

# *Using an EIA-485 Port With SEL MIRRORED BITS<sup>®</sup> Communications for an IEEE C37.94 Fiber-Optic Link*

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## INTRODUCTION

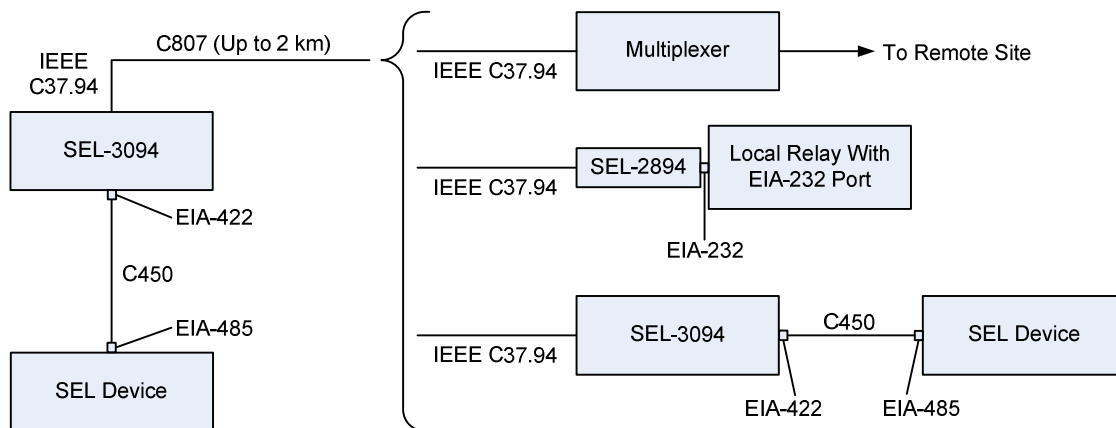
MIRRORED BITS communications is a direct relay-to-relay communications protocol that allows protective relays to exchange information quickly and securely at minimal cost. This information facilitates remote control, remote sensing, or communications-assisted protection schemes, such as POTT (permissive overreaching transfer trip) and DCB (directional comparison blocking). This application note provides implementation details and requirements for converting an EIA-485 port to the IEEE C37.94 standard through an EIA-422 interface using the SEL-3094 Interface Converter.

## PROBLEM

As an example, assume you have used all of the EIA-232 serial ports on the back of a relay and only the EIA-485 port is available. You need to use the port for MIRRORED BITS communications but want to convert it to an IEEE C37.94-compliant fiber-optic link.

SEL devices that have an EIA-485 communications port include SEL-300 series and SEL-700 series relays, SEL-734 Advanced Metering Systems, and SEL-2411 Programmable Automation Controllers.

## SEL SOLUTION



**Figure 1 Possible Configuration of MIRRORED BITS Communications Network**

The following equipment is needed to convert to the IEEE C37.94 standard:

- SEL-3094 with EIA-422 interface
- SEL-C450 cable
- SEL-C807 fiber-optic cable

## EIA-485 Interface Configuration

For information on configuring MIRRORRED BITS communications on the EIA-485 port of an SEL device, please see the instruction manual for that device, available at [www.selinc.com](http://www.selinc.com).

## SEL-3094 Configuration

On the SEL-3094, set Switch 1 of the control (DIP) switches to the down position (Position B), and all other switches to the up position (Position A). For more information, please see the SEL-3094 Instruction Manual, available at [www.selinc.com](http://www.selinc.com).

## SEL-C450 Cable Wiring

The SEL-C450 cable must be wired to the compression-block connector on the EIA-485 communications port. The correct wiring is shown in Figure 2.

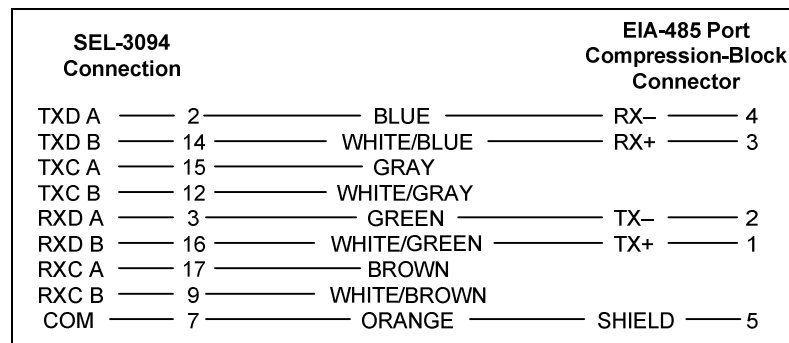


Figure 2 SEL-C450 Cable Diagram