RS-485 Monitoring

February 9, 2017

Issue
Describe setup procedures and problems for monitoring a RS-485 circuit

Procedure
RS-485 is a half-duplex circuit. Requests and responses appear on the same 2-wire circuit.
RS-232 is a full duplex circuit. Requests and responses appear on a different set of pins.

ASE2000 has native support for RS-232 only. To monitor RS-485, use an external 485-to-232 converter (purchased elsewhere) and connect the RS-232 input to one ASE2000 channel. Set the carrier to constant, telling the ASE2000 to ignore modem carrier signals which are not present.

Start monitoring. All messages from either direction (master-to-remote requests and remote-to-master responses) will arrive on one communication channel instead of two. That is, for RS-232, messages in one direction appear on a different channel than messages from the other direction. The RS-485 converter supplies all messages on one channel only.

This will be OK for a protocol such as DNP3 that contains a direction bit in the message. The ASE2000 uses this bit to parse each message correctly as a request or response.

For a protocol such as Modbus that has no such direction bit, the ASE2000 will treat all messages as either requests or responses depending on where the RS-485 converter is connected. If, for example, it is connected to the channel where the ASE2000 expects to see responses, then all responses will be shown correctly. Requests will be parsed as responses and, since the structure is not the same, will be shown as errors.

If the converter is connected to the other port, then all requests will be shown OK, and all responses will be in error.