EIA-422

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(Redirected from RS-422)

American national standard **ANSI/TIA/EIA-422-B** (formerly **RS-422**) and its international equivalent **ITU-T Recommendation V.11 (http://www.itu.int/rec/T-REC-V.11/en)** (also known as **X.27**), are technical standards that specify the "electrical characteristics of the balanced voltage digital interface circuit"[1]. It provides for data transmission, using balanced or differential signaling, with unidirectional/non-reversible, terminated or non-terminated transmission lines, point to point, or multi-drop. In contrast to RS-485 (which is multi-point instead of multi-drop) EIA-422/V.11 does not allow multiple drivers but only multiple receivers.

The current title of the ANSI standard is *TIA-422 Electrical Characteristics of Balanced Voltage Differential Interface Circuits* and is now in revision B, published in May 1994, and was reaffirmed by the Telecommunications Industry Association in 2005.

Several key advantages offered by this standard include the differential receiver, a differential driver and data rates as high as 10 megabaud at 12 metres (40 ft). The specification itself does not set an upper limit on data rate, but rather shows how signal rate degrades with cable length. The figure plotting this stops at 10 Mbit/s.

EIA-422 only specifies the electrical signaling characteristics of a single balanced signal. Protocols and pin assignments are defined in other specifications. The mechanical connections for this interface are specified by EIA-530 (DB-25 connector) or EIA-449 (DC-37 connector), however devices exist which have 4 screw-posts to implement the transmit and receive pair only. The maximum cable length is 1200 m. Maximum data rates are 10 Mbit/s at 12 m or 100 kbit/s at 1200 m. EIA-422 cannot implement a truly multi-point communications network (such as with EIA-485), however one driver can be connected to up to ten receivers.

A common use of EIA-422 is for RS-232 extenders. In video editing studios it is used to link control signals for all video and audio players/recorders to a central control board. Also, an RS-232-compatible variant of RS-422 using a mini-DIN-8 connector was widely used on Macintosh hardware until it was replaced by Intel's Universal Serial Bus on the iMac in 1998.

EIA-422 can interoperate with interfaces designed to MIL-STD-188-114B, but they are not identical. EIA-422 uses a nominal 0 to 5 Volt signal while MIL-STD-188-114B uses a signal symmetric about 0 V. However the tolerance for common mode voltage in both specifications allows them to interoperate. Care must be taken with the termination network.

EIA-423 is a similar specification for unbalanced signaling.

When used in relation to communications wiring, RS-422 wiring refers to cable made of 2 sets of twisted pair, often with each pair being shielded, and a ground wire. While a double pair cable may be practical for many RS-422 applications, the RS-422 specification only defines one signal path and does not assign any function to it. Any complete cable assembly (i.e. with connectors) should be labeled with the specification that defined the signal function and mechanical layout of the connector, such as RS-449.

Wikibooks has a book on the topic of
Programming:Serial Data Communications

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External links

- The Telecommunications Industry Association (http://www.tiaonline.org/)

References

1. ^ *TIA/EIA STANDARD, Electrical Characteristics of Balanced Voltage Digital Interface Circuits, TIA/EIA-422-B*, May 1994

See also

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- National Semiconductor Application Note AN-1031 "TIA/EIA-422-B Overview", January 2000, National Semiconductor Inc., retrieved from [2] (http://www.national.com/an/AN/AN-1031.pdf)
- National Semiconductor Application Note AN-759 "Comparing EIA-485 and EIA-422-A Line Drivers and Receivers in Multipoint Applications", February 1991, National Semiconductor Inc., retrieved from [3] (http://www.national.com/an/AN/AN-759.pdf)
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- Texas Instruments Application Report "Comparing Bus Solutions" February 2004, Texas Instruments, retrieved from [7] (http://focus.ti.com/lit/an/slla067a/slla067a.pdf)

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