

Model 7120 Analog Output Barometer

User's
Manual
7120-001



Introduction

The Model 7120 Analog Output Barometer uses a laser-trimmed piezoresistive sensing element to convert a change in atmospheric pressure to an analog voltage. Atmospheric pressures from 600 mb to 1100 mb (17.72-32.48 in. Hg) are detected and amplified by the sensor and its associated circuitry. The wide response of the sensor allows operation at elevations ranging from sea level to 14,000 feet without adjustments to the sensor.

The barometer operates from a DC power source of 10.5-24 Vdc. The output voltage range is from 2.9008 Vdc to 5.3167 Vdc, corresponding to a pressure range of from 600-1100 mb. Input power and output signal connections are provided via a 3', 4 conductor cable. Voltage regulation is provided internally to ensure correct sensor operation. A maximum current drain of 15 mA can be expected.

The barometer is housed in a black, thermoplastic enclosure that can be mounted easily to a variety of surfaces or installed within other enclosures, such as electronics cabinets. A #1/16" I.D., 3' vinyl hose is provided that can be routed into or out of the area to be measured. Use of the remote measuring feature allows the sensor to be installed in a stable environment to eliminate errors due to extreme temperature variations.

Heater kits are available for both 110 VAC (P/N 71201) and 220 VAC power (P/N 71202), and can be installed inside the 7120 enclosure for extended temperature operation (-40 to +50° C).

Contents

Installation	1
Theory of Operation	2
Calibration	3
Maintenance	4
Warranty	5
Specifications	6
Drawings	7

Installation

This instrument is thoroughly tested and fully calibrated at the factory and is ready for installation. Please refer to the return authorization card included in the packing box if damage has occurred. Also, notify All Weather Inc.

The Analog Output Barometer is designed for optimum performance when installed in a stable environment. When the sensor is housed in a tightly sealed area, the remote sensing feature must be used. To sense pressure remotely, the attached hose should be routed as conveniently as possible to the outside. Avoid making sharp angles in the hose that could collapse the inside of the tube. If the sensor is housed inside a vented enclosure, the remote tubing is not necessary.

The barometer housing is designed to be bolted onto a panel or surface supplied by the user.

The barometer is not sensitive to direction and may be mounted in any position. Fasten the cable securely to a rigid support with electrical tape or plastic wire ties to minimize cable damage.

For continuous operation, the red and green wires must be wired together at the +12 Vdc power source. For interrupted power operation, such as with automatic weather stations, the green wire is used to conserve battery power. The automatic weather station must then be programmed to provide power to the barometer.

For use with equipment not furnished by All Weather Inc., refer to the sensor wiring details to connect the sensor output and power input.

Theory of Operation

The Analog Output Barometer is designed to provide an analog voltage in response to changes in atmospheric pressure.

The pressure transducer is a piezoresistive material that exhibits a small change in voltage in response to changes in pressure. The varying voltage is conditioned and amplified to a usable level by circuitry included in the sensing element integrated circuit. Temperature compensation and voltage regulation are provided internally as well.

Calibration

Each sensor is tested in a pressurized chamber and compared to an N.I.S.T.-traceable standard. There is no adjustment required with the sensor.

Maintenance

Maintenance should include regularly scheduled testing of the sensor to detect any changes in performance.

The sensor cannot be serviced. Any attempts to remove the cover or to disassemble the sensor will result in irreparable damage and will void all warranties.

Should any sensor appear to be defective, notify All Weather Inc.'s service department for assistance.

Warranty

Unless specified otherwise, All Weather Inc. (the Company) warrants its products to be free from defects in material and workmanship under normal use and service for one year from date of shipment, subject to the following conditions:

- a. The obligation of the Company under this warranty is limited to repairing or replacing items or parts which have been returned to the Company and which upon examination are disclosed, to the Company's satisfaction, to have been defective in material or workmanship at time of manufacture.
- b. The claimant shall pay the cost of shipping any part or instrument to the Company. If the Company determines the part to be defective in material or workmanship, the Company shall prepay the cost of shipping the repaired instrument to the claimant. Under no circumstances will the Company reimburse claimant for cost incurred in removing and/or reinstalling replacement parts.
- c. This warranty shall not apply to any Company products which have been subjected to misuse, negligence, or accident.
- d. This warranty and the Company's obligation thereunder is in lieu of all other warranties, express or implied, including warranties of merchantability and fitness for a particular purpose, consequential damages, and all other obligations or liabilities.

No other person or organization is authorized to give any other warranty or to assume any additional obligation on the Company's behalf, unless made in writing and signed by an authorized officer of the Company.

Specifications

Sensing Range	600 to 1100 mb (17.72 to 32.48 in. Hg)
Operating Range	Sea level to 14,000 feet (Sea level to 4,267 meters)
Output	2.9008 to 5.3167 Vdc
Sensitivity	4.83 millivolts/mb
Accuracy (non-heated)	±0.88 mb (+20° to +50° C) ±2.2 mb (-10° to +20° C)
Accuracy (heated)	±0.88 mb (-40° to +50° C)
Temperature Range:	
Operating (non-heated)	-10 to +50°C
Operating (heated)	-40 to +50°C
Storage/Shipping	-50 to +65°C
Storage Pressure	5 to 30 psi
Sensor Power	15 mA at 10.5-24 Vdc
Heater Power (110V or 220V)	7.5W max.
Enclosure Size	6 " L x 4.6" W x 2.5" H (153 mm x 117 mm x 64 mm)
Weight (non-heated)	1.0 lbs (0.45 kg)
Weight (heated)	1.2 lbs (0.54 kg)

Drawings

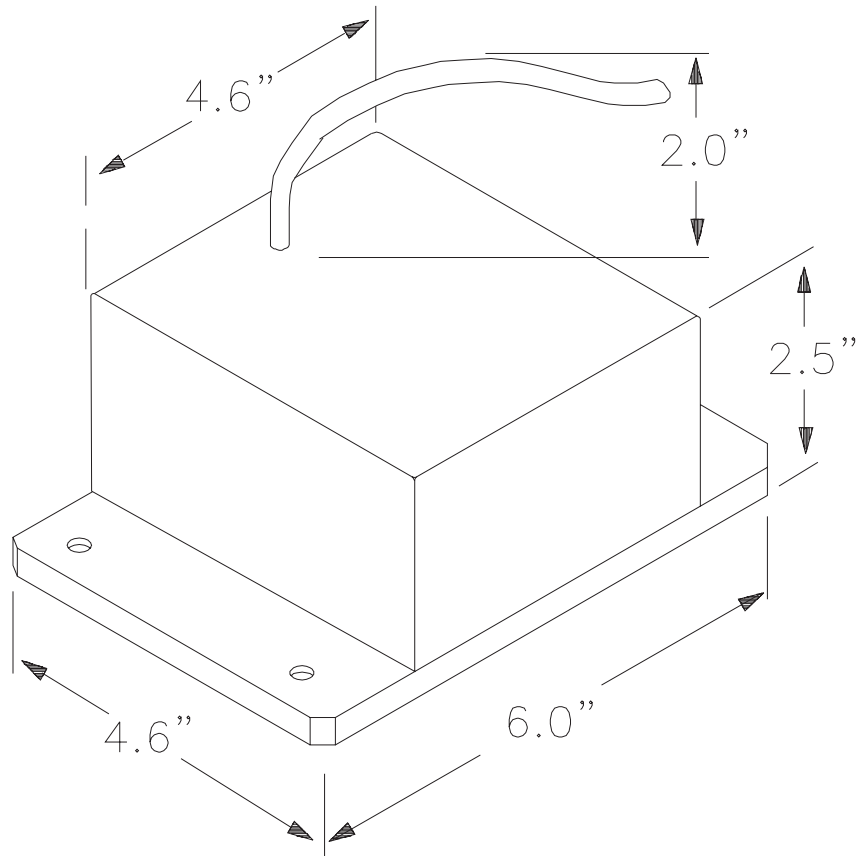


Figure 1
7120 outline drawing

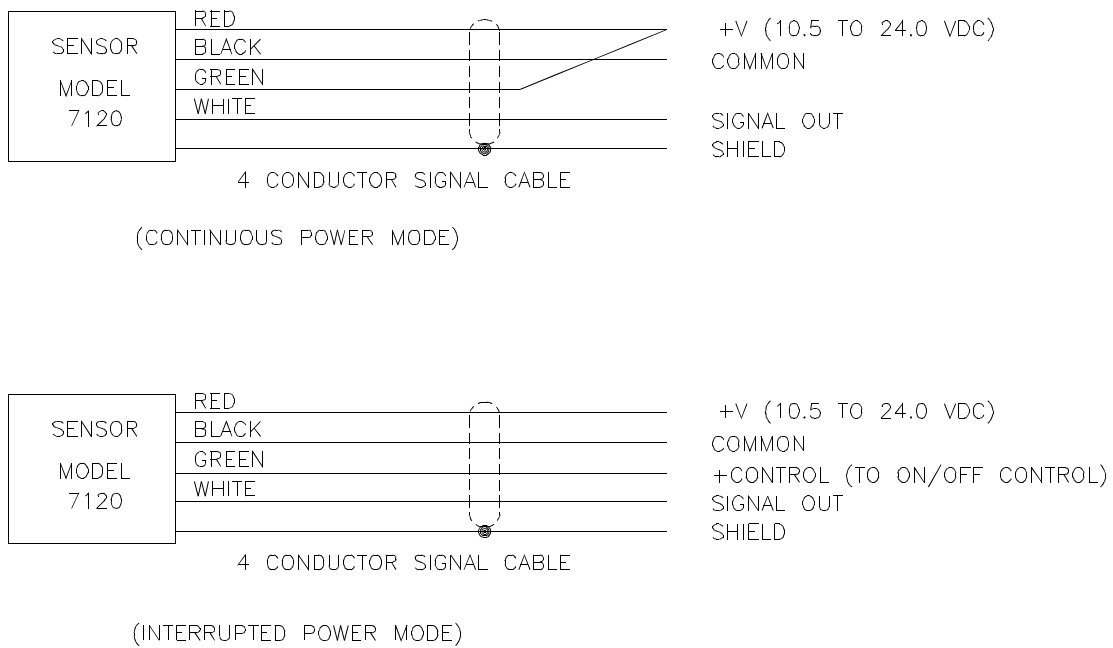


Figure 2
7120 sensor wiring

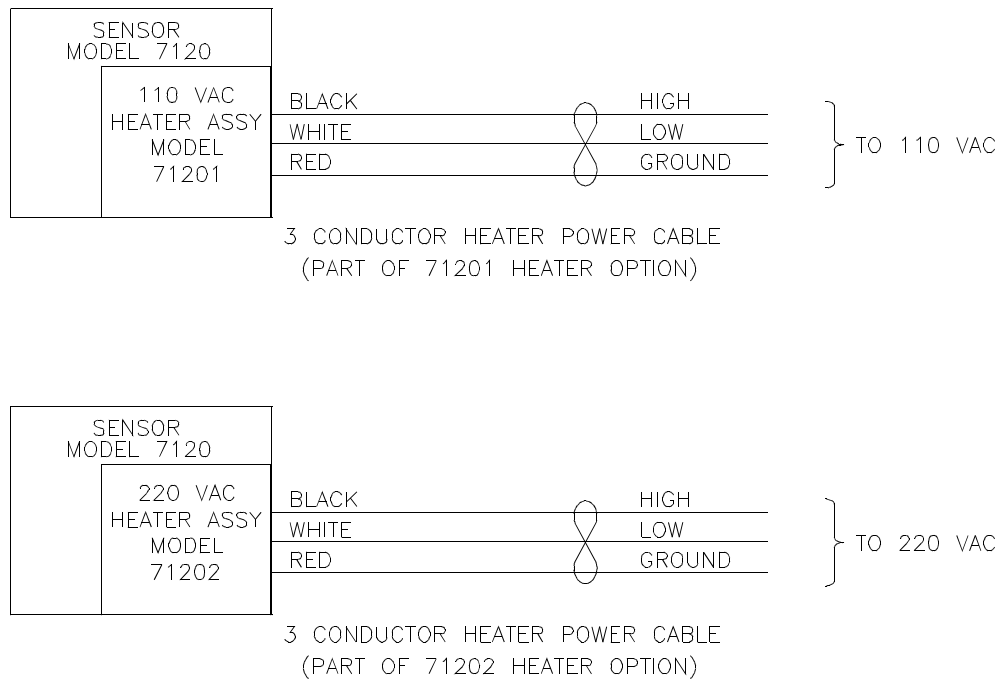


Figure 3
7120 heater wiring (heater optional)



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