

* Digital Audio Transmission

Audio Engineering II

Reading: Huber pp. 214-224 (ch. 6)

* Digital Audio Transmission

* Audio data is commonly transferred between devices in digital form.

* Standards for Digital Transmission:

- * AES/EBU

- * S/PDIF

- * MADI

- * ADAT Lightpipe

- * TDIF

* AES/EBU

- * Audio Engineering Society / European Broadcast Union
- * Conveys 2 channels of digital audio through a single XLR cable.
- * Includes both audio and synchronization data.
- * The receiving device will usually base its wordclock on the source drive.

* S/PDIF

- * Sony/Phillips Digital InterFace
- * Uses unbalanced RCA connectors or Toslink optical “lightpipe” connectors
- * Includes setup information – sample rate, copy protection status, etc.)
- * Able to transmit multichannel data between devices:
5.1 surround link between DVD and audio receiver



* MADI

- * Multichannel Audio Digital Interface
- * Proposed as an AES multichannel standard by several prominent manufacturers (Sony, Neve, SSL)
- * Up to 56 channels of digital audio along a single coaxial cable (or fiber-optic cables for longer distances)
- * Transmission rate of 100Mbit/sec

* ADAT Lightpipe

- * Developed by Alesis for use with ADAT tape (which is hardly ever used anymore)
- * Digital transmission protocol lives on - used by a variety of digital multitrack recorders, audio interfaces, mic pres and hardware devices.
- * Toslink optical connectors
- * Up to 8 channels per cable
- * Up to 24 bit, 48k resolution (other modes can transmit higher SRs for 4 channels)
- * Digital audio sync data is also transmitted, but not timecode.



*TDIF

- *Tascam Digital InterFace

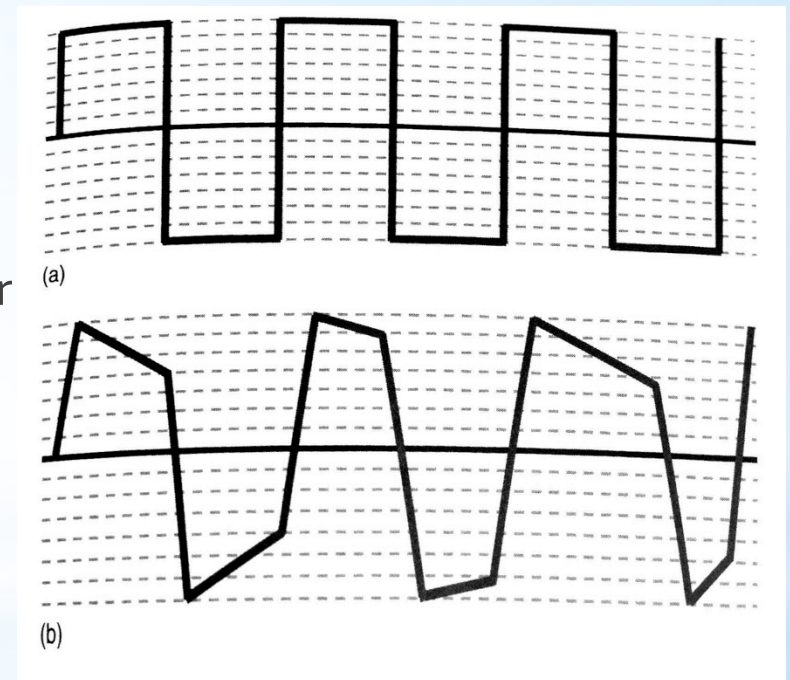
- *Uses 25-pin D-Sub cable

- *Transmit/receive up to 8 channels of digital audio

- *Bidirectional – one cable connects ins and outs.

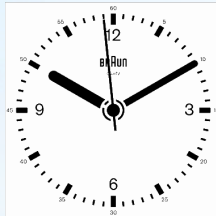
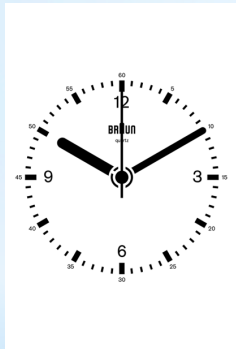
* Jitter

- * Time-based errors in a digital connection
- * Can be caused by:
 - * Very long cables
 - * Cables of the wrong impedance
 - * Devices impedances are mismatched
 - * Too many devices daisy-chained together
- * Effects
 - * Slightly blurred audio image
 - * Added noise
 - * Distortion
 - * Reduced dynamic range

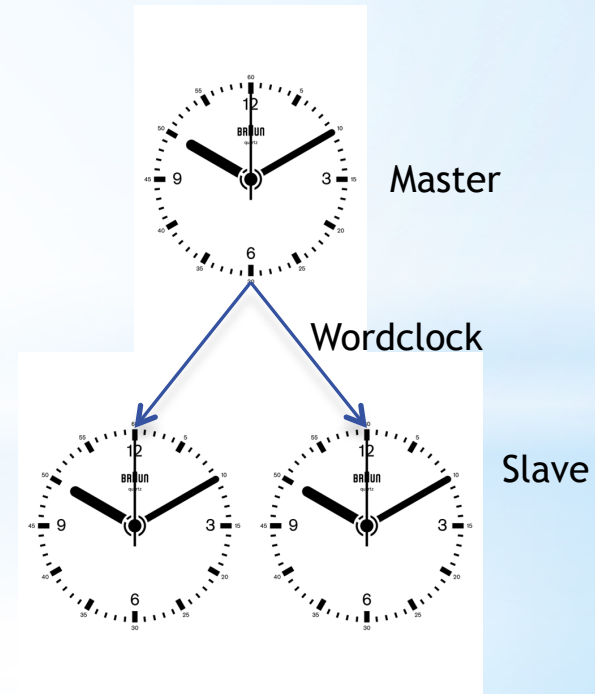


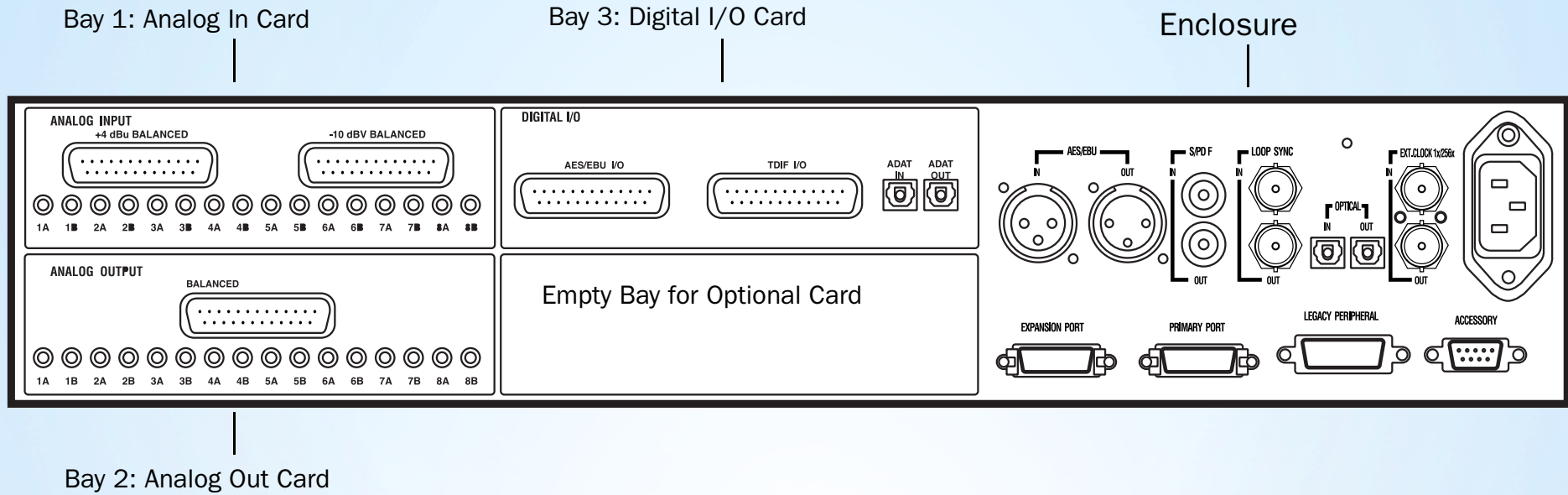
* Wordclock

- * One device acts as the “master” – it sets the timing reference for all other devices.
- * Synchronizes A/D conversion during record and playback processes



- * Usually transmitted via RCA or BNC co-axial cables





192 I/O back Panel

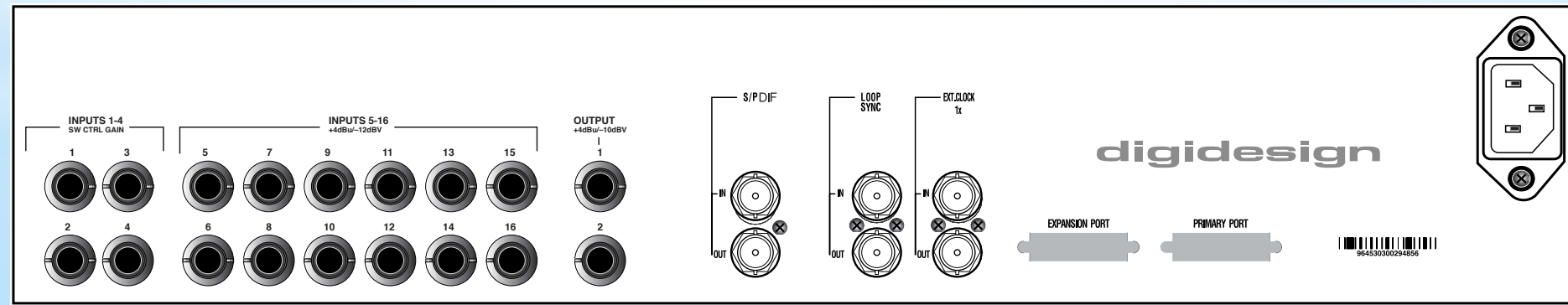


Figure 2. 96i I/O back panel