

## Re: Effect of a rs485 damaged driver

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**From:** Tim Wescott ([tim\\_at\\_wescottnospamdesign.com](mailto:tim_at_wescottnospamdesign.com))

**Date:** 09/23/04

Date: Thu, 23 Sep 2004 10:16:02 -0700

Tim Shoppa wrote:

> "Reginald Jean Louis" <[louis\\_reginaldjean@hotmail.com](mailto:louis_reginaldjean@hotmail.com)> wrote in message  
news:<9Os4d.21940\$pa.1489170@news20.bellglobal.com>...

>

>>I have a bunch of rs485 transceivers arrange in a 4-wires bus topology (my  
>>question is good for 2-wire/half duplex too). I want to know if a blown up  
>>driver can affect the line by putting permanently the line in a high or low  
>>state? If so, there is a way to prevent that?

>

>

> Receivers can latch up/blow up too, for example by shorting one or both  
> of their inputs to Vcc or ground.

>

> The most common failure I've seen is shorted output drivers holding one  
> line high or low. Sometimes the system still continues to sort-of work  
> but not reliably at all.

>

> I've seen some applications guard against this by putting 50-ohm-or-greater  
> resistors in series between each node and the bus wires. Noise immunity  
> is decreased but the idea is that a "good" driver will outvote a "bad" driver  
> that has only one of its outputs shorted to ground/Vcc. This doesn't really  
> help if the "bad" driver is just ignoring its tristate input and jabbering  
> all the time as it then (electrically) has just as much vote as a good  
> driver.

>

> Some bus networks have receivers that can issue an alarm if one of the  
> bus lines is stuck high/low or they see meaningless jabber. Haven't  
> seen this for RS-485 although some software will issue somewhat meaningful  
> alarms when they cannot see their own transmissions :-).

>

> Tim.

Asynchronous serial receivers can detect framing errors, and any protocol should include at least a checksum on messages -- you can alarm on either bad checksums, framing errors, or the line going silent.

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Tim Wescott

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