

DATE:

June 2006

APPLICABLE TO:

DigiCORA® MW31, MW21, MW15 and MW11 Sounding Systems, AUTOSONDE®, ASAP and MARWIN® MW12

CHANGE DESCRIPTION:

Extending reported TEMP humidity measurements to -100°C

New temperature limit for humidity data reporting in TEMP message

- New information on the usable temperature range for humidity measurements when using Vaisala Radiosondes.
- A recommendation for setting the temperature limit for humidity data reporting in the TEMP message.
- Detailed instructions for adjusting the temperature limit in different ground system types.

It has been common practice for many meteorological services to exclude humidity data from TEMP messages at low temperatures. This practice originates from the use of resistive carbon film type humidity sensors that have typically had a very high variance at the cold temperatures. The most commonly used cold temperature limit has been -40°C and it has been applied regardless of sensor design. This is also the current default value in Vaisala ground equipment.

Although this temperature limitation has been widely accepted, it does not mean that measuring humidity at even colder temperatures would not be valuable. Indeed, it is important for meteorological and especially climatological purposes.

Over the years, Vaisala has continuously improved its polymer based humidity sensor and one of the goals has been an improvement in its performance at cold temperatures. The performance has already improved significantly with the Vaisala Radiosonde RS80 types. However, the new Vaisala Radiosonde RS92 family finally provides a sensor quality which allows Vaisala to recommend the removal of the

temperature limit completely. The performance of the humidity sensor has been verified in the recent WMO radiosonde intercomparison tests in Vacoas, Mauritius and in several other comparison tests.

Recommendation

Vaisala recommends that users of RS92 radiosondes change the temperature limit to -100°C and users of RS80 change the limit to -70°C. The limit is a user adjustable parameter in the system software and it can be changed easily in any Vaisala ground system as described below.

How to set the limit in Vaisala ground equipment

Vaisala DigiCORA® Sounding System MW21, MW31 and Vaisala Sounding Processor PP21

First make sure you have Sounding administrator rights in the sounding workstation

- Start Vaisala DigiCORA® software
- In the Tools menu select System Parameters (DBManager window opens)
- In File menu select Connect (database structure opens)
- Doubleclick on SYSPAR (the tree expands)
- Doubleclick on WMO
- Click once on MessageCodingParameters
- Doubleclick on TemperatureLimitForDPD in the right pane (the parameter is opened for editing)

- In the Data area, change the data to -100 (or -70 for RS80) and click OK
- Close the DBManager window and then the DigiCORA UCP window

The parameter is now changed and it is applied in all subsequent TEMP message coding. In future software versions the limit is set to -100°C as the default value.

Vaisala DigiCORA® Sounding System MW11, MW12, MW15 and Vaisala Sounding Processor PP15 and in related Vaisala Metgraph software

- Start the system
- After self-test is passed, press CMD
- Press C1 (Sysgen)
- Press C5 (GoOn)
- If you don't want to print out the current settings, skip the following six steps
 - Press C1 (Exit)
 - Press C5 (List)
 - Press C4 (Output) to print out the current Output parameters
 - Press C1 (Exit) to exit from print mode
 - Press C5 (GoOn)
 - Press C4 (Modify)
- Press C4 (Output)
- Press C4 (MsgPar)
- Press C3 (CompPar)
- Press C2 (General)
- Press C4 (Select) until parameter Min T to report DPD is displayed
- Press C5 (Reject)
- Using the keypad, type in -100°C (or -70°C for RS80) and press the enter key

- Press C1 (Exit) four times
- Press C5 (SaveRAM)
- Press C4 (Yes) Temporary storage is done first
- Press C1 (Exit)
- Press C4 (Yes) to store the changes permanently
- Key in the password and press C5 (GoOn). The system jumps back to SOND menu.

The parameter is now changed and it is applied in all subsequent TEMP message coding.

If you are also using Metgraph the parameter needs to be changed there too. Proceed as follows:

- Locate the file 'Vaisala.Ini' in the computer and open it into a text editor (Notepad for example)
- Find the line:
MinT_to_report_DPD=-40
- Change it to:
MinT_to_report_DPD=-100 (or MinT_to_report_DPD=-70 for RS80)
- Save and close the file