

# Composition: Electronic Media II

Feb. 6, 2006

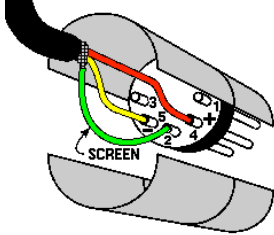
## Intro to MIDI

1. History and premises of MIDI (Musical Instrument Digital Interface).
  - a. Dave Smith, 1982
  - b. Communication protocol between digital instruments produced by different manufacturers.
  - c. Event-oriented.
  - d. General MIDI
2. The downside of MIDI:
  - a. Latency
  - b. Log jams
  - c. Event-oriented
  - d. General MIDI
3. MIDI Plug



Note the 5 pins

4. MIDI Plug anatomy:

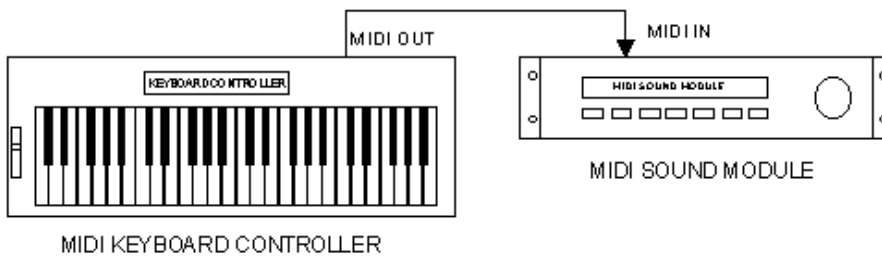


Note the 3 wires.

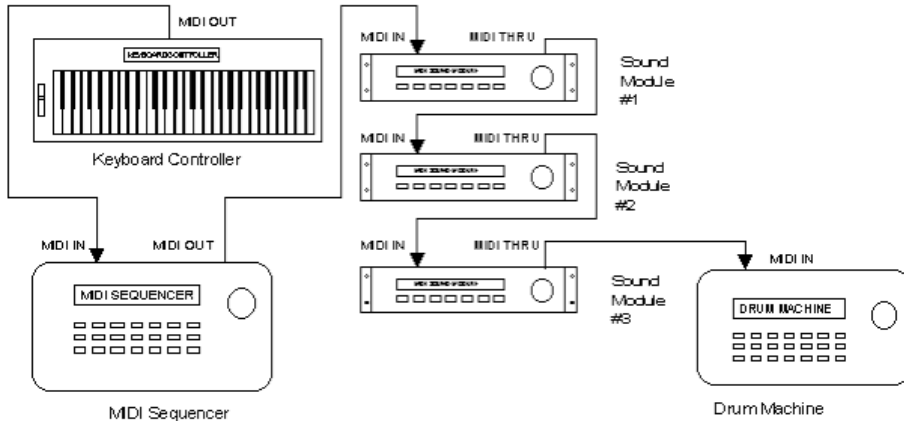
5. MIDI jacks: in, out, thru



6. Basic MIDI set-up:



7. Expanded MIDI set-up:



8. MIDI devices in EMS:

- a. Fatar Keyboard
- b. Peavey PC-1600 faders
- c. Foot volume controls
- d. MOTU MIDI Patch Bay

9. Other types of MIDI devices that we can buy?

10. Basics of MIDI transmission:

- a. UART: Universal Asynchronous Receiver/Transmitter
- b. UART sends and receives high and low voltages. High voltage interpreted as 0 and low voltage interpreted as 1 in binary code.
- c. Baud rate = 31,250 bits per second
- d. Bit: 1 digit, 0 or 1, base 2.

6. Discussion of base 2:

- a. 0000 base 2 = 0 base 10
- b. 0001 base 2 = 1 base 10
- c. 0010 base 2 = 2 base 10
- d. 0011 base 2 = 3 base 10

7. More on MIDI transmission.

- a. Data stream
- b. 10-bit chunk
- c. start and stop bits
- d. 8-bit data byte.

8. Basics of MIDI Messages:

- a. Status Byte: Most Significant Bit (MSB) = 1
- b. Data Byte: Most significant Bit (MSB) = 0

9. Status Byte:

y	y	y	x	x	x	x	Start = 1
Type of Data Messages to follow			Channel message				
<b>Note off</b>			Ch. 1-16				
<b>Note on</b>			Ch. 1-16				
Polyphonic			Ch. 1-16				
Aftertouch			Ch. 1-16				
<b>Control Change (continuous controller)</b>			Ch. 1-16				
<b>Program Change</b>			Ch. 1-16				
Channel Aftertouch			Ch. 1-16				
System			Ch. 1-16				
Note: $2^3 = 8$			Note: $2^4 = 16$				

10. First Data Byte:

y	y	y	x	x	x	x	Start = 0
Note: $2^7 = 128$							

Note off = 0 - 127

Note on = 0 - 127

Control Change = 0 - 127

Program Change = 0 - 127

11. If the first Data Byte is note on or off, then a second Data Byte follows:

- a. velocity
- b. 0 - 127
- c. Back in the day story.