Re: RS−232 levels to computer

Source: http://sci.tech−archive.net/Archive/sci.electronics.design/2006−03/msg01471.html

- *From*: budgie <me@xxxxxxxxxxx>
- *Date*: Sun, 12 Mar 2006 10:18:19 +0800

On Sat, 11 Mar 2006 13:45:15 GMT, Fred Bloggs <nospam@xxxxxxxxxx> wrote:

> Spehro Pefhany wrote:
>
> > On Sat, 11 Mar 2006 19:45:27 +0800, the renowned budgie
> > <me@xxxxxxxxxxx> wrote:
> >
> > > On Sat, 11 Mar 2006 05:37:04 GMT, Mac <foo@xxxxxxx>
> > > wrote:
> > >
> > > > On Fri, 10 Mar 2006 19:10:42 −0800,
> > > > Richard Henry wrote:
> > > >
> > > > > <pdrunen@xxxxxxx> wrote
> > > > > in message
> > > > > news:1142015379.013518.240620@xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx
> > > > >
> > > > > > Hi All,
> > > > > >
> > > > > > I understand
> > > > > > that
> > > > > > standard
> > > > > > RS−232
> > > > > > levels must
> > > > > > be bipolar
> > > > > > with at least
> > > > > > a −3V for a
> > > > > > logic "1"
> > > > > > and +3 volts

for logic
"0".

The
micocontroller
232 level is
TTL level, I
use this
signal to
drive a
NPN so the
the signal is
inverted and
use +12 on
the collector
to get
the level.
The lowest
voltage out
of the NPN
will be near
zero. I am
using this
for just
collecting
some data
sent over a
small cable
lengh
and I don't
plan on this
being part
of a design.

The
question is
in regards to
the
computer
RS−232
input,
would the
near
zero voltage
be taken as
by the com
port as the
correct
level?

> Don't count on it. However,
> many poorly−designed,
> non−spec−compliant
> interfaces will work with
> those voltages.
>
> Sometimes.
>
> Intermittently.

> Many well−designed ones will work, too. It's
> just not guaranteed by the
> spec to work.

> You too are misunderstanding the spec. The spec mandates
> minimum receiver
> threshold performance. Any receiver that can reliably
> respond *inside* those
> +/−3V specified minima is compliant.

> Indeed, one could argue that practice in the PC and other industries,
> with their huge installed base, trumps whatever 232 spec is current,
> and any new implementation that acted only minimally compliant with
> the spec (eg. thresholds at +/−2.6V nominal) would be 'broken'.
>
> One major advantage of the way the receivers generally work** is that
> the output state is known for a disconnected cable.
>
> Current practice, in effect, imposes *tighter* constraints than the
> standard. This is not an uncommon situation.
>
> ** does anyone know of a commercial RS−232 receiver IC that *doesn't*
> have a threshold in the +500mV~ +2.5V range?
>
> Best regards,
> Spehro Pefhany

That's why the damned things act up when the peripheral and computer are plugged into different line circuits with significant voltage difference between GNDs− not enough noise margin. For high reliability, the bipolar drive should be used, and it should be as large as possible, +/−12V if feasible.

Crikey! Back in 1969 my degree honours project had us running RS232 at 9600 baud between two campus buildings that were several hundred metres apart. I shudder to think what the data ground line was carrying.
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