

## Electronic Air Temperature Methodology

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Air temperature and relative humidity are measured electronically using combination sensors housed in naturally aspirated radiation shields\*

\*(From the manufacturer: the naturally aspirated 6 and 10-plate radiation shields' louvered construction allows air to pass freely through the shield, keeping the probe at or near ambient temperature. The shields' white color reflects solar radiation.)

Since 1990's, different sensors have been used. From 1995 to 2001 the Viasala HMP35C was used (see Temp\_Hum\_Probe\_Model\_hmp35c.pdf). From 2001 to 2010 the Viasala HMP45C was used (see Figure 1 and Temp\_Hum\_Probe\_Model\_hmp45c.pdf). Since 2010 the CS215 sensor has been in use (see Figure 2 and Temp\_Hum\_Probe\_Model\_cs215.pdf).

Air temperature and relative humidity are sampled every 10 seconds. The average, minimum and maximum values are recorded at the end of every 15 minute interval.

Sensor elements are replaced every year according to the manufacture's recommendations.

Records are provided with two Quality Control flags. Flag one indicates the fitness for use of each records. Possible values are: good, bad, doubtful, missing. Records are marked as bad if they fail one or more QC tests. Likewise, records are marked as doubtful if they are potentially bad, but without sufficiently strong evidence to be marked as bad. The second QC variable provides that reason for marking a variable as bad or doubtful. Potential values are: range, step, persistence, drift. At this time only range tests have been applied.

Figure 1



HMP 45C sensor Temperature & Humidity sensor inside 10-gill naturally aspirated radiation shield

Figure 2



CS215 sensor Temperature & Humidity sensor inside 6-gill naturally aspirated radiation shield