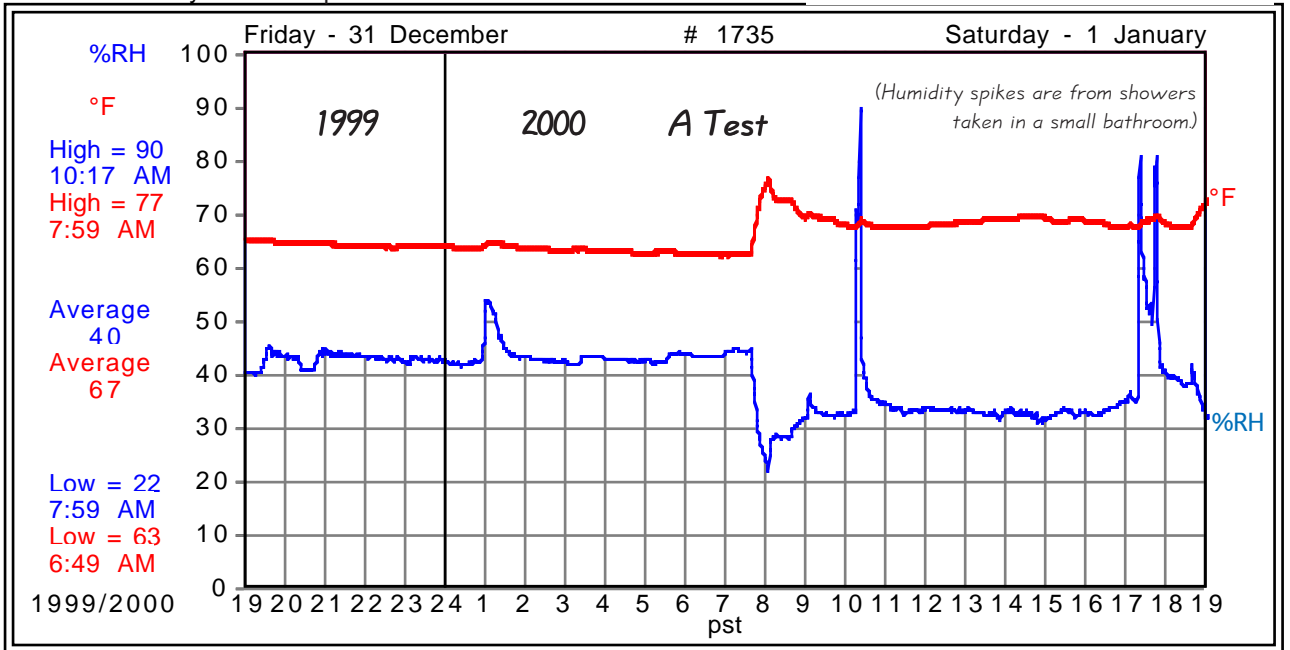


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Title: Humidity and Temperature



Welcome to New Year's Eve 1999/New Year's Day 2000.
Data gathered in 1998 have been 'set' as if they were gathered as the millennium changed.

Langan Instruments Welcome Year 2000

Bear Facts -- #97

The DataBear is microprocessor-based and records time.
It was subject to a 'y2k' problem. This has been investigated and resolved.
Here is what we did.



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the DataBear

Bear Facts are published to provide useful insights into the operation and applications for the DataBear™ Measurer and associated complete instruments.

Keeping
in
Touch!

The Year 2000 represents a potential technical problem for microprocessors and mainframes alike, plus everything in between. If any process depends upon the comparison of a 2-digit reference to the year, this must be evaluated. In the case of Langan products, we were confident about our Macintosh software but had concern about our Motorola processor's firmware. This 'brain' of the DataBear had to be analyzed. To be sure, both our Macintosh and Wintel software setup/retrieval products had to be studied as well.

The firmware for the DataBear was written to accept a 12-character definition for the date and time and to organize time into this configuration upon retrieval. The logic (agreed upon by international standards) being that time was defined from longest period to shortest: year-month-day-hour-minute-second. If two digits define each, you have YYMMDDHHMMSS, 12 characters. The year, at the turn of the century, is ambiguous if used to compare years. When automatically concatenated with 19, or if zeros are ignored in converting from text characters to numeric values, it is wrong. Humans can easily recognize that 000101121530 is a half-day into the new year from 991231233015. Machines may falter, depending upon how they were taught (programmed).

We found that changing to the new century caused a problem within the DataBear. We had two choices: change the firmware or modify how you stored the time. It is our good fortune that all retrieval is done using our MacOS or MS-DOS reset/retrieval applications. Those who had designed their own interfaces are limited and could be contacted. Based upon this fact, we chose to modify the interface programs rather than change the basic firmware. This firmware is very reliable, concise and fully field tested.

The basic logic we applied was to make a change which is 'blind' to the user. Whenever a date is set, a specified number of 4-year periods are subtracted. When ever data are retrieved, this same number of periods are added. Thus, the date operated upon within the DataBear remains well within its proven working range. The date and time observed by the user remain real and current. Both Langan programs have been modified and tested.

The only thing a user needs to do is to set the time using a new version of the program, sometime in 1999. Use.

**Sense-Your-World! (MacOS) version 5.00 or higher.
Measurer's Window (Windows95/98/NT)**

What if my retrieved data show 1931 or 1932?*

They have been set by the new versions of either program and retrieved by older versions. If before 2000, simply reset the time. If after, get the new program.

What if I do not have the new programs?

Then you can arbitrarily set the year to be earlier than it is and reset it after retrieving the data. Use a multiple of four. Then ask for the new program or download it from our website <www.langan.net/lpi/y2k>

* We chose to use -68 as our modifier to the year setting. In 1999, the DataBear actually operates using 1931. In 2000, it will use 1932, and so forth. This was chosen to include a four-year (leap-year) multiple, to be distinctly separate from any prior recorded data and to be relatively unique to our need.

**All manufacturers of instrumentation that use computers at any level
must resolve what effect the change of the millennium will have on their use.
It is behaving upon them to fix any errors that may result. Langan Products, Inc. has done so.**