Macintosh RS-422-to-RS-232-C Adapter

Article Created: 25 January 1991
Article Last Reviewed: 10 June 1992
Article Last Updated: 10 June 1992

TOPIC ---

I am trying to attach some Macintosh computers to a AT&T ISN network. The ISN requires an RJ-45 connector. We are having two problems.

1) According to the article "Macintosh Mini-8-to-RJ-45 Connection", "To do this, you need some kind of adapter." Is there a way to build a RS-422-RJ-45 cable without an RS-232 adapter in the middle?

2) Is there a consistent difference between computers in the Macintosh II family and Macintosh SE computers in terms of distance tolerance for RS-422? We get a Macintosh SE to work in situations where a Macintosh IIci will not. My thought was similar to that in another article on serial port cable length specifications. That is, we were a little over the distance spec and the Macintosh SE seems to be able to handle that. Word on the Internet is that people have to make different cables for the Macintosh II than for the Macintosh SE in these situations.

DISCUSSION ---

Because the built-in Macintosh serial ports are based on RS-422, which uses differential signals, a simple rule should be followed to assure compatibility with RS-232-C devices. Ground the RD+ line and leave the TD+ line disconnected. This converts the port to RS-423, which is compatible with almost all RS-232-C equipment.

The adapter spoken of in the article you referenced merely adapts the different connector types: RJ-45 to DB-25. The grounding of RD+ was done by the Mini-8 to DB-25 adapter. The following diagram shows the proper cable configuration for connecting a Macintosh serial port to an RS-232 device:

Macintosh Mini-8 Port				25 Pin RS-232 DTE Device		
Signal Name	Signal	Pin		Pin*	Signal	Signal Name
Handshake Out	HSKo	1	---- if needed --->	6	DSR	Data Set Ready
Handshake In	HSKi	2	<--- if needed ----	20	DTR	Data Term Ready

Transmit -	TD-	3	------------------>	3	RD	Receive
Receive -	RD-	5	<------------------	2	TD	Transmit
Transmit +	TD+	6	Not connected			
Signal Ground	SG	4	-----|------------	7	SG	Signal Ground
Receive +	RD+	8	-----|			

*Note that the pin assignments shown may be wrong if the RS-232 device is wired as DCE instead of DTE. Since we don't know how the RJ-45 connectors are wired, we can't provide pin assignments for them. However, the signal assignments will be the same, so you can translate pin numbers from the signal names.

Although both Macintosh ports usually work with RS-232-C equipment without the considerations mentioned above, their maximum cable lengths and resistance to noise and interference are reduced. The approximate 50-foot length limitation may be reduced drastically and reliability can be impaired.

We have noticed that the Macintosh SE and earlier models are slightly more tolerant of cable design. While the Macintosh II family serial ports are capable of the 50-foot maximum cable length RS-232-C specification, this requires the cable to be designed as shown above. If RD+ is not grounded, the maximum length will be reduced. The Internet community discussions you mention are probably based on a partial understanding of these factors.

Keywords: <None>

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19960215 11:05:19.00
Tech Info Library Article Number: 6703