Problem Report PR-005

HW part: HW0001

HW rev: R002

Description: SW output is not recognized by synthesizers.

Steps to reproduce the problem

1. Connect piano input to MIDI IN 2
2. Connect PC output to MIDI IN 3
3. Connect PC input to MIDI THRU 2
4. Connect synth input to MIDI OUT 2
5. Turn on piano

Expected results:

1. None
2. None
3. None
4. None
5. Synthesizer should change program to Piano 1, but no effect was observed.

Investigation notes

2021-03-27 I discovered the interrupt was being received, but it was being sent to the wrong output. After correcting the output channel, I discovered that the Roland Integra-7 synthesizer received MIDI data, but doesn’t respond.

2021-03-28 After connecting an oscilloscope to the output of the opto-coupler and to the amplifier output, I observed the MIDI status message (0.25 sec period) from the piano on the input, but nothing on the output. I need to investigate the code driving the output UART further.

2021-03-29 I identified code defects in the functions MergeOutput\_SendByte() and MergeOutput\_TxIsr() that prevented data from being output. After testing with the Saleae logic analyzer, I identified code defects in the function \_Hal\_InitUart() that prevented the UART from sampling the correct data value. After correcting these code defects, the UUT works as expected with the digital piano and the Roland Integra-7 synthesizer.