

## Re: LCD Screens and freezing weather

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*Source:* <http://sci.tech-archive.net/Archive/sci.geo.satellite-nav/2007-12/msg00034.html>

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- *From:* Richard Owlett <[rowlett@xxxxxxxxxxxxx](mailto:rowlett@xxxxxxxxxxxxx)>
  - *Date:* Tue, 04 Dec 2007 06:34:27 -0600
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miso@xxxxxxxxx wrote:

On Dec 3, 12:17 pm, Richard Owlett <[rowl...@xxxxxxxxxxxxx](mailto:rowl...@xxxxxxxxxxxxx)> wrote:

m...@xxxxxxxxx wrote:

On Dec 3, 10:18 am, "Fred Hiltz" <[n...@xxxxxxx](mailto:n...@xxxxxxx)> wrote:

George wrote:

Can I safely keep my LCD  
touch screen GPS in my car  
in freezing  
weather? I mean, after all,  
the "L" stands for liquid.

It is more a paste than a liquid. Of course  
everything freezes at  
some temperature. Google "LCD storage  
temperature" will find you  
typical ranges of -40 to +70 degrees C.  
Check your owner's manual.

My GPSmap 60CS specifies no storage  
range, but an operating range  
of -15 to +70 C. I have used it as low as  
-25, but the screen has  
almost no contrast and of course the batteries

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do not last long. I  
keep it in an inside pocket and use an  
external antenna now.

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Fred Hiltz, fhiltz at yahoo dot com

Generally when you design "personal" electronics, you  
design for an  
environment that can be tolerated by a person. Hence the  
LCD getting  
finicky in cold weather.  
[snip a case history]

Pay attention that like humans "can survive" extremes at which the "can  
not operate". Consider skater falling thru ice whose body temperature is  
drastically reduced. He does not "function" at that temperature. BUT, if  
carefully warmed may resume normal function.

\*CAVEAT LECTOR\* ALL adjectives significant ;/

Consumer grade or even industrial grade electronics will degrade  
specifications for items that interface with humans. Chips can easily  
work at 125 deg C, but nobody designs displays to be read at those  
temperatures.

The LCDs used in outdoor electronics have heaters. Even then, I doubt  
they are designed to work at the lower limits of the chips (-55 deg C)

I've designed display driver chips, so I'm not pulling this stuff out  
of the ether.

Been there ;) You should see what happens to an spinning 8" floppy goes too quickly from min operating  
temp to max operating temp.

I was just trying to illustrate the concept of "storage" vs "operating".  
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