

Re: USB or Ethernet for controller interface?

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- *From:* Tauno Voipio <tauno.voipio@xxxxxxxxxxxxxx>
 - *Date:* Thu, 12 Apr 2007 18:27:44 GMT
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Gary wrote:

On Apr 12, 5:32 am, "Paul E. Bennett" <p...@xxxxxxxxxxxxxxxxxxxxxx> wrote:

Gary wrote:

Working on 32-bit microcontroller design that needs to interface to industrial PC (mini-ITX, PC104, etc.) over short 3-meter cable. It is an industrial application and the design will be DIN rail mounted along side PLC's, relays, etc.

Any thoughts as to whether USB or Ethernet would be best?

Cost is a concern. Since this application's cable length requirement is short, does this make USB the obvious winner?

Or, is Ethernet more robust in an industrial environment?

Sorry if this has been debated in the past. I did a search, but didn't find much except for posts made in 2001. Let me know if there are articles that address this.

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Thank you!

No mention of desired speed of communication, no indication of what type of equipment the microcontroller will be attached to (from a safety point of view) and certainly no mention of the safety requirements in the communications link (which you should not be entirely reliant on). You also do not mention the type of data you expect to be handled and what latency you could tolerate. So no hope of a really sensible answer.

There is a large number of communication possibilities from physical connection details to protocol choices (RS232, RS485, CAN, USB, Ethernet, etc.). A bit more detail from your side and maybe you will get an answer more appropriate to your situation.

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Thank you for the feedback. Here are more details:

100Mb/s Ethernet or USB are needed for thru-put. CAN & RS232/485 have been ruled out. Ethernet or USB data rate is needed because the design will be transferring large amounts of buffered data. The buffer will be large enough to handle Ethernet or USB latency and the PC's non-deterministic nature. The PC side will be used as the human-interface and data storage. Not for time or safety critical control.

The design will be doing basic control stuff - reading sensors & inputs and controlling actuators. The isolation Rene mentioned is very good feedback.

Go for Ethernet and the TCP/IP stack. You'll have problems on the non-transparency of USB protocols. The IP protocols on Ethernet are pretty standard, and the sheer mass of the TCP/IP community prevents any fast drastic changes, which is an absolute necessity in industrial applications.

(Been there - done that).

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