

*Installation, Operation & Maintenance Manual*

# GPS-IMEASURE-D



Thank your choosing the GPS-iMEASURE-D. The GPS-iMEASURE-D ion detector is permanently mounted in the duct or inside an air handling system downstream of any GPS ionization device.

### *Equipment Provided by GPS:*

- GPS-iMEASURE-D
- Pre-installed mounting bracket
- Transformer (APV 12-24) for input voltages 100-240V

### *Hardware Required by Installer*

- #10 x 1" Self-tapping sheet metal screws
- Electrical connectors
- 18/5 shielded cable
- 24V power supply (voltage supplied must be floating) for input voltages other than 100-240V

### *Installation Location*

GPS recommends the GPS-iMEASURE-D be installed on or in the duct downstream of the ionizer, away from extreme heat and condensation. Mount in location with minimal turbulence. The unit should be mounted prior to the first take-off if any exists. Unit should be mounted at or near the same elevation as the ionization device for more accurate readings.

### *Mechanical Installation*

1. Prior to installation, ensure outer mesh is not in contact with inner tube. If necessary, adjust mesh accordingly.
2. Ensure housing is not grounded using the factory installed mounting bracket.
3. Select a location for installation. Find an area that will minimize, dust, dirt, and water. The duct must be at least 11 inches deep.
4. Cut or drill a 2-1/2-inch hole in the duct. Insert the GPS-iMEASURE-D into duct.
5. Secure the GPS-iMEASURE-D to the duct with field supplied screws.
6. In larger air handlers, the GPS-iMEASURE-D may be mounted entirely in the airstream



### *Electrical Installation*

**CAUTION: MAKE SURE POWER IS DISCONNECTED FROM HVAC EQUIPMENT BEFORE INSTALLATION**

- Verify voltage of circuit the GPS-iMEASURE-D will be connected.  
INPUT VOLTAGE RANGE 20-40 VAC or VDC  
NOTE: All units manufactured on or after 8/1/2020 will accept 20-40 VAC or VDC. This includes all units with serial number beginning with 1500 and above.  
NOTE: If wire connected to pin 4 is not grounded, the housing of the iMEASURE-D must be grounded.
- If using the included APV 12-24 transformer, connect APV 12-24 Blue and Brown wires to line voltage, and connect APV 12-24 Red and Black wires to Pins 1 and 2 on the GPS-iMEASURE-D.
- Wire the GPS-iMEASURE-D per the following (see FIGURE 1):  
Pin 1= input voltage (not polarity sensitive)  
Pin 2= input voltage (not polarity sensitive)  
Pin 3= Polarity selection: No connection (floating)= detects positive ion  
Connected to pin 4 = detects negative ions  
Pin 4= Output Return or reference/ground reference  
Pin 5= Output to BMS 0VDC to +10VDC



Figure 1



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## Scale Selection

The scale on which the ions are read can be adjusted. To adjust the range (sensitivity) of the GPS-iMEASURE-D, move the white jumper on the control board. See FIGURE 2 and FIGURE 3.

- No Jumper = 10k ions/cc/sec (0V = 0 ions and 10V = 10k ions)
- Jumper on center and right pin position "A" = 100,000 ions/cc/sec (0V = 0 ions; 10V = 100k ions)
- Jumper on left and center pin position "B" = 1,000,000 ions (0V = 0 ions; 10V = 1M ions)

Programming Note: If you don't know what scale to use, start with the 10k ions/cc/sec scale.

If the output voltage stays near 10V on this scale, move the jumper to read 100k ions/cc.

If the output voltage stays near 10V on this scale, move the jumper to read maximum level of 1M ions/cc/sec.

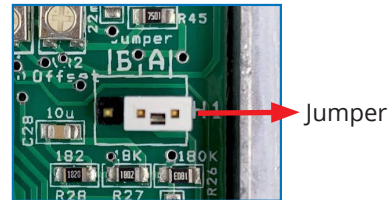


Figure 2

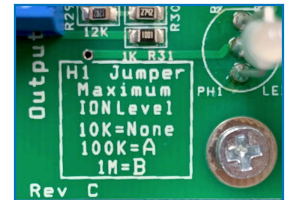


Figure 3

## Initial Power Up

Once power is applied, the GPS-iMEASURE-D will go through a 15 second calibration cycle.

During this time the LED will flash red or green (depending on detection polarity) and, the output will go to 0VDC. The bi-color LED will be solid red or green when power is applied and there are no faults.

## Self-Test

Upon power up and once every hour the GPS-iMEASURE-D will perform a self-test. During the self-test the device's ion sensitivity is tested. During the self-test the output levels are held at the pre-auto zero level. Upon a fault, the LED will flash alternating red and green, and the output level will be pegged at 10V (remote indication of error). The most common cause of an error is the sensor is grounded in more than 1 location.

## Indicators

- Dual color LED
- Blinking Green: Positive polarity self-test
- Solid Green: Positive polarity normal operation
- Blinking Red: Negative polarity self-test
- Solid Red: Negative polarity normal operation
- Alternating Green and Red: Self-test failure

## Maintenance

Accumulation of lint and dust, spider webs or web fragments within the ion chamber can cause inaccurate readings, the inability to auto-zero or the ability to maintain a proper chamber voltage. This can usually be corrected by cleaning the chamber with canned compressed air. It is advisable to periodically blow out the chamber with compressed air. The frequency of this preventative procedure will depend on the environment in which it is used. Cleaning the unit/chamber once a year will usually be sufficient in non-industrial environments.



## *Sensor Data Summary*

- Voltage Input: 12-24V AC or DC, for units manufactured prior to 8/1/2020 with serial numbers up to 1500
- Voltage Input: 20-4-V AC or DC, for units manufactured on or after 8/1/2020 and with serial number beginning with 1500 and above.
- Current: 100mA
- Power: <2 watts
- Sensing Range (ions/cc): 0-10K, 0-100K, 0-1M
- Sensor Output: 0-10VDC
- Polarity Sensing: Positive or Negative, jumper controlled (a BMS can use a binary contact to change polarity remotely)
- Temperature Range: -20°F to 140°F
- Humidity Range: 0 to 99% RH, non-condensing
- Maximum impedance between pins 4 and 5 shall not exceed 1 kΩ.



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