1. Mount a 3.33 cm (1.31 in) outer diameter pipe or crossarm (such as a CM20X) to the tripod mast or tower.

2. Mount the CM250 leveling mount to the end of the crossarm, securing it with two set screws.

3. Use the captive bolt on the CM250 to mount the CSAT3BH. The orientation of the CSAT3BH should be level and pointing in the direction of the prevailing wind.

4. Use a compass to determine what direction the sonic is pointing. This direction is input into the CSAT_AZIMUTH constant within the CRBasic program.

5. Ground the CSAT3BH by attaching one end of a user-supplied, 10 AWG wire from the copper ground lug on the back of the CSAT3BH block.

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**Specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>–40 to 50 ºC</td>
</tr>
<tr>
<td><strong>Wind Accuracy</strong></td>
<td>–40 to 50 ºC, wind speed &lt; 30 m/s, azimuth angles bewteen ± 170 ºC</td>
</tr>
<tr>
<td><strong>Offset Error</strong></td>
<td></td>
</tr>
<tr>
<td>$u_x$</td>
<td>± 8 cm/s max</td>
</tr>
<tr>
<td>$u_y$</td>
<td>± 8 cm/s max</td>
</tr>
<tr>
<td>$u_z$</td>
<td>± 4 cm/s max</td>
</tr>
<tr>
<td><strong>Gain Error</strong></td>
<td></td>
</tr>
<tr>
<td>Wind Vector ± 5° of horizontal:</td>
<td>± 2% of reading max</td>
</tr>
<tr>
<td>Wind Vector ± 10° of horizontal:</td>
<td>± 3% of reading max</td>
</tr>
<tr>
<td>Wind Vector ± 20° of horizontal:</td>
<td>± 6% of reading max</td>
</tr>
<tr>
<td><strong>Wind Resolution</strong></td>
<td></td>
</tr>
<tr>
<td>$u_x$</td>
<td>1.0 mm/s RMS</td>
</tr>
<tr>
<td>$u_y$</td>
<td>1.0 mm/s RMS</td>
</tr>
<tr>
<td>$u_z$</td>
<td>0.5 mm/s RMS</td>
</tr>
<tr>
<td><strong>Wind Full Scale Range:</strong></td>
<td>± 65 m/s</td>
</tr>
<tr>
<td><strong>Sonic Temperature Resolution:</strong></td>
<td>± 0.002º C RMS at 25 ºC</td>
</tr>
<tr>
<td><strong>Sonic Temperature Reporting Range:</strong></td>
<td>–30 to 50 ºC</td>
</tr>
</tbody>
</table>

**Measurement Rates**

- Data logger Triggered: 1–100 Hz
- Unprompted Output (to computer): 10, 20, 50, or 100 Hz
- Internal Self-Trigger Rate: 100 Hz

**Voltage Requirement:**

- 9.5–32 VDC for CSAT3BH
- 22–32 VDC for heater

**Current Requirement (10 Hz Measurement Rate):**

- Current @ 12 VDC: 110 mA
- Current @ 24 VDC: 65 mA

**Heaters:**

- Arms & Strut (at maximum heating) = 2.46 A @ 24 VDC
- Transducer Fingers (at maximum heating) = 3.75 A @ 24 VDC
- Total System Power Required (at maximum heating) = 6.2 A @ 24 VDC

**Quiescent power consumption = 30 mA @ 24 VDC**

**Chassis Thermistor Accuracy:** ± 0.1 ºC

**Temp/Relative Humidity Accuracy:** ± 0.3 ºC and ± 3%
1. Connect the cable from the Temp/RH sensor to the heater controller connection labeled Temp/RH.

2. Connect the heater and chassis temp cables from the CSAT3BH to the Heaters and Chassis Temp connections on the heater controller.

3. With power turned off, connect the cable from the external 22–32 VDC power supply to the Power In connection.

4. Connect the RS-485 cable to the RS-485 TX/RX connection. The other end of this cable connects to the data logger in the main enclosure.

5. Connect one end of an 10 AWG ground wire to the ground lug (U-bolt) on the bottom of the heater controller. Connect the other end of this wire to the same ground rod as the CSAT3BH.

6. Mount the dedicated Temp/RH probe to the end of the crossarm closest to the tripod/tower mast using a U-bolt, flat washers, lock washers, and nuts.

7. Position the heater controller within 15 feet of the CSAT3BH. Mount the chassis ground to the ground lug (U-bolt) on the bottom of the heater controller using two U-bolts, flat washers, lock washers, and nuts.

8. Earth (chassis) ground the other end of the wire to a ground rod driven closest to the tripod/tower mast using a U-bolt, flat washers, lock washers, and nuts.


10. Once everything is correct click Apply.

NOTE: If using a CR1000X where C5/C6 or C7/C8 aren’t available, an MD485 is required for serial communications. Consult the manual or contact Campbell Scientific for instructions on how to set up the MD485.

11. If using SDM communications, connect a CSAT3BCBL1-L and CSAT3HCBL1-L cables to the data logger ports according to the following table.

12. If using CPI communications, connect a CSAT3BCBL2-L, CSAT3HCBL1-L, and CSAT3HCBL3-L cables to the data logger ports according to the following table.

NOTE: Use CR1000X where C5/C6 or C7/C8 aren’t available, an MD485 is required for serial communications. Consult the manual or contact Campbell Scientific for instructions on how to set up the MD485.

13. Ensure the data logger enclosure ground is connected to the same ground rod as the CSAT3BH and heater controller.

14. Use LoggerNet, PC400, or PC200W to send a data logger program to the data logger. Refer to Section 6: Configuration for instructions on establishing communications with the data logger.

15. Verify the green Status light on the CSAT3BH block is blinking, indicating measurements are being made and recorded in the data logger without diagnostic error conditions.

NOTE: In the default operating Mode 0, where the CSAT3BH measurements and output are triggered by a data logger, the CSAT3BH Status light will light to indicate a data logger is connected to the CSAT3BH and its program is running and sending measurement triggers.

16. If using CPI communications connect a CSAT3BCBL2-L cable and a CSAT3HCBL3-L-RU to the connectors on the back of the CSAT3BH block labeled Power/SDM and CPI/RS-485, respectively.

17. Connect power and communications cable(s) to the data logger.

18. With power turned off, connect the cable from the external 22–32 VDC power supply to the Power In connection.

19. Connect the RS-485 cable to the RS-485 TX/RX connection. The other end of this cable connects to the data logger in the main enclosure.

20. Connect one end of an 10 AWG ground wire to the ground lug (U-bolt) on the bottom of the heater controller. Connect the other end of this wire to the same ground rod as the CSAT3BH.

21. Mount the dedicated Temp/RH probe to the end of the crossarm closest to the tripod/tower mast using a U-bolt, flat washers, lock washers, and nuts.

22. Earth (chassis) ground the other end of the wire to a ground rod driven closest to the tripod/tower mast using a U-bolt, flat washers, lock washers, and nuts.

23. Connect the cable from the Temp/RH sensor to the heater controller connection labeled Temp/RH.

24. Connect power and communications cable(s) to the data logger.

25. With power turned off, connect the cable from the external 22–32 VDC power supply to the Power In connection.

26. Connect the RS-485 cable to the RS-485 TX/RX connection. The other end of this cable connects to the data logger in the main enclosure.

27. Connect one end of an 10 AWG ground wire to the ground lug (U-bolt) on the bottom of the heater controller. Connect the other end of this wire to the same ground rod as the CSAT3BH.

28. Mount the dedicated Temp/RH probe to the end of the crossarm closest to the tripod/tower mast using a U-bolt, flat washers, lock washers, and nuts.

29. Earth (chassis) ground the other end of the wire to a ground rod driven closest to the tripod/tower mast using a U-bolt, flat washers, lock washers, and nuts.

30. Connect the cable from the Temp/RH sensor to the heater controller connection labeled Temp/RH.

31. Connect power and communications cable(s) to the data logger.

32. With power turned off, connect the cable from the external 22–32 VDC power supply to the Power In connection.

33. Connect the RS-485 cable to the RS-485 TX/RX connection. The other end of this cable connects to the data logger in the main enclosure.

34. Connect one end of an 10 AWG ground wire to the ground lug (U-bolt) on the bottom of the heater controller. Connect the other end of this wire to the same ground rod as the CSAT3BH.

35. Mount the dedicated Temp/RH probe to the end of the crossarm closest to the tripod/tower mast using a U-bolt, flat washers, lock washers, and nuts.

36. Earth (chassis) ground the other end of the wire to a ground rod driven closest to the tripod/tower mast using a U-bolt, flat washers, lock washers, and nuts.

37. Connect the cable from the Temp/RH sensor to the heater controller connection labeled Temp/RH.

38. Connect power and communications cable(s) to the data logger.

39. With power turned off, connect the cable from the external 22–32 VDC power supply to the Power In connection.

40. Connect the RS-485 cable to the RS-485 TX/RX connection. The other end of this cable connects to the data logger in the main enclosure.