(s) and secure with cable ties to prevent damage.

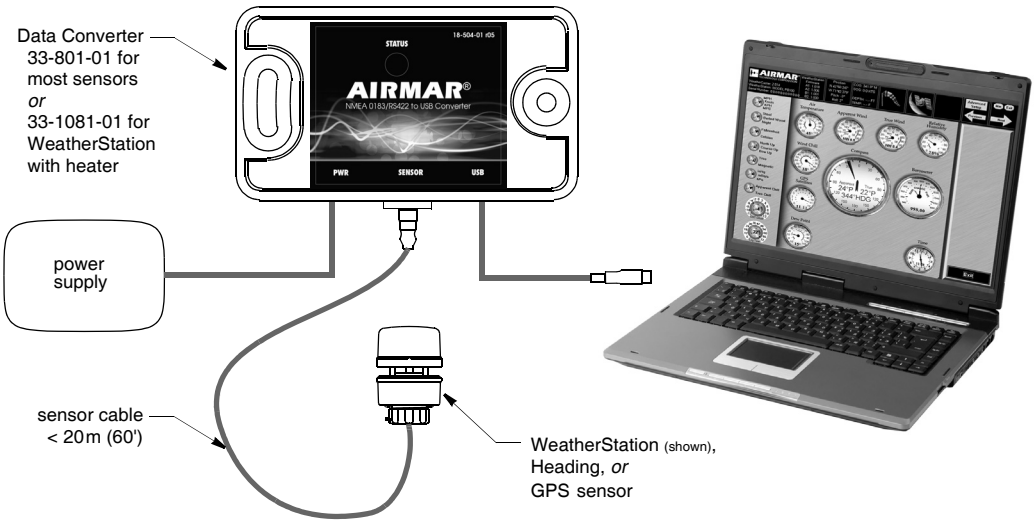

Figure 1. All sensors with sensor cable SHORTER than 20m (60′) (not to scale)

Installation

Data Converter Mounting Location

1. Be sure you have the correct Data Converter for your installation. Select a convenient, dry, mounting location for the water-resistant Data Converter, a minimum of 1m (3') from the PC (Figure 1).
2. Hold the Data Converter at the selected location and mark the position of the screw holes. If the Data Converter will be mounted on a vertical surface, face the cables downward to avoid water seeping into the box.
3. At the marked locations, drill the holes for the screws. *Do not fasten the Data Converter in place at this time*.

Instruction A. All sensor models EXCEPT WeatherStation Instrument with Heater & Sensor Cable run > 20m (60'). Go to Instruction B.

Sensor Cable

Route the sensor cable to the Data Converter (Figure 1). *Do not connect the cable or fasten it in place at this time.*

Power Cable

***NOTE**: The sensor is powered by the power cable. The Data Converter is powered by the USB port.*

1. Route the power cable from the Data Converter to the power supply (Figure 1). Be sure it is isolated from the engine start batteries, and the voltage is that specified for the product and model. *Do not fasten the power cable in place at this time.*
2. Allowing an extra 200 mm (10") for wiring ease, cut the cable to length.
3. Strip 60mm (2-1/2") of the outer jacket and foil shielding from the cut end of the cable.
4. Cut off the bare wire flush with the cable jacket.
5. Strip 10mm (3/8") of conductor insulation from the end of each colored wire.
6. Protect the cable's foil shielding from causing a short by using heat-shrink tubing around the jacket where the wires emerge from the cable. The tubing must overlap the wires a minimum of 6mm (1/4"). Use a heat gun to shrink the tubing.
7. Connect the wires to the power supply. See the color code.

Red	V+
Black	V–/ground

USB Cable

Route the USB cable from the Data Converter to the USB port on the PC (Figure 1). *Do not connect the cable or fasten it in place at this time. Go to "Completing the Installation."*

Instruction B. WeatherStation Instrument with Heater & Sensor Cable run > 20m (60')

WeatherStation Instrument with Heater—If the distance between the WeatherStation Instrument and the Data Converter is *longer than 20m (60')*, use Data Converter 33-801-01 and a junction box (Figure 2).

Locating the Junction Box

1. Select a convenient, dry, mounting location for the water-resistant junction box. Locate it no more than 9.5m (30′) from the WeatherStation Instrument (Figure 2).
2. Follow the instructions that came with the junction box. If the box will be mounted on a vertical surface, face the cable entries sideways or downward to avoid water seeping into the box. Hold the junction box at the selected location and mark the position of the screw holes.
3. At the marked locations, drill the holes for the screws. *Do not fasten the junction box in place at this time*.

Routing & Preparing the Cables

1. Data Converter—*The power (PWR) cable will NOT be used* (Figure 2). Coil the power cable and secure it with cable ties.
2. Route the sensor cable, 33-1167-01, to the junction box. *Do not connect the cable or fasten it in place at this time.*
3. Route the 33-862-XX cable, from the Data Converter to the junction box. Allowing an extra 25 cm (10") for wiring ease, cut the 33-862-XX cable to length. **Be sure to cut the end with the WeatherStation connector. It is the 9-pin connector with a blue cap**. *Do not connect the cable or fasten it in place at this time.*
4. Route two 14AWG power wires, one red and one black, from the junction box to the power supply. Be sure the power supply is isolated from the engine start batteries, and the voltage is

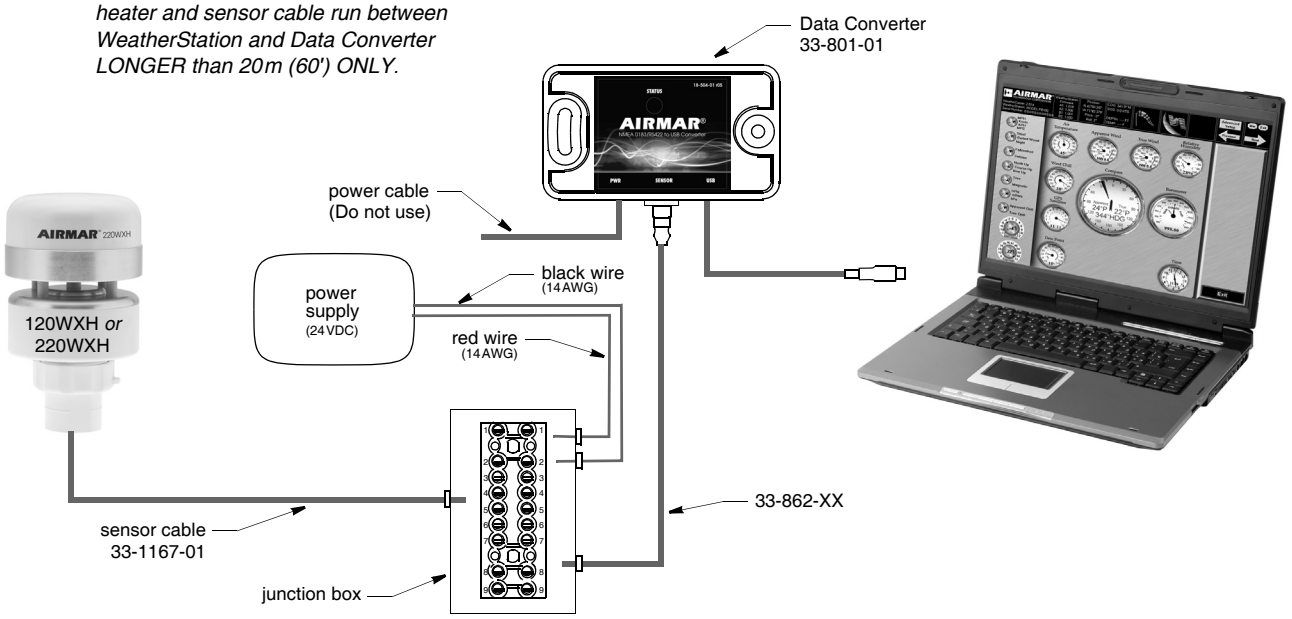

Figure 2. WeatherStation Instrument with heater and sensor cable LONGER than 20m (60′) (not to scale)

24VDC. Allowing an extra 51cm (20") for wiring ease, cut the wires to length. *Do not connect the wires or fasten them in place at this time.*

NOTE: *Apply alcohol to each cable jacket to ease sliding.*

5. Feed the sensor cable, 33-1167-01, through a grommet in the junction box. Allow an extra 25cm (10") for wiring ease.
6. Feed the 33-862-XX cable through a grommet on the opposite side of the junction box. Allow an extra 25cm (10") for wiring ease.
7. Feed the red and black power wires through grommets. Allow an extra 25cm (10") for wiring ease.
8. Strip 60mm (2-1/2") of the outer jacket and foil shielding from the cut end of the 33-862-XX cable.
9. Protect the cable's foil shielding from causing a short by using heat-shrink tubing around the jacket where the wires emerge from the cable. The tubing must overlap the wires a minimum of 6mm (1/4"). Use a heat gun to shrink the tubing.
10. Strip 10mm (3/8") of conductor insulation from the end of each colored wire on both the 33-862-XX cable and the power wires.

Connecting to the Junction Box

1. Sensor cable, 33-1167-01—Connect each colored wire and the bare wire to a separate terminal in the terminal block (Figure 3). Insert the stripped end of each colored wire into the appropriate opening in the side of the terminal block. Tighten the terminal screw until the wire is held firmly.
2. 33-862-XX cable—Connect each colored wire and the bare wire to the corresponding wire on the opposite side of the terminal block. There will be 7 wires.
3. Power wires (14AWG)—Connect the red and black power wires to the correspondingly colored red and black wires on the opposite side of the terminal block.

Closing the Junction Box

1. Visually inspect all the wires. There should be no frayed strands or loose ends to cause shorting. If any colored wire has a visible bare end, reconnect it to the terminal. Check to be sure each wire is held firmly within its terminal.

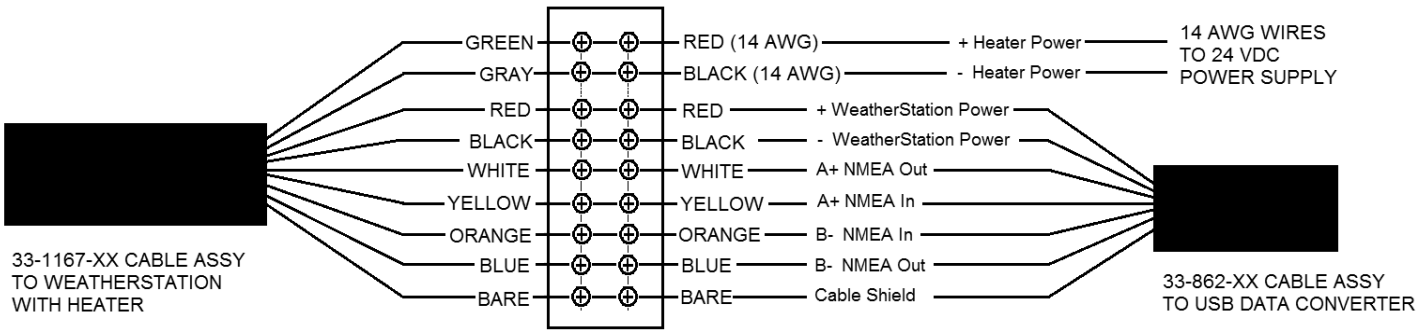

Figure 3. Wiring the junction box

2. From outside the junction box, carefully pull each cable/wire until only about 25mm (1") of the cable *jacket* remains inside the box.

   ***NOTE**: If there is a crimp connection(s), push it into the junction box first, under the terminal block.*

3. Arrange the wires neatly within the junction box.
4. To close the box, follow the instructions that came with it.

Connecting to the Power Supply

1. Strip 10mm (3/8") of conductor insulation from the end of the red and black 14AWG power wires.
2. Connect the wires to the power supply. See the color code below.

Red	V+
Black	V–/ground

Completing All Installations

1. Screw the Data Converter in place at the holes previously drilled. Use the screws supplied.
2. **WeatherStation Instrument with heater**—Screw the junction box in place at the holes previously drilled.
3. Plug sensor cable into the Data Converter.
   WeatherStation Instrument with heater—Plug the 33-862-XX cable into the Data Converter.
4. Fasten all the cables in place. Coil any excess cable and secure it with cable ties to prevent damage.

Operation

The Data Converter is powered when it is connected to the USB port on the PC. Plug the USB cable into the PC. When the Data Converter is operating, the green LED indicator light will flash.

Parts

For a list of parts, see the owner's guide that came with the sensor. Obtain parts from your instrument manufacturer or marine dealer.

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