NI 9871 Module Testing
Progress Report

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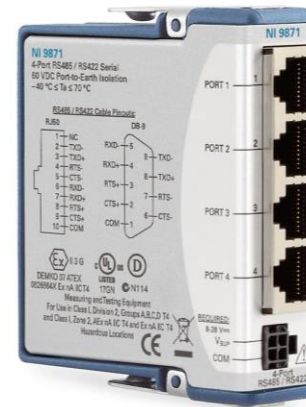
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NI-9871

- 4-Port RS485/RS422

Serial Module
- – Used in conjunction with NI USB-to-485 4-Port Serial Interface Device

Technical Specifications

	NI-9871	NI USB-485
Type	4-Port RS485 Serial Module	USB-to-RS485 Serial Interface
S/N	1A71D6E	1A3FAC6
Max Baud Rate	3686.4 kbps	460.8 kbps
Voltage Range	8-28 VDC	9-30 VDC

Both module and USB-485 are connected to their own 24 VDC power supplies.

Tests

- Read/write capability tests

    - Can module read from USB-485 and write back to it? ✔
    - Are there any special characters that this module cannot handle?
    - Does this module read back *exactly* what has been written to it?
    - Does this module write *exactly* what it has been instructed to write?

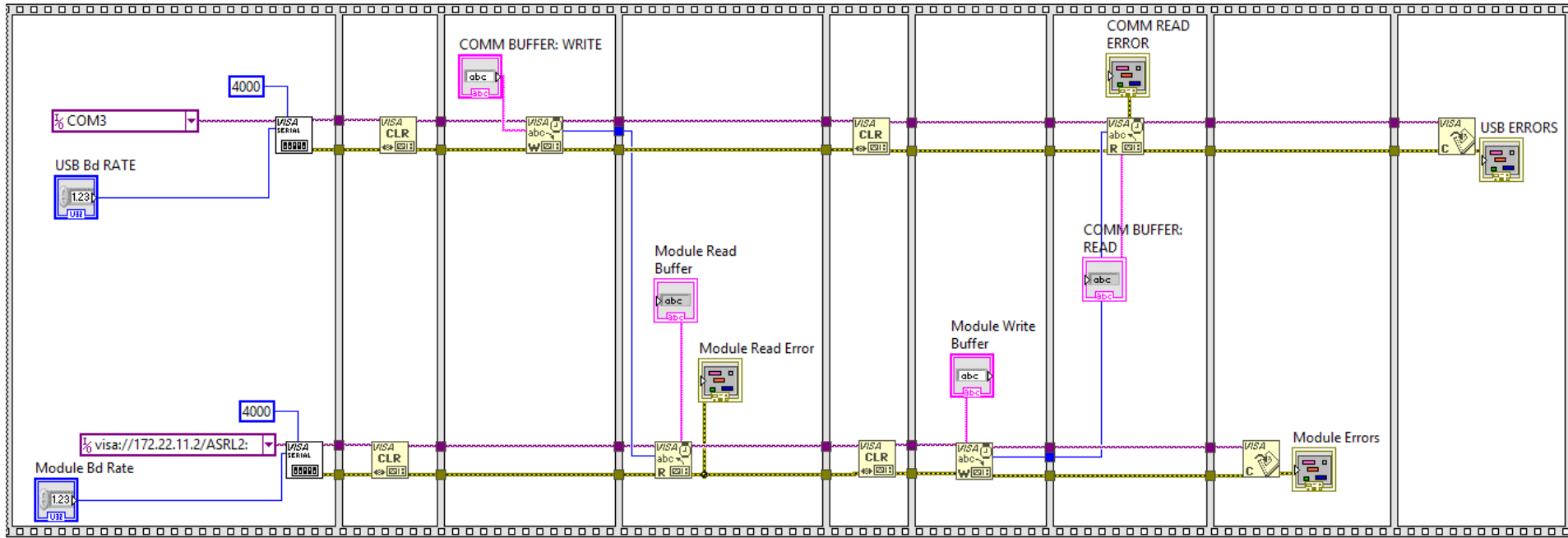- Test different baud rates (in development)
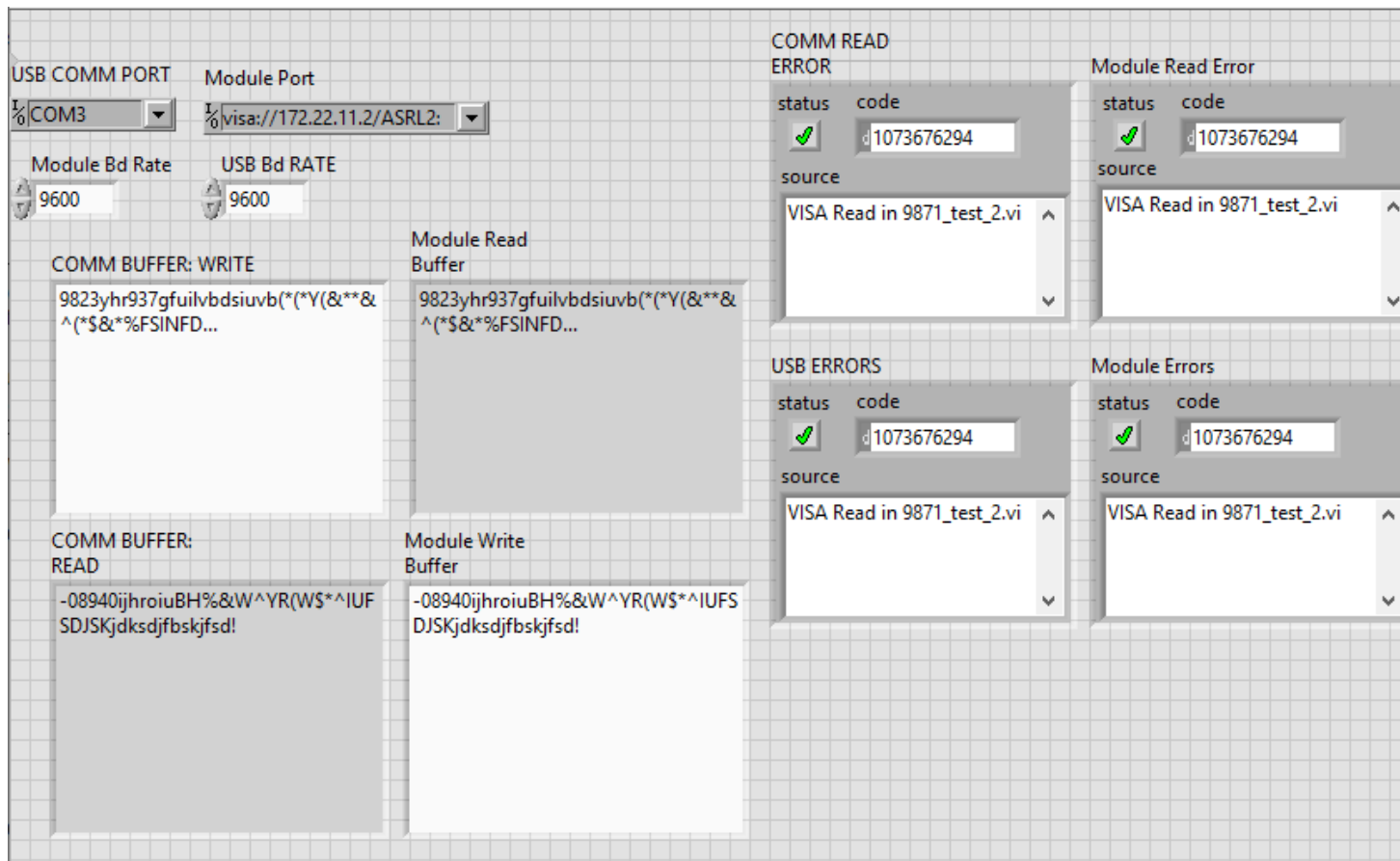
Read/Write Test: Block Diagram

Read/Write Test: Front Panel

LabVIEW front panel for NI-9871 serial module test. User changeable port selection and baud rate. Read and write buffers, and error messages.

Problems Faced

- Ethernet cable
  - Module requires RJ-50 cable, but only RJ-45 cables available.
  - Solution: Purchased RJ-50 cable.

- Serial cable adapter
  - To connect module to USB-485 serial interface via Ethernet cable an adapter was needed that could support an RJ-50 Ethernet cable.
  - Solution: Purchased breakout board and DB9 serial adapter.

Problems Faced (cont'd)

- Read/write
  - Could not read from either USB-to-serial interface or module in National Instruments Measurement & Automation Explorer (NI MAX), but could write from both.
  - Solution: Changed timeout from 2 s to 4 s on both module and USB-485 serial interface. This appears to have fixed timeout error.

- Baud rates
  - Unsuccessfully attempted to increase rates (from 9600 bps to 14400 bps) for both module and USB-485. Only worked for USB-485.
  - Maximum baud rate for module is significantly higher than that of USB-to-485, so there is a limit to how high it can be tested.

Moving Forward

- Decide how many times to run each test.

- Determine how to change baud rate for module.

- Test different baud rates, create random string generator, and compare read/write strings.

- Determine if these tests are enough to ensure that module works according to manufacturer's specifications.

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Conclusions

- The NI-9871 serial module behaves as it should under these specific conditions:

    - Baud rate of 9600 bps
    - Only for specific characters input for test

Thank You!

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