

PURPOSE

This application note covers the use of RS-485 with the ISP-100.

INTRODUCTION

The ISP-100 utilizes RS-232 for its serial communication. The problem with RS-232 is that the distance between transmitter and receiver is limited in most cases to 50 feet. This distance is too short for some installations.

The RS-485 standard was developed to solve the problem of long distance serial communications. The maximum distance that can be covered varies depending on the speed of the data being transmitted.

SOLUTION

Through the use of RS-232 to RS-485 converters, the problem of long distance communications is solved. A set of Telebyte 365M RS-232 to RS-485 converters were acquired and tested with an ISP-100.

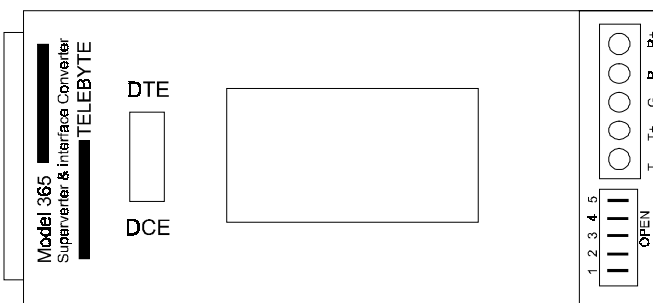


Figure 1 Telebyte 365M RS-232 to RS-485 converter.

While a Telebyte 365M (see Figure 1) was used in our tests, any RS-232 to RS-485 converter should work provided that the converter's data transfer speed is at least 38.4 KBPS and that an adapter cable (discussed below) is used. The 365M converters tested had a maximum data rate of 115.2 KBPS. Two sources of RS-232 to RS-485 converters are given at the end of this document.

When selecting converters, keep in mind the maximum distance that 38.4 KBPS data can be transmitted. This may or may not be readily available from the manufacturer's data sheet. Contact the converter's manufacturer for information specific to their product.

ADAPTER CABLE

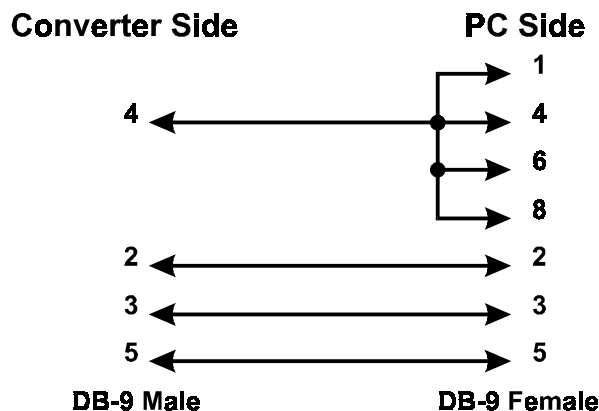


Figure 2 Adapter cable.

The use of the converters requires an adapter cable on the PC side of the link. This cable is necessary to defeat the cable detection feature within VUE-IT. This means that if the cable linking the ISP-100 to the PC is broken, the user may not know it except for unresponsiveness from the ISP-100. This cable is critical to any converter setup. When wiring the connector only connect the wires show. See Figure 2 for the wiring information.

USING THE TELEBYTE 365M

The following items were used in the tested link:

- (2) Telebyte 365M RS-232 to RS-485 converters.
- (1) Adapter cable (see Figure 2).
- (1) DB-25 Female to DB-9 Female adapter.
- (1) DB-25 Female to DB-9 Male adapter. (If connecting to ISP-100 through front serial port.)

The items were connected as seen in Figure 3.

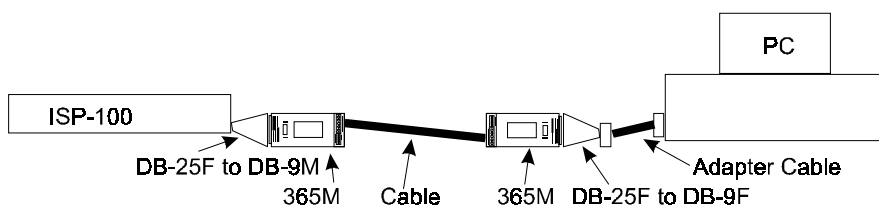


Figure 3 Link connections

SWITCH SETTINGS

Set the DTE/DCE switch to DCE on the converter at the PC end of the link.

Set the DTE/DCE switch to DTE on the converter at the ISP-100 end of the link.

The dip switches on both units should have the following settings:

- 1 - Closed
- 2 - Open
- 3 - Open
- 4 - Open
- 5 - Closed

SOURCES OF RS-232 TO RS-485 CONVERTERS

Telebyte Technology, Inc.
270 Pulaski Road
Greenlawn, NY 11740

Phone: 1-800-835-3298 or 516-423-3232
Fax: 516-385-8184
Web: www.telebyteusa.com
E-mail: sales@telebyteusa.com

Black Box Corporation
1000 Park Drive
Lawrence, PA 15055

Phone: 412-746-5500
Fax: 412-746-0746
E-mail: info@blackbox.com

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