

DS/AQS Winterization Kit Installation and Setup

Introduction

The Winterization Kit extends the lower operating temperature of the Aeroqual Dust Sentry and AQS from -10°C (14°F) to -40°C (-40°F). It consists of an insulation jacket and a heater module that work together to keep the internal temperature of the instrument at an adequate temperature to maintain the instrument's specified performance. The jacket does reduce the upper operating range (from 45°C to 35°C) so should be removed prior to warm weather to preserve performance. The heater module has an integrated thermostat, and will not operate at high temperatures, meaning it can be left in the instrument indefinitely.

- While the jacket allows the system to operate at this lower temperature point, it does not enable long term storage of the un-powered instrument at these colder temperatures. In the event that the instrument has been stored at temperatures below -10°C, the cold start procedure described below (Section D) should be followed.
- The addition of the heater module increases the instrument's power draw by up to 20W – as such, battery and solar powered systems will need to be sized accordingly for this extra load. Additionally, the heater module comes pre-wired for use with the mains DC supply, but the system can quickly be re-wired for use with a battery powered system (see Section C - *Re-wiring for Battery and Solar Installations* below).
- The Winterization kit has been designed to be used on instruments mounted to pole-style tripods. It comes with a set of extended mounting brackets that allow for adequate clearance to install the jacket. The kit is not designed to function with the survey tripod mount (AIC DSAQS_TMNT)
- The jacket should be installed prior to cold weather and removed if high temperatures (> 35°C / 95°F) are expected.
- The heater module is controlled by a thermostat to maintain an internal temperature of at most 10°C in the instrument. At temperatures above this point the heater will switch off and will no longer draw power.

Kit Equipment

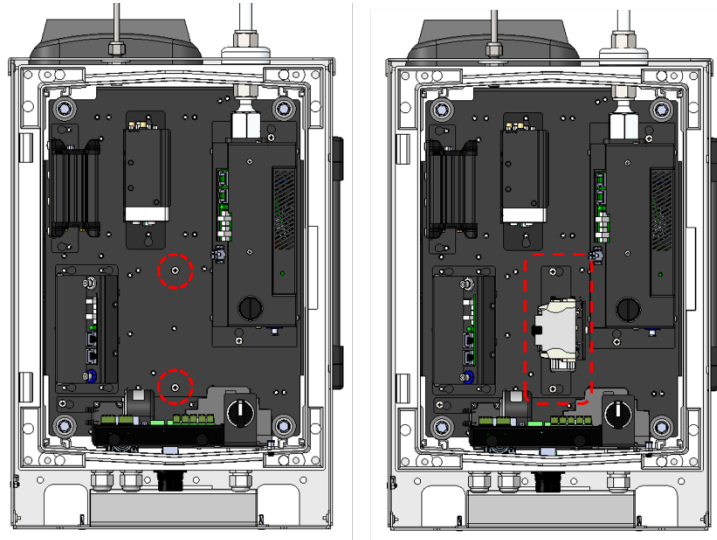
- Winterization jacket
- Winterization heater module
- Winterization mounting brackets
- PM inlet insulation (PCX Only)
- (2) M4 x 10 panhead screws

Contents

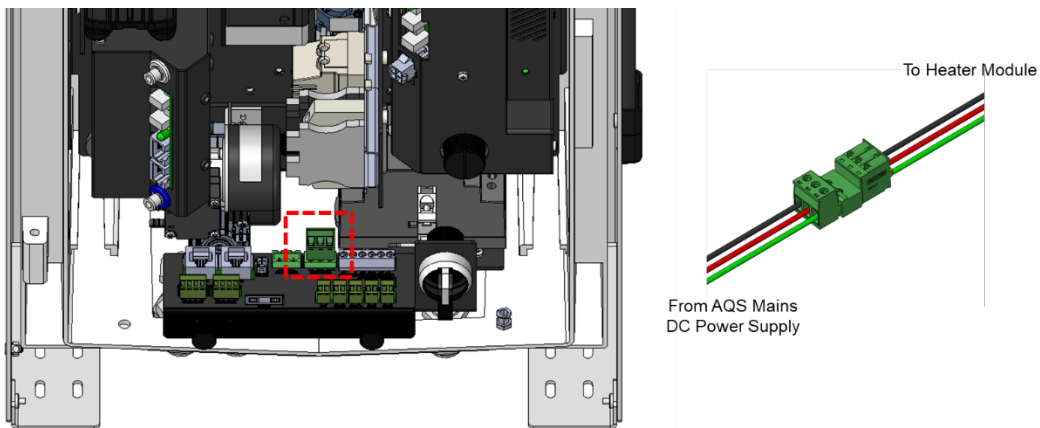
A. Heater Module Installation	2
B. Bracket and Jacket Installation	3
C. Re-wiring for Battery and Solar Installations	5
D. Cold Start Procedure	7

A. Heater Module Installation

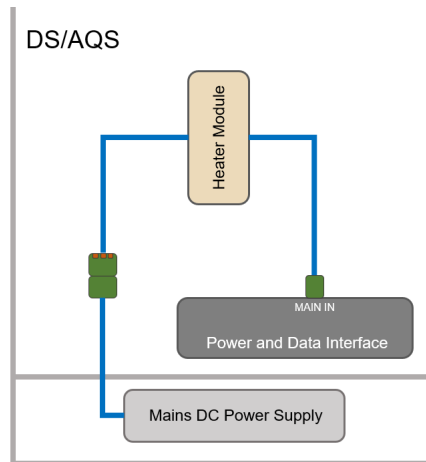
1. Disconnect power from the instrument.
2. Open the instrument and install the heater module using 2x M4x10 screws in the location shown.



3. Unplug the MAINS DC connector from the power and data interface at the bottom of the instrument and plug it into the mating connector on the heater module.



4. Plug the other connector back into the power and data interface such that power is connected as shown.



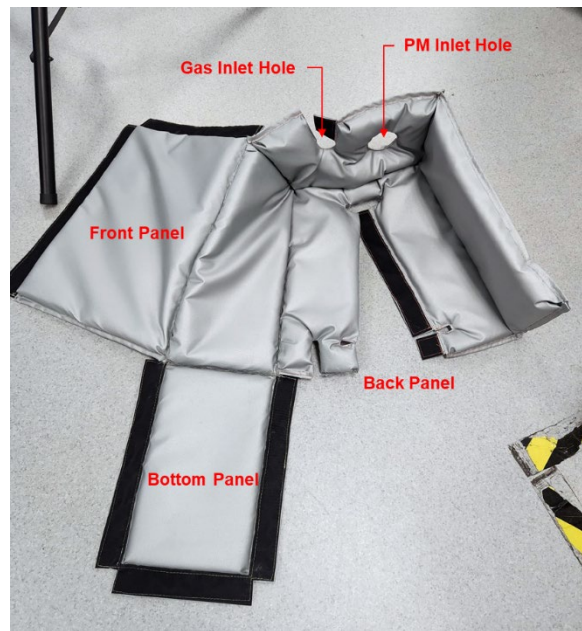
5. Restore power to the instrument.

B. Bracket and Jacket Installation

1. Mount instrument on the desired pole using the extended mounting brackets as you would with the standard mounting brackets



2. Open the jacket ensuring all the Velcro flaps are disconnected. Identify the various parts of the jacket to orient it correctly.



3. Place over the top of the instrument such that the PM inlet and gas inlet go through their corresponding holes
4. Close the front panel of the jacket across the front of the instrument, and then secure the back Velcro tabs behind the instrument.
 - Ensure that the Velcro flaps lay flat beneath the mounting brackets and that the power cable exists the slot on the bottom corner of the back panel.



5. Lift the bottom panel up and secure along the back bottom, front bottom, and side bottom.



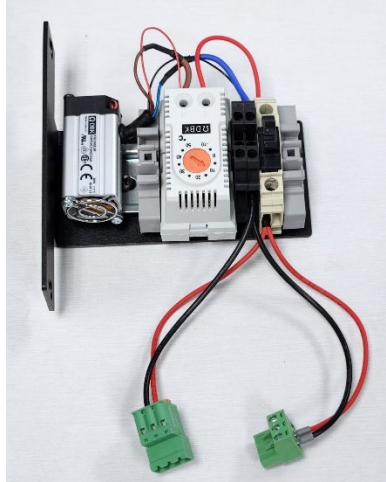
6. If installing on an instrument with a PCX module, remove the TSP inlet and slide the insulation tubing onto the inlet tube. If installing on an instrument with a nephelometer or profiler, this step is not required.



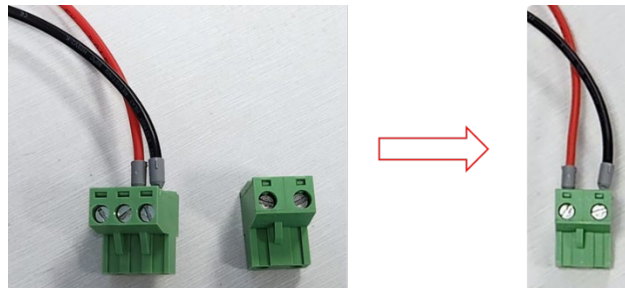
C. Re-wiring for Battery and Solar Installations

If you will be powering the system from an external DC supply such as a battery the connectors on the heater module need to be rewired. To do this:

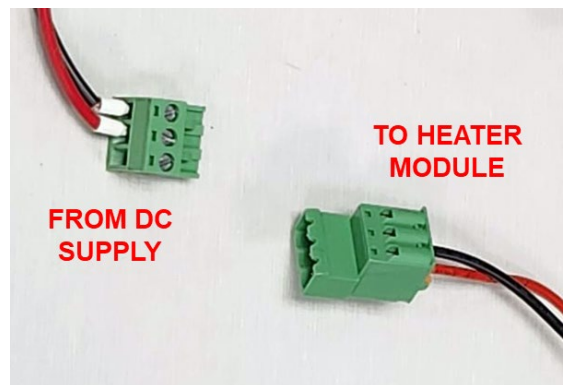
1. Remove the green earth wire between the two connectors and the heater module.



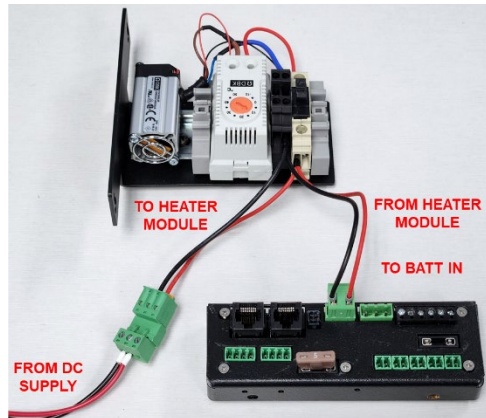
2. Remove the 3-way connector on the output from the heater module and replace with the 2-way BATT IN connector from the power and data interface.



3. Take the 3-way connector you removed in the previous step and wire your DC supply into this connector. Ensure polarity is correct on the connector.



4. The heater module can now be connected inside of the instrument as shown:



D. Cold Start Procedure

In the event the instrument has left unpowered in the cold for extended periods, immediately starting it may cause damage to pumps and/or sensors. Follow the cold start procedure below to pre-warm the system. The below assumes you have a heater module and winterization jacket installed already.

1. Ensure the instrument is switched to the 'OFF' position on the power and data interface



2. Restore power to the instrument. The heater module is powered before the power and data interface switch should turn on independent of the switch being off.
3. Close the instrument and jacket and allow the system to warm up for 1 hour or until the internal temperature is above -10°C.
4. Switch the power switch for the instrument on to either 'MAIN' or 'BATT' depending on the power source being used.