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The logo features the letters 'O3D' in a bold, black, sans-serif font. The letters are positioned above a series of horizontal blue lines that create a sense of motion or depth.

DIGITAL MIXING CONSOLE

03D

Applications Guide

Part 2: 03D Applications

System Operating Notes

03D

- 03D interface cards must be screwed securely in place. Do not leave the screws out after installation as the cards will not be grounded correctly.
- If a crackling noise can be heard, make sure not more than one device is set to internal wordclock. One device should be set for internal wordclock (master) and all other devices should be set to external wordclock (slave).

ADAT

- To use the ADAT's DIGITAL INPUT, press the DIGITAL IN button on the ADAT. Do not press the DIGITAL I/O button on the BRC.
- Set the DIGITAL I/O button on the BRC to OFF. This function is for direct ping-pong between multiple ADATs. If this is turned ON while connected to an 03D, bus assignments will produce unexpected results. Press the DIGITAL IN button on the ADAT to use the DIGITAL INPUT.
- To check the ADAT wordclock source, press the SET LOCATE and DIGITAL IN buttons together. The display will show "int" for internal or "digi" for external.
- The sampling rate of an ADAT can be set to either 48 kHz or 44.1 kHz. Use Fixed mode for 48 kHz and Variable mode for 44.1 kHz (using the PITCH DOWN button, set to -146 cents. At which point 44.1 appears on the display). The newer ADAT-XT has dedicated switches for selecting these two sampling rates.
- In a multiple ADAT system with no BRC, Control Slave ADATs must be powered up before the Control Master ADAT, because when the Control Master ADAT is powered up it checks how many Control Slave ADATs are connected, allocates them device numbers, and automatically sets the system wordclock.
- In an ADAT system with a BRC, the ADAT(s) must be powered up before the BRC, because when the BRC is powered up it checks how many ADATs are connected, allocates them device numbers, and automatically sets the system wordclock. The BRC works as Control Master.
- To generate timecode on a BRC, press the GEN SYNC button.
- ADAT tapes can be duplicated when ADATs are connected together directly. Be aware that a delay will be introduced if tapes are duplicated via the 03D.
- To see the version number of an ADAT, press the SET LOCATE and FAST FWD buttons together.
- Both the ADAT and BRC can be initialized as follows. Initialization is recommended when a BRC is behaving strangely, and the first time an ADAT is connected to a BRC. To initialize, hold down the RECORD and PLAY transport buttons while turning on the power.

Akai DR8 & DR16

- When a track is armed for recording, the DR8 or DR16 will normally try to take its wordclock source from that track's input. To prevent this, in the Digi submenu set Auto Sync to Off. Note that the Auto Sync setting is not memorized when the DR8 or DR16 is turned off, although it can be stored as part of a project.

03D Optional Interface Cards

To interface the 03D with digital multitrack equipment, an optional interface card is required. One single-size interface card can be installed in the 03D.

Available Cards

The following table lists the interface cards available for use with the 03D.

Card	Description	Connectors
CD8-AT	ADAT Digital I/O	Optical x2
CD8-TDII	Tascam TDIF-1 Digital I/O	25-pin D-sub x1
CD8-AE-S ^a	AES/EBU Digital I/O	25-pin D-sub x1
CD8-Y	Yamaha Digital I/O	25-pin D-sub x1
CD8-CS KIT	Digital Cascade Kit ^b	25-pin D-sub x1

a. Cable not included.

b. Kit includes two cards and one cable.

YGDAI Digital Inputs

The eight YGDAI digital inputs of the interface card work as 03D inputs for input channels 17 through 24, and cannot be reconfigured.

Assigning Signals to the YGDAI Outputs

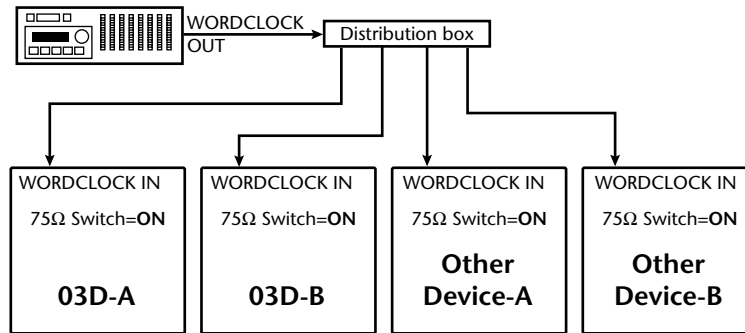
The following table shows which signal sources can be assigned to the eight YGDAI digital outputs. Note that these signals are not sourced directly from the 03D buses. They are sourced from the actual outputs before D/A conversion, so they are affected, for example, by the stereo, bus, and aux send master faders, EQ, and dynamics processors.

Output	Source
1	BUS 1, AUX 1, Direct Out 1, Direct Out 9, or STEREO L
2	BUS 2, AUX 2, Direct Out 2, Direct Out 10, or STEREO R
3	BUS 3, AUX 3, Direct Out 3, Direct Out 11, or STEREO L
4	BUS 4, AUX 4, Direct Out 4, Direct Out 12, or STEREO R
5	BUS 1, AUX 1, Direct Out 5, Direct Out 13, or STEREO L
6	BUS 2, AUX 2, Direct Out 6, Direct Out 14, or STEREO R
7	BUS 3, AUX 3, Direct Out 7, Direct Out 15, or STEREO L
8	BUS 4, AUX 4, Direct Out 8, Direct Out 16, or STEREO R

Wordclock Connections & Termination

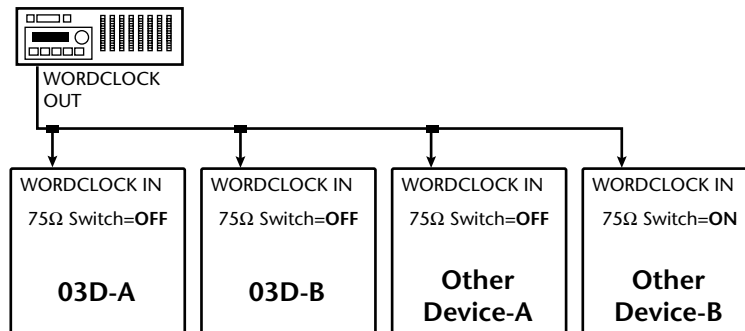
For correct operation it is essential that the wordclock cabling be terminated correctly. The 03D has a wordclock termination ON/OFF (75Ω) switch on the rear panel. Wordclock is a TTL signal, and IN and OUT connections use BNC connectors. Three wordclock distribution examples are shown below. Note the 75Ω wordclock terminator switch settings.

1. Parallel Distribution Box



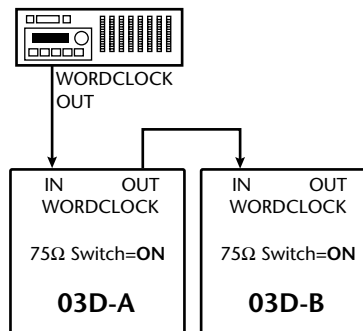
In this example, a parallel distribution box is used to distribute the wordclock signal among devices. All wordclock terminator switches are set to ON.

2. Using BNC T-bar Connectors



This example is similar to the above except that T-bar connectors are used. In this system, only the last device's wordclock terminator switch is set to ON.

3. Daisy Chain Distribution



In this example, the wordclock master is a digital multitrack recorder. Both 03D wordclock terminator switches are set to ON. This method of wordclock distribution is not recommended for large systems.

Wordclocks

When several digital audio devices are configured in a system, it is essential that they are all synchronized to a single wordclock source. This is not SMPTE or MIDI timecode synchronization. Wordclock synchronization refers to the synchronization of the digital audio processing components inside each digital audio device. Typically, one digital audio device acts as wordclock master and all other devices work as wordclock slaves. The wordclock frequency is the same as the chosen sampling rate.

Even though some systems appear to work okay with several digital audio devices not sharing a common wordclock (i.e., all devices set to their own internal wordclock), digital audio data will not be processed correctly. In some systems this problem will be very audible. In others it may cause subtle distortion. Be aware of this.

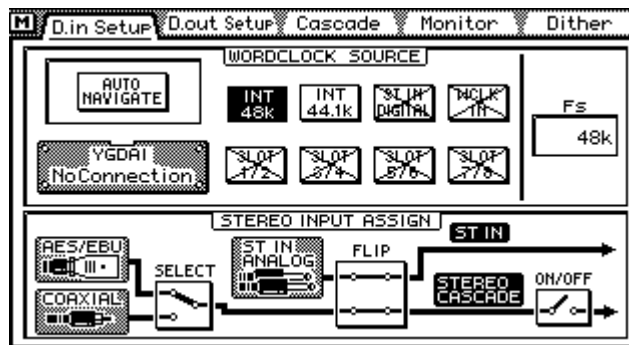
In a system where all devices share a common wordclock, it is important that all devices be powered on even if just one or two devices are being used. Obviously, the wordclock master device must be powered on. Before starting a recording session it's a good idea to make sure that all wordclock slaves are locked to the master wordclock source. Most devices have front panel indicators that show whether they are locked to internal or external wordclock.

Setting the 03D's Wordclock

With the 03D's internal wordclock generator, industry-standard sampling rates of 44.1 kHz and 48 kHz are available. When the internal wordclock generator is used, the 03D can be used as wordclock master, with other digital devices working as wordclock slaves.

Alternatively, the 03D can be used with external wordclock rates of between 32 kHz -6% and 48 kHz $+6\%$. An external wordclock can be sourced from the DIGITAL STEREO IN, BNC WORD CLOCK IN, or a pair of YGDAI digital inputs.

1. Use the [DIO] button to locate the D.in Setup page shown below.



Note: As the wordclock source is being changed, noise may be produced. So before selecting a wordclock source, set the stereo output, aux send, and bus out faders to minimum, turn down your monitor amplifier, and stop all recorders.

2. Use the cursor buttons to select the WORD CLOCK SOURCE options, and the [ENTER] button to set them. If you are using a mouse, simply click the options.

If the 03D locks correctly to the selected wordclock source, the respective indicator appears highlighted.

AUTO NAVIGATE—This function checks all possible wordclock sources and then displays a dialog box recommending a suitable source. Note, however, that this function is not perfect and in some situations it may not be able to recommend a suitable source. The dialog box shown here appears when this function is selected.



MANUAL—These options allow you to select the wordclock source.



Internal wordclock at 44.1 kHz



Internal wordclock at 48 kHz



External wordclock via the DIGITAL STEREO IN (AES/EBU or Coaxial). The STEREO INPUT ASSIGN FLIP switch on the D.in Setup page must be set so that the AES/EBU or Coaxial signal is assigned to the ST IN.



External wordclock via the BNC WORD CLOCK IN connection



External wordclock via the YGDAI card inputs 1 and 2



External wordclock via the YGDAI card inputs 3 and 4



External wordclock via the YGDAI card inputs 5 and 6



External wordclock via the YGDAI card inputs 7 and 8

The status of the wordclock is indicated as follows.



03D locked to this wordclock source



Usable wordclock present



Wordclock signal present but not synchronized to selected wordclock. If such a signal is connected and the DIGITAL ST IN SYNC CAUTION or YGDAI IN SYNC CAUTION preference is set to ON, a warning message appears.



No wordclock signal available.

FS—When the 03D is locked to a wordclock, the sampling rate appears here (48k, 44.1k, or 32k). When it is unlocked, the display shows UNLOCK. If another page is accessed in the unlocked state, UNLOCK appears on that page too.

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03D with ADAT & JL Cooper Datasync-2

This application shows how the 03D can be used with an Alesis ADAT and JL Cooper Datasync-2 MIDI Synchronizer to create an 18-input, 8-track digital recording system. The eight digital tape returns and 18 Mic/Line inputs provide up to 26 inputs at mixdown. In addition, the 03D's built-in automix and scene memories provide both dynamic and static mix automation referenced to timecode.

The JL Cooper Datasync-2 MIDI Synchronizer converts ADAT sync signals to MTC and SMPTE timecode. In this particular system, the 03D automix is referenced to MTC.

Connections

- The ADAT (CD8-AT) card must be screwed securely in place. Do not leave the screws out after installation as the cards will not be grounded correctly.
- The Digital In/Out connectors on the 03D and ADAT are connected together using Optical Cables. Press the **DIGITAL IN** button on the ADAT to use the DIGITAL IN.
- YGDAI digital outputs can be configured as bus outs, aux sends, input channel direct outs, or stereo outs. So although the 03D is a four-bus mixer, assigning the four buses and four aux sends, or the channel direct outs, to the YGDAI outputs allows eight-track simultaneous recording. YGDAI output assignments are made on the D.out Setup page, which can be located using the [DIO] button.
- YGDAI digital inputs feed 03D input channels 17 through 24.
- 9-pin Sync cables for connecting the ADAT and Datasync-2 are available from Alesis.

03D Wordclock Setup

In this system, the 03D works as a wordclock slave. Any pair of YGDAI digital inputs can be selected as the wordclock source. Use the [DIO] button to locate the D.in Setup page for wordclock settings.

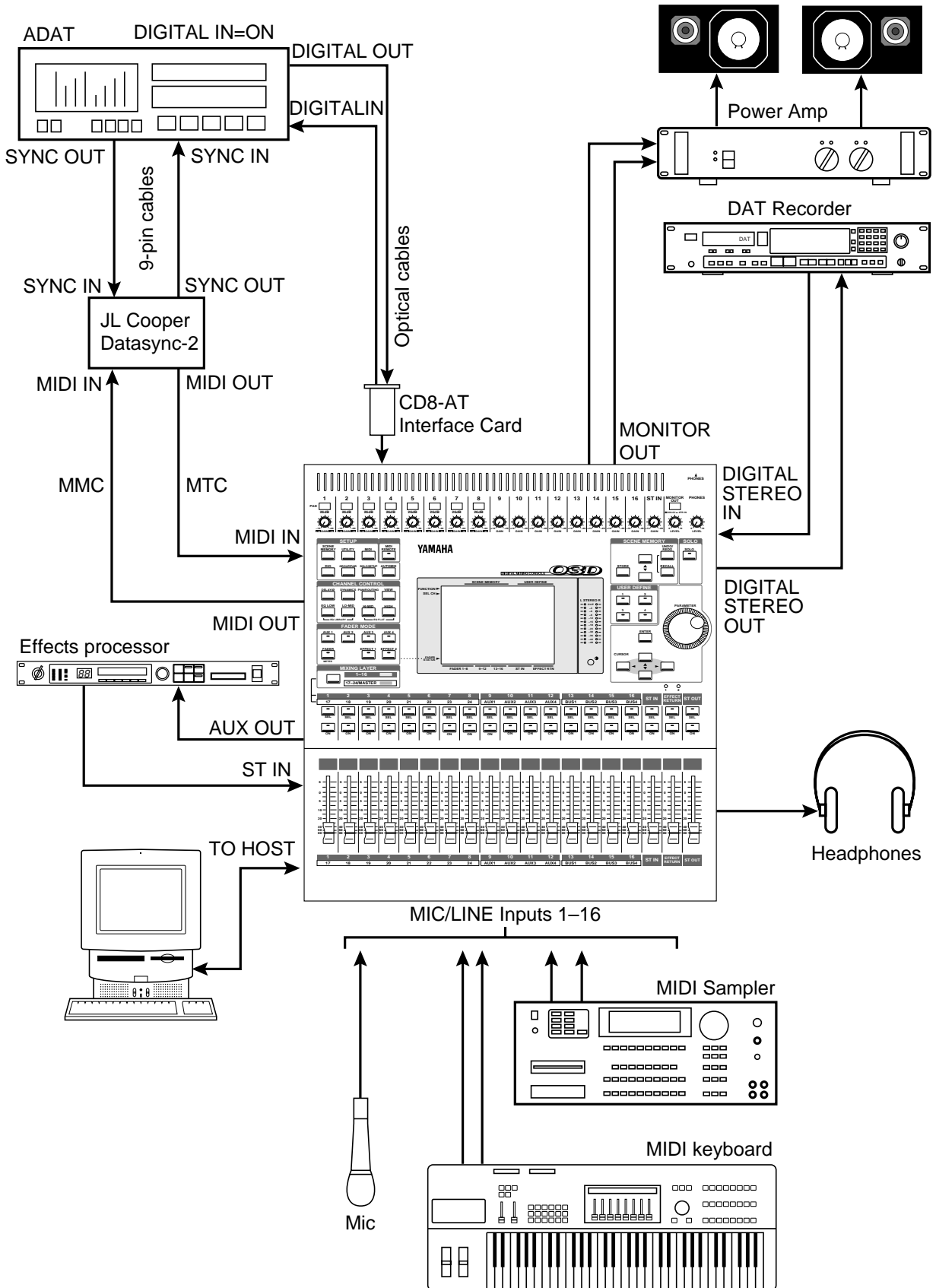
ADAT Wordclock Setup

The ADAT should be set as wordclock master. To confirm this, press the SET LOCATE and DIGITAL IN buttons together. The display should show “int”, meaning internal wordclock. The ADAT sampling rate can be set to either 48 kHz or 44.1 kHz. Use Fixed mode for 48 kHz and Variable mode for 44.1 kHz (using the PITCH DOWN button, set to -147 cents. At which point “-146, 44.1, -148” appears on the display). The newer ADAT-XT has dedicated switches for selecting these two sampling rates.

Alternatively, the ADAT could be used as a wordclock slave with the 03D as master. In this case, the ADAT would be set to “digi”. This can be confirmed by pressing the DIGITAL IN and SET LOCATE buttons together. Use the [DIO] button to locate the D.in Setup page on the 03D and set the internal wordclock to either 44.1 kHz or 48 kHz.

Notes

- Press the DIGITAL IN button on the ADAT to use the DIGITAL INPUT.



03D

Figure 22 03D with ADAT & JL Cooper Datasync-2

23 03D with DA-38 (Timecode on Tape Track)

This application shows how the 03D can be used with a Tascam DA-38 to create an 18-input, 7-track digital recording system. As shown in Figure 23, track eight of the DA-38 has been striped with SMPTE timecode. This is then fed to the Midiman Syncman Plus, which converts the SMPTE to MTC and feeds it to the 03D. The seven digital tape returns and 18 Mic/Line inputs provide up to 25 inputs at mixdown. In addition, the 03D's built-in automix and scene memories provide both dynamic and static mix automation referenced to timecode.

The Midiman Syncman Plus is an SMPTE to MTC converter and MTC generator. Front panel DIP switches are used to select the timecode type when working as a generator. For SMPTE to MTC conversion the frame rate is detected and set automatically.

Connections

- The Tascam (CD8-TD) card must be screwed securely in place. Do not leave the screws out after installation as the card will not be grounded correctly.
- The Tascam digital audio cable (PW-88DL) carries the eight tape sends and eight tape returns.
- YGDAI digital outputs can be configured as bus outs, aux sends, input channel direct outs, or stereo outs. So although the 03D is a four-bus mixer, assigning the four buses and four aux sends, or the channel direct outs, to the YGDAI outputs allows eight-track simultaneous recording. YGDAI output assignments are made on the D.out Setup page, which can be located using the [DIO] button.
- YGDAI digital inputs feed 03D input channels 17 through 24.
- DA-38 track eight is striped with SMPTE timecode. Track eight analog out (phono) is connected to the Syncman Plus.

03D Wordclock Setup

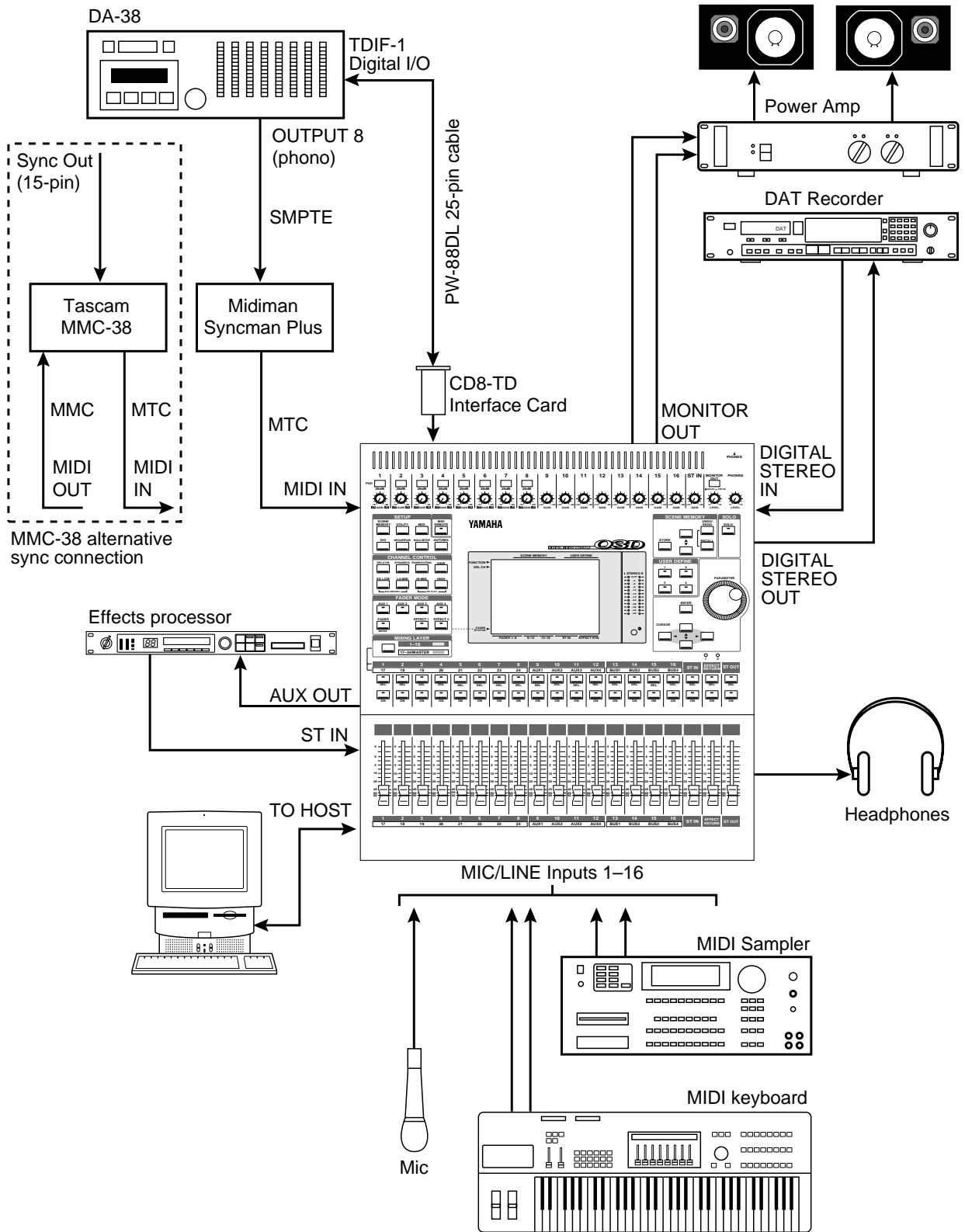
The 03D works as a wordclock slave. Any pair of YGDAI digital inputs can be selected as the wordclock source. Use the [DIO] button to locate the D.in Setup page for wordclock settings.

DA-38 Wordclock Setup

The DA-38 works as wordclock master. The sampling rate is set when the DA-38 tape is formatted. This can be either 48 kHz or 44.1 kHz. After formatting, the sampling rate is determined by the formatted tape.

Notes

- On the Tascam (CD8-TD) card there is a DIP switch that should be set to 16-bit. This is the initial setting, but you should confirm it. This switch is for use with Tascam High-Bit recording applications.
- Tascam 25-pin digital audio cables PW-88DL (5 m) and PW-88D (1 m) are available from Tascam.
- With an optional MMC-38, which converts Tascam sync signals to MTC, the DA-38 could be used as an 8-track recorder, with track 8 free for audio recording. In this case, the Sync Out connector on the DA-38 would connect to the Remote In connector in the MMC-38.



03D

Figure 23 03D with DA-38 (Timecode on Tape Track)

24 03D with Akai DR8

This application shows how the 03D can be used with an Akai DR8 Hard Disk Recorder to create an 18-input, 8-track digital recording system. The eight digital tape returns and 18 Mic/Line inputs provide up to 26 inputs at mixdown. In addition, the 03D's built-in automix and scene memories provide both dynamic and static mix automation referenced to timecode.

Connections

- The ADAT (CD8-AT) card must be screwed securely in place. Do not leave the screws out after installation as the card will not be grounded correctly.
- The DR8 is fitted with an optional ADAT (IB-804A) interface card and MIDI (IB803M) interface card.
- YGDAI digital outputs can be configured as bus outs, aux sends, input channel direct outs, or stereo outs. So although the 03D is a four-bus mixer, assigning the four buses and four aux sends, or the channel direct outs, to the YGDAI outputs allows eight-track simultaneous recording. YGDAI output assignments are made on the D.out Setup page, which can be located using the [DIO] button.
- YGDAI digital inputs feed 03D input channels 17 through 24.
- The Digital In/Out connectors on the 03D and DR8 are connected together using Optical Cables.

03D Wordclock Setup

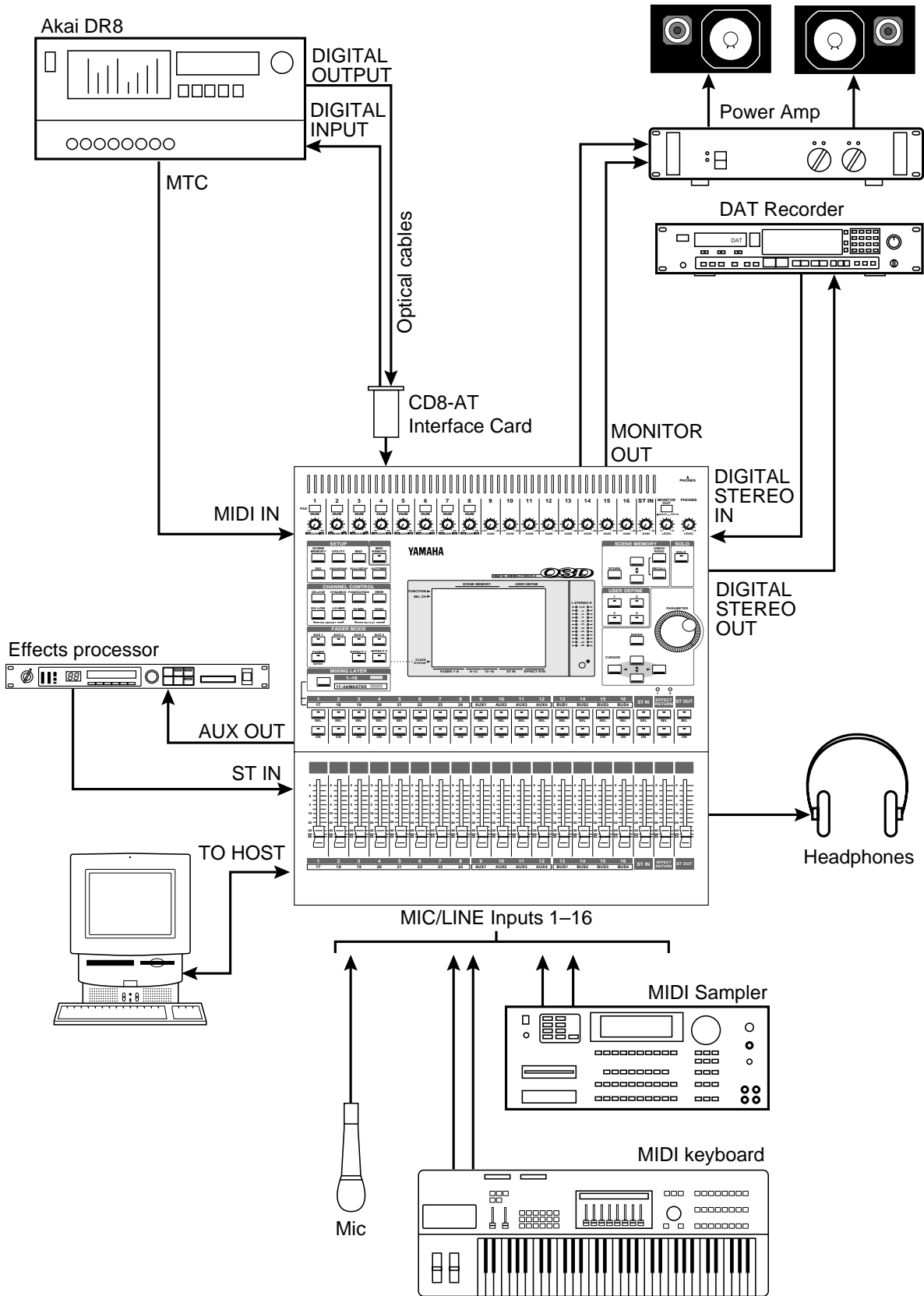
The 03D works as a wordclock slave. Any pair of YGDAI digital inputs can be selected as the wordclock source. Use the [DIO] button to locate the D.in Setup page for wordclock settings.

DR8 Wordclock Setup

The DR8 works as wordclock master.

Notes

- When a track is armed for recording, the DR8 will normally try to take its wordclock source from that track's input. To prevent this, in the Digi submenu set Auto Sync to Off. Note that the Auto Sync setting is not memorized when the DR8 is turned off, although it can be stored as part of a project.



03D

Figure 24 03D with Akai DR8

25 03D with Akai DR16

This application shows how the 03D can be used with an Akai DR16 Hard Disk Recorder to create an 18-input, 16-track digital recording system. The eight digital tape returns, eight analog tape returns, and 18 Mic/Line inputs provide up to 34 inputs at mixdown. In addition, the 03D's built-in automix and scene memories provide both dynamic and static mix automation referenced to timecode.

The DR16 is a 16-track hard disk recorder featuring 8-track recording and 16-track playback.

Connections

- The ADAT (CD8-AT) card must be screwed securely in place. Do not leave the screws out after installation as the card will not be grounded correctly.
- The DR16 is fitted with an optional ADAT (IB-804A) interface card and MIDI (IB803M) interface card. An IB804AEX interface card, which provides 8 digital inputs and 16 digital outputs, could be used instead of the IB-804A, but since the 03D has only one YGDAI slot, eight DR16 outputs would still have to be connected using analog cables.
- YGDAI digital outputs can be configured as bus outs, aux sends, input channel direct outs, or stereo outs. So although the 03D is a four-bus mixer, assigning the four buses and four aux sends, or the channel direct outs, to the YGDAI outputs allows eight-track simultaneous recording. YGDAI output assignments are made on the D.out Setup page, which can be located using the [DIO] button.
- YGDAI digital inputs feed 03D input channels 17 through 24.
- The Digital In/Out connectors on the 03D and DR16 are connected together using Optical Cables.

03D Wordclock Setup

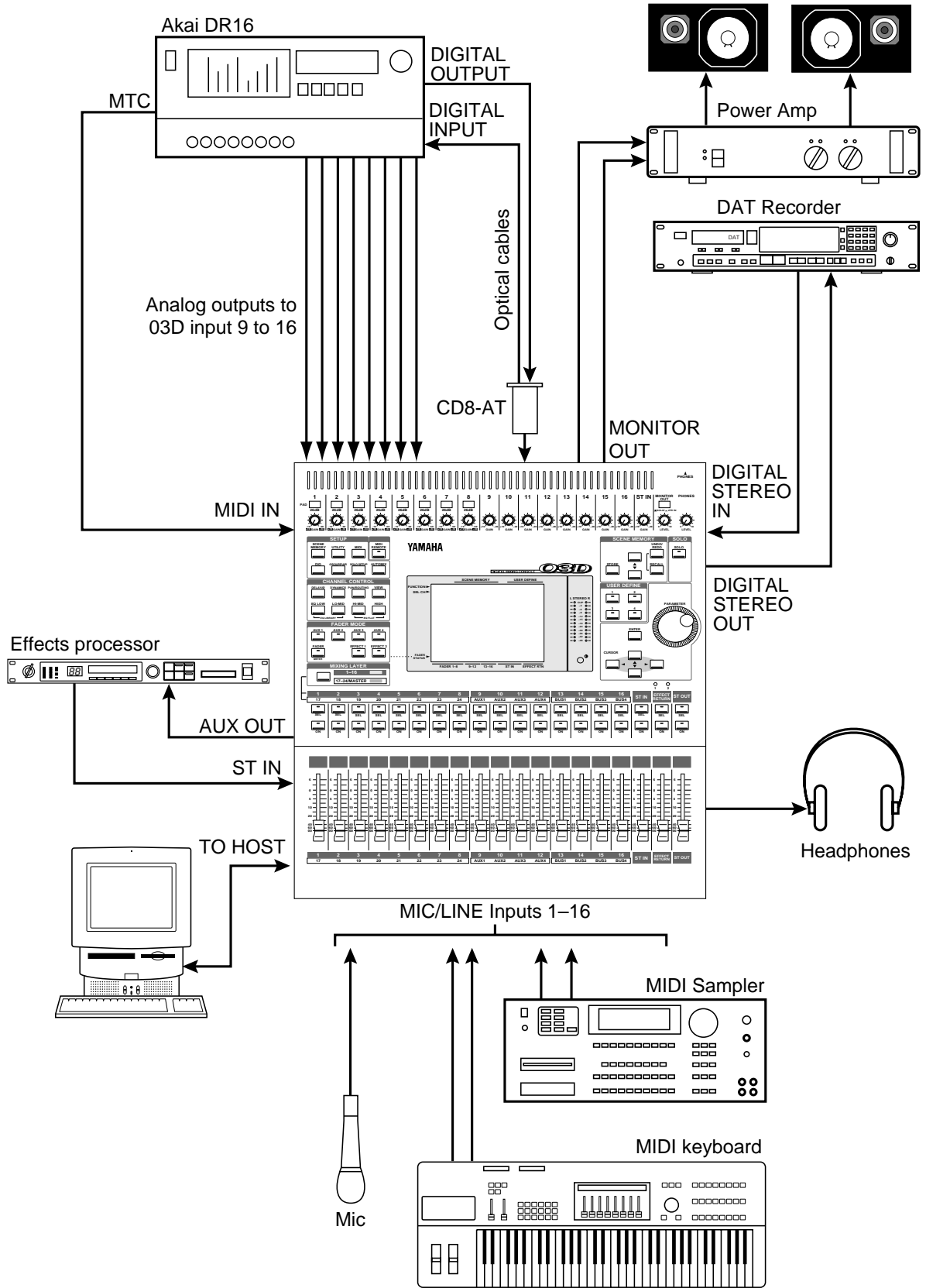
The 03D works as a wordclock slave. Any pair of YGDAI digital inputs can be selected as the wordclock source. Use the [DIO] button to locate the D.in Setup page for wordclock settings.

DR16 Wordclock Setup

The DR16 works as wordclock master.

Notes

- When a track is armed for recording, the DR16 will normally try to take its wordclock source from that track's input. To prevent this, in the Digi submenu set Auto Sync to Off. Note that the Auto Sync setting is not memorized when the DR16 is turned off, although it can be stored as part of a project.



03D

Figure 25 03D with Akai DR16

26 03D with Fostex D-90

This application shows how the 03D can be used with a Fostex D-90 hard disk recorder to create an 18-input, 8-track digital recording system. The 8 digital tape returns and 18 Mic/Line inputs provide up to 26 inputs at mixdown. In addition, the 03D's built-in automix and scene memory systems provide both dynamic and static mix automation referenced to MIDI timecode.

The Fostex D-90 is an 8-track hard disk recorder featuring ADAT I/O as standard.

Connections

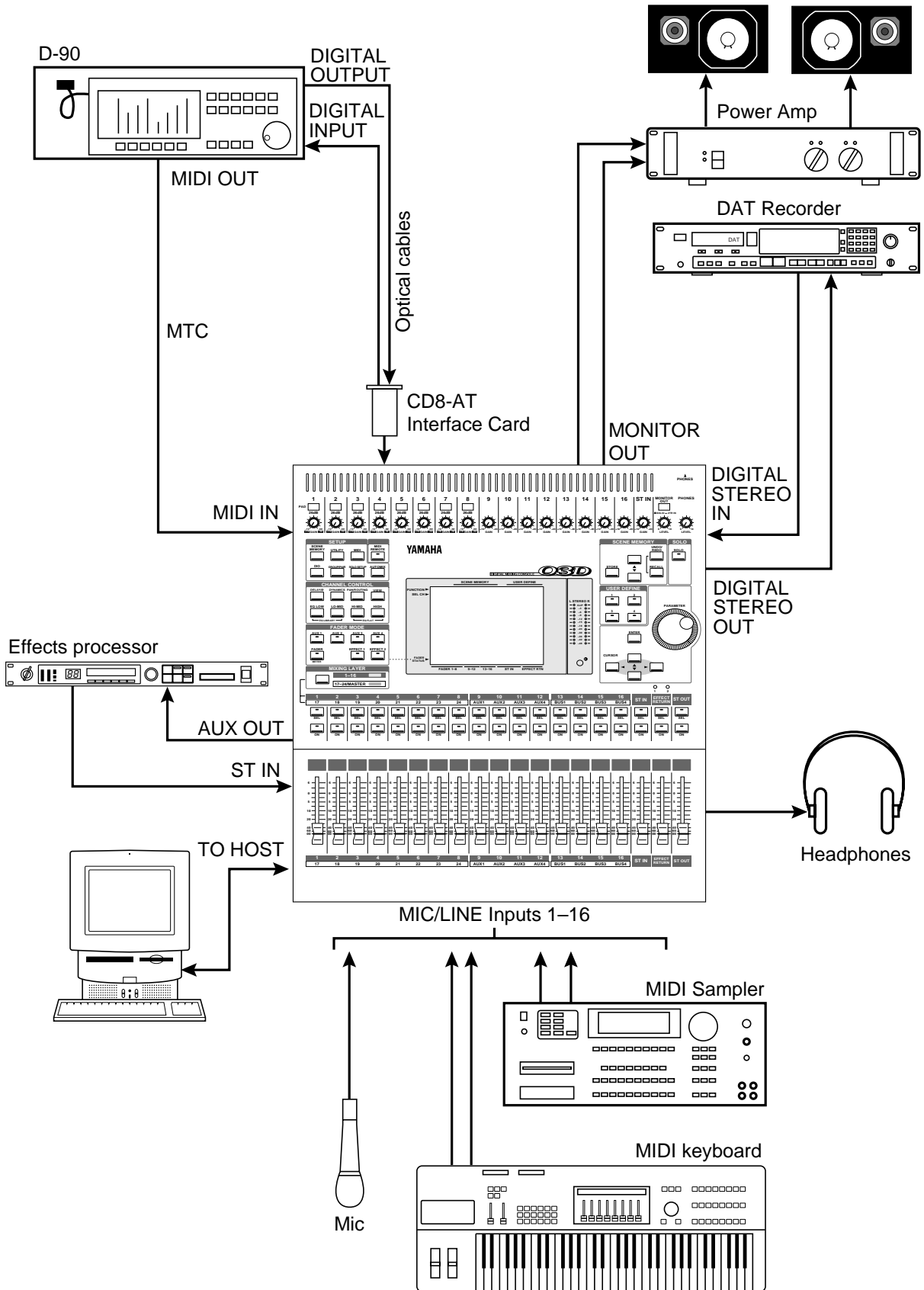
- The ADAT (CD8-AT) card must be screwed securely in place. Do not leave the screws out after installation as the card will not be grounded correctly.
- YGDAI digital outputs can be configured as bus outs, aux sends, input channel direct outs, or stereo outs. So although the 03D is a four-bus mixer, assigning the four buses and four aux sends, or the channel direct outs, to the YGDAI outputs allows eight-track simultaneous recording. YGDAI output assignments are made on the D.out Setup page, which can be located using the [DIO] button.
- YGDAI digital inputs feed 03D input channels 17 through 24.
- The Digital In/Out connectors on the 03D and D-90 are connected together using Optical Cables.

03D Wordclock Setup

The 03D works as wordclock master, and can be set to either 44.1 kHz or 48 kHz on the D.in Setup page, which is accessed using the [DIO] button.

D-90 Wordclock Setup

The D-90 should be configured as a wordclock slave, with the ADAT interface as the clock source.



03D

Figure 26 03D with Fostex D-90

27 03D with Syncman Plus & Analog Multitrack

This application shows how the 03D can be used with an 8-track analog multitrack recorder to create an 18-input, 7-track recording system. As shown in Figure 27, track eight of the multitrack recorder has been striped with SMPTE timecode. This is then fed to the Midiman Syncman Plus, which converts the SMPTE to MTC and feeds it to the 03D. The seven analog tape returns and 18 Mic/Line inputs provide up to 25 inputs at mixdown. In addition, the 03D's built-in automix and scene memory systems provide both dynamic and static mix automation referenced to MIDI timecode.

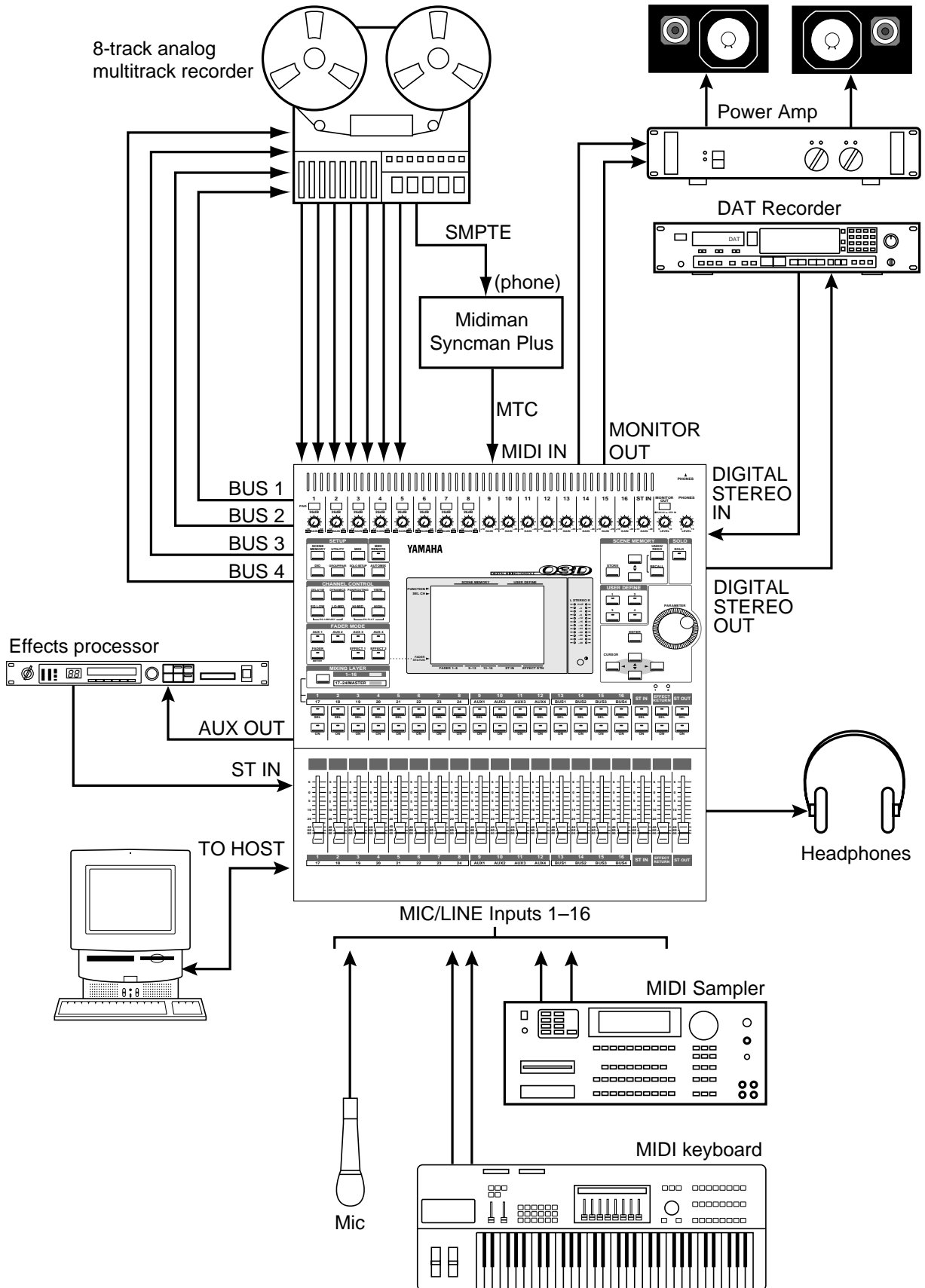
The Midiman Syncman Plus is an SMPTE to MTC converter and MTC generator. Front panel DIP switches are used to select the timecode type when working as a generator. For SMPTE to MTC conversion the frame rate is detected and set automatically.

Connections

- The 03D's analog bus outs are connected to the multitrack recorder's inputs.
- The seven tape returns are connected to 03D channel inputs 9 through 16.

03D Wordclock Setup

The 03D works as wordclock master, and can be set to either 44.1 kHz or 48 kHz on the D.in Setup page, which is accessed using the [DIO] button.



03D

Figure 27 03D with Syncman Plus & Analog Multitrack

28 03D with Video Machine & DA-88

This application shows how the 03D can be used with a video machine and Tascam DA-88 for audio post-production and audio sweetening. Using only the SMPTE timecode from the video machine, the DA-88 can generate MTC for the 03D. The eight digital tape returns and 18 Mic/Line inputs provide up to 26 inputs.

Connections

- The Tascam (CD8-TD) card must be screwed securely in place. Do not leave the screws out after installation as the card will not be grounded correctly.
- The Tascam digital audio cable (PW-88DL) carries the eight tape sends and eight tape returns.
- YGDAI digital outputs can be configured as bus outs, aux sends, input channel direct outs, or stereo outs. So although the 03D is a four-bus mixer, assigning the four buses and four aux sends, or the channel direct outs, to the YGDAI outputs allows eight-track simultaneous recording. YGDAI output assignments are made on the D.out Setup page, which can be located using the [DIO] button.
- YGDAI digital inputs feed 03D input channels 17 through 24.
- The optional SY-88 Sync Board is required. The DA-88 has a dedicated timecode track and can output SMPTE timecode or MTC. In addition, a timecode offset can be specified on the DA-88, so the 03D automix start time can be adjusted. The DA-88 also has the ability to re-stripe the timecode track.
- The video house sync is connected to the Video In BNC connection on the DA-88.

03D Wordclock Setup

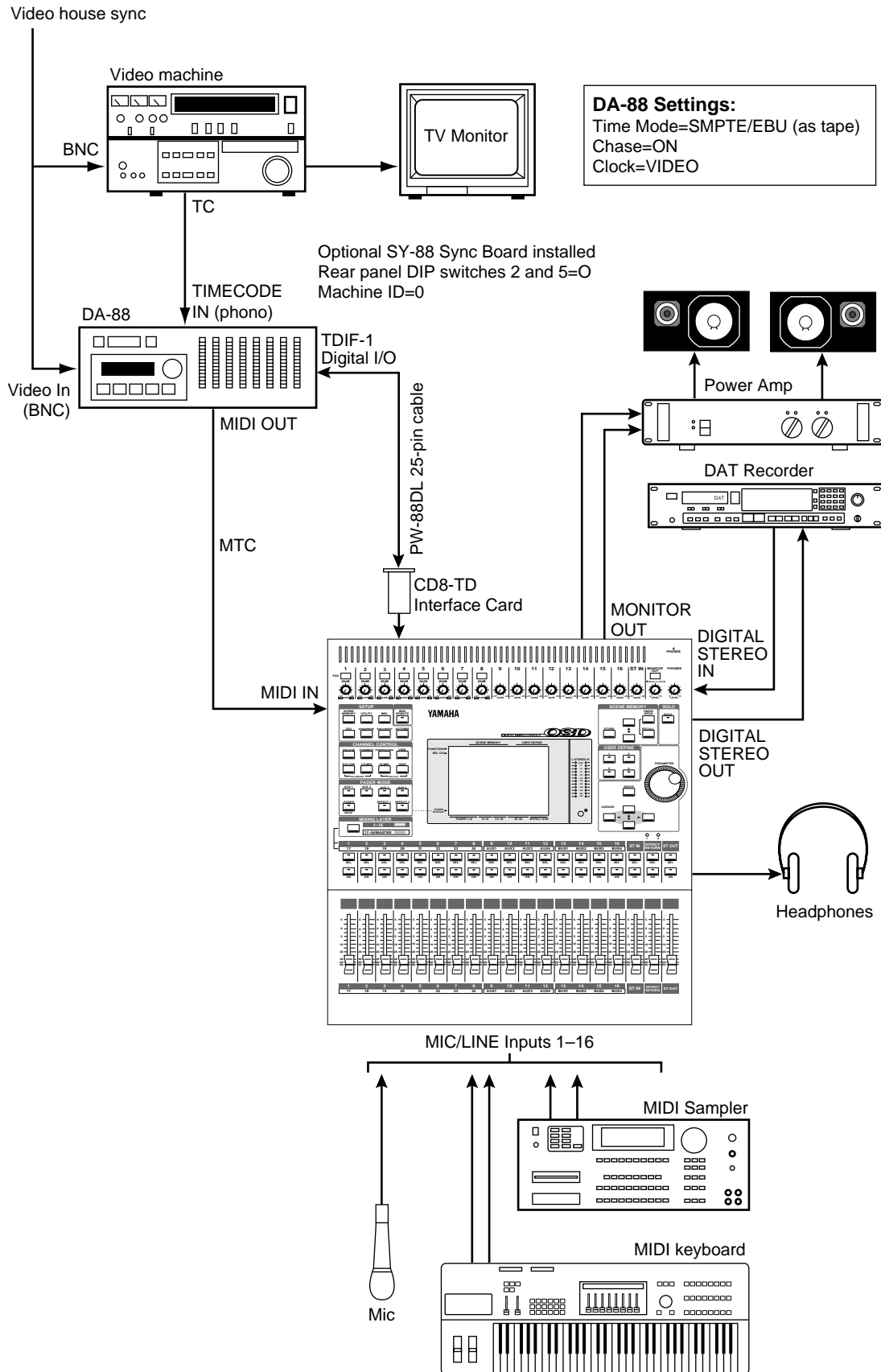
The 03D works as a wordclock slave. Any pair of YGDAI digital inputs can be selected as the wordclock source. Use the [DIO] button to locate the D.in Setup page for wordclock settings.

DA-88 Wordclock Setup

The DA-88 generates a wordclock signal referenced to the Video In signal (VIDEO). The sampling rate is set when the DA-88 tape is formatted. This can be either 48 kHz or 44.1 kHz. After formatting, the sampling rate is determined by the formatted tape.

Notes

- The DA-88 must be powered up even when it is not being used. Failure to do so may cause an intermittent pumping noise on the 03D.
- On the DA-88 rear panel, set the MACHINE ID to 0.
- The optional Tascam SY-88 Sync Board, available from Tascam, must be installed to use SMPTE timecode and MTC. To use the MTC function, the SY-88 firmware must be version 3.08 or higher.
- The rear panel of the SY-88 Sync Board has a DIP switch labeled MODE. Set DIP switches 2 and 5 to ON (0). Set internal switch 8 on the SY-88 board marked S2 to ON.
- On the Tascam (CD8-TD) card there is a DIP switch that should be set to 16-bit. This is the initial setting, but you should confirm it. This switch is for use with Tascam High-Bit recording applications.
- Tascam 25-pin digital audio cables PW-88DL (5 m) and PW-88D (1 m) are available from Tascam



03D

Figure 28 03D with Video Machine & DA-88

29 03D with Pro Tools

This application shows how the 03D can be used with a Pro Tools system. The eight digital tape returns and 18 Mic/Line inputs provide up to 26 inputs at mixdown. In addition, the 03D's built-in automix and scene memory systems provide both dynamic and static mix automation referenced to MIDI timecode.

A Digidesign 888 I/O Audio Interface connects the 03D to the Pro Tools system, with a special 50-pin Pro Tools cable between the computer card and 888. The 25-pin connector on the CD8-AE-S card connects to a patchbox, which provides eight AES/EBU inputs (four XLRs) and eight AES/EBU outputs (four XLRs).

Pro Tools can be controlled remotely from the 03D using the Pro Tools template of the MIDI Remote function. The 03D's built-in automix is referenced to MTC coming from the Pro Tools system. A MOTU MIDI Timepiece (or Opcode Studio 4) is used as a MIDI interface and connects to the computer's Modem port.

Connections

- The AES/EBU (CD8-AE-S) card must be screwed securely in place. Do not leave the screws out after installation as the card will not be grounded correctly.
- YGDAI digital outputs can be configured as bus outs, aux sends, input channel direct outs, or stereo outs. So although the 03D is a four-bus mixer, assigning the four buses and four aux sends, or the channel direct outs, to the YGDAI outputs allows eight-track simultaneous recording. YGDAI output assignments are made on the D.out Setup page, which can be located using the [DIO] button.
- YGDAI digital inputs feed 03D input channels 17 through 24.
- The Digital In/Out connectors on the 03D and patchbox are connected together using a 25-pin D-sub cable.
- The patchbox is connected to the 888 I/O Audio Interface using AES/EBU-compatible XLR cables.
- The 888 I/O Audio Interface connects to the audio card using a special 50-pin Pro Tools cable.

03D Wordclock Setup

The 03D works as a wordclock slave and receives its wordclock from the Pro Tools system. Use the [DIO] button to locate the D.in Setup page and select SLOT 1/2 (i.e., AES/EBU 1/2).

Pro Tools Wordclock Setup

The Pro Tools system should be configured as wordclock master.

Note

- The XLR<->D-sub box (or D-sub to XLR break-out cable) is not available from Yamaha, and should be custom made.

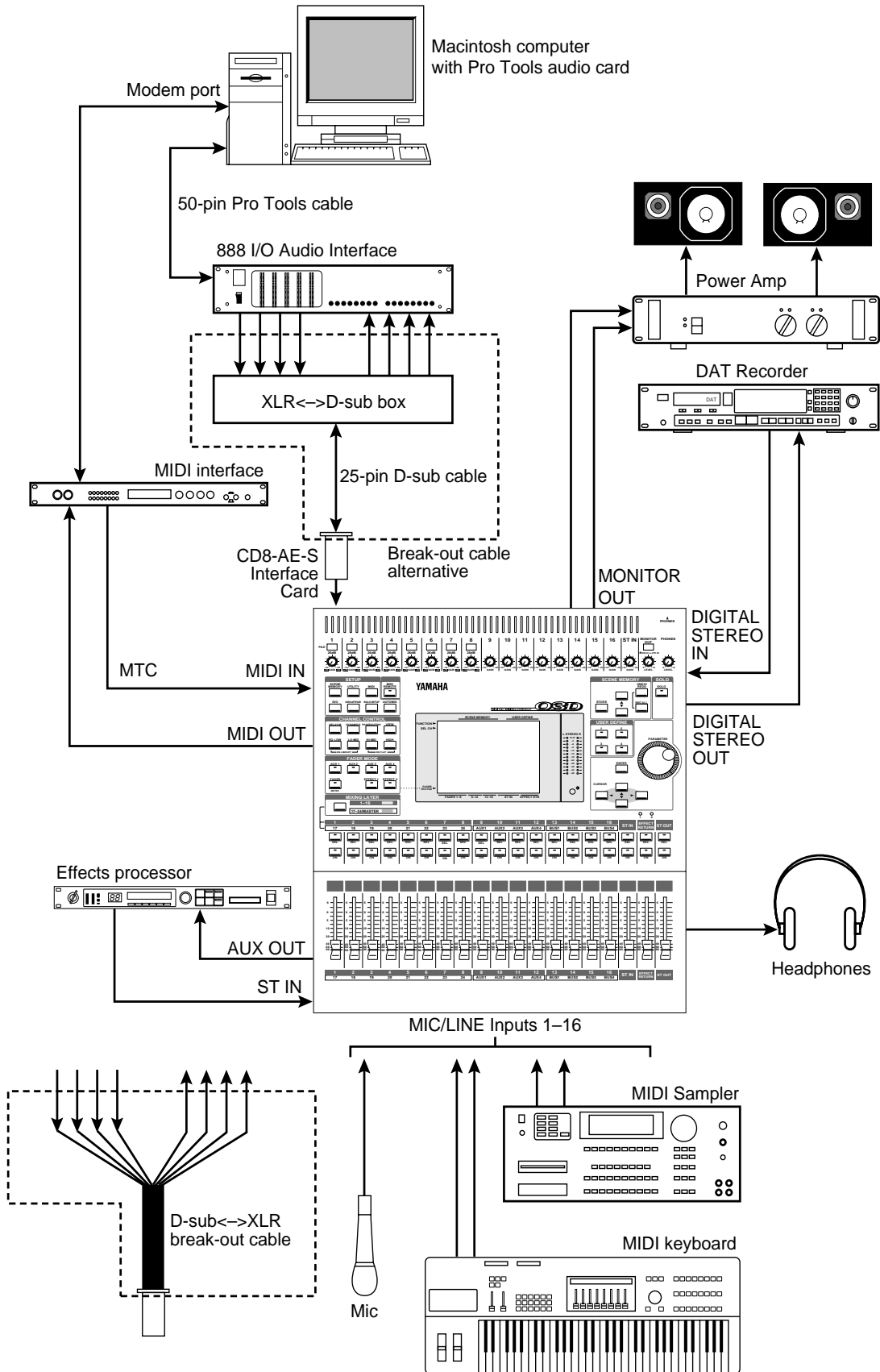
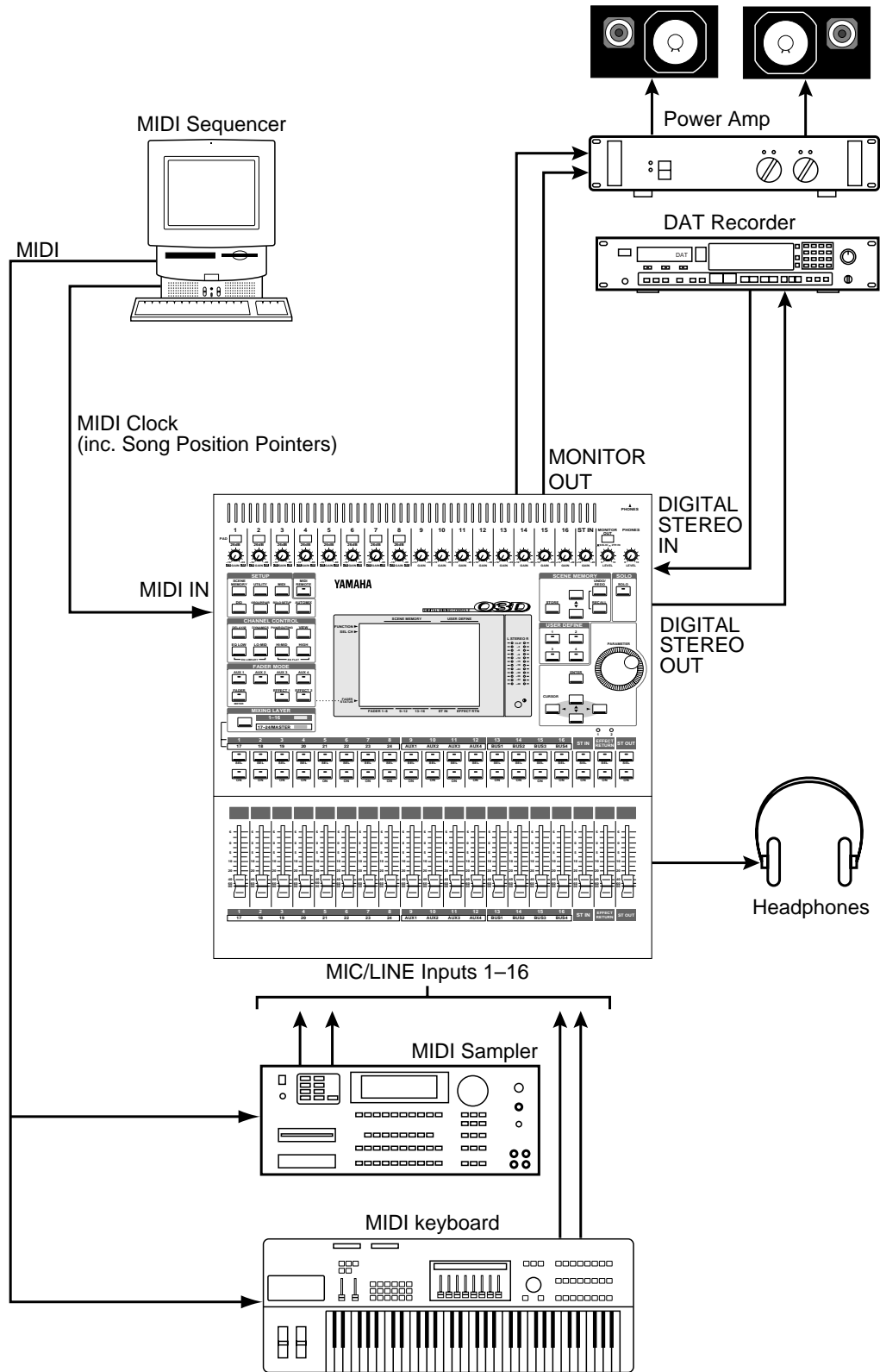


Figure 29 03D with Pro Tools

03D

30 03D Basic MIDI Studio

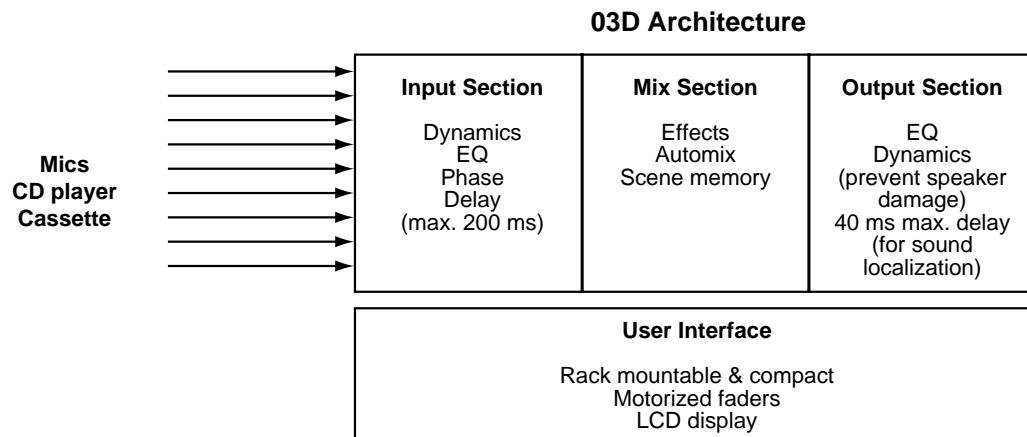
This application shows how the 03D can be used in conjunction with a MIDI sequencer to form a powerful MIDI studio. The 03D's 18 inputs are used to connect MIDI tone generators, synthesizers, samplers, etc. In addition, the 03D's built-in automix and scene memory systems provide both dynamic and static mix automation and can be referenced to either MIDI timecode or MIDI Clock. With support for MIDI Song Position Pointers, MIDI Clock sync simplifies automix operation when composing to bars, beats, and clocks. GM and XG compatible tone generators can be controlled remotely from the 03D using the GM and XG MIDI Remote templates.



03D

Figure 30 03D Basic MIDI Studio

31 03D Installation



Two internal effects, EQ and dynamics processors on every input and output, a compact size, and total recall make the 03D ideal for live and installation applications. Four bus outputs and the stereo output provide up to six outputs, and bus outputs can be delayed individually to compensate for delays in multiple speaker systems. In addition, the 03D has a small footprint and can be rack-mounted.

- A full assignment of inputs and outputs, including 18 analog inputs (16 mono/1 stereo) and 10 analog outputs (1 stereo, 4 bus, 4 aux).
- Every input and output features a 4-band parametric EQ, dynamics processor, and delay, all of which can be stored in the libraries.
- Scene memories store a snapshot of all mix settings and can be recalled in an instant. Up to 50 mix scenes can be stored and recalled either manually or remotely via MIDI.
- Two built-in effects processors eliminate the need for external processors. An all-in-one approach, compact size, and rack mounting mean that external equipment is kept to a simple minimum.
- Digital recording to DAT is possible using the digital outputs, and a CD player can be connected digitally using the digital inputs.
- Protectable scene memories can be recalled, and MIDI devices controlled from a computer.

Dynamics

Input channel dynamics processors can be configured as gates to prevent howling when channel faders are up, or as compressors to prevent voice distortion caused by sudden level increases. Ducking can be used to reduce background music when an MC speaks. To prevent speaker damage, stereo or bus out processors can be configured as compressors or limiters.

EQ & Delay

Every input and output features a 4-band parametric EQ. Settings can be stored in the EQ library, which features 40 preset programs, including a special Narrator program. Mono sound sources in a two-mic situation, which may sound dull when mixed due to phase interference between the mics, can be improved using the input channel delay and phase functions.

Sound Localization & Sound Image Control (Using Hass Effect)

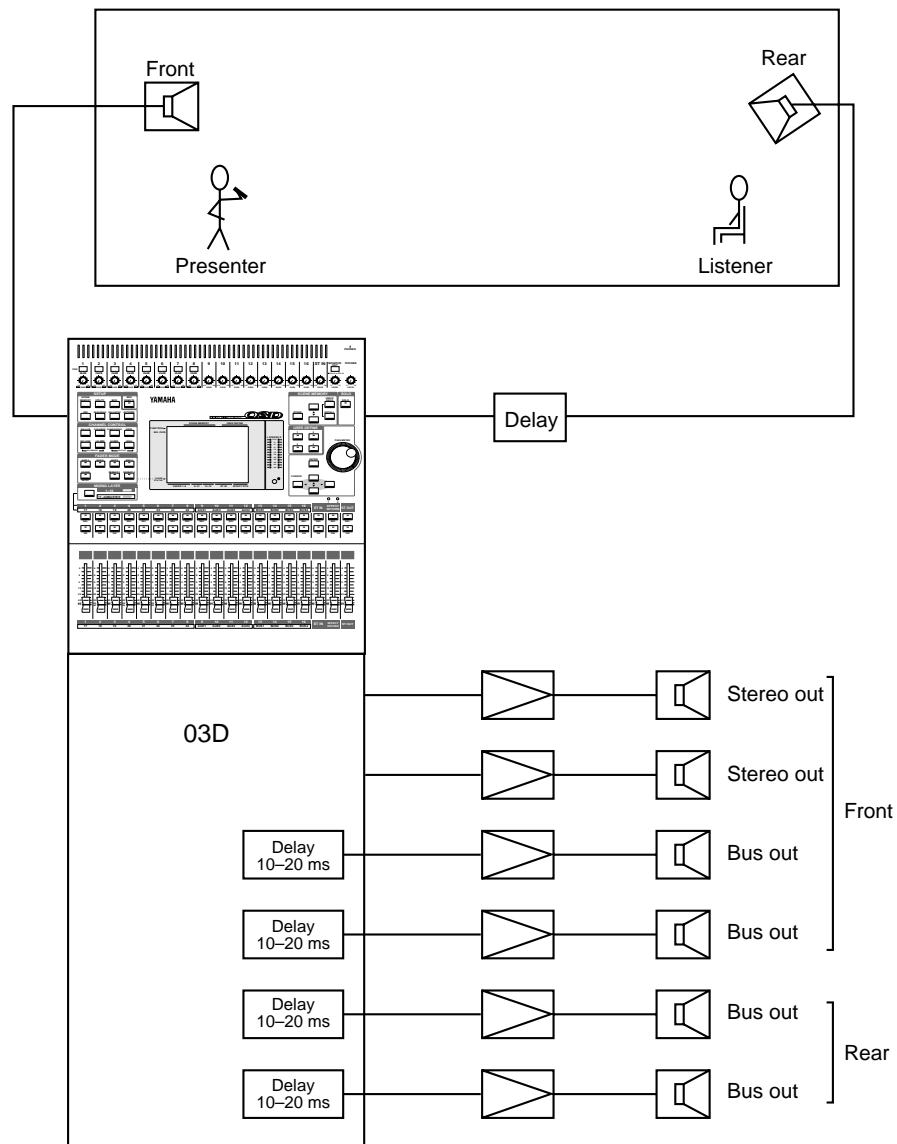
Using the bus assign, the main PA sound can be positioned to match that of the sound source. Delays in multiple speaker systems can be compensated using the bus output delays (Hass Effect).

In a large or medium-sized church or hall with rear or side speakers, where the sound image needs to direct listeners towards the presenter or sound source, adding a small delay of between 10 and 20 milliseconds to the rear speakers gives the impression that the presenter is actually located in front, not behind (Hass Effect). Each 03D output can be delayed by up to 40 milliseconds.

To achieve the Hass Effect, a small delay must be used in addition to the delay used to compensate for speaker distance. For example, if the distance between the front and rear speakers is 30 meters, the speaker distance compensation delay will be 87 milliseconds ($30/344 = 0.087$, where 344 is the speed of sound). To this a small delay of between 10 and 20 milliseconds should be added to achieve the Hass Effect.

Formula for setting total delay is

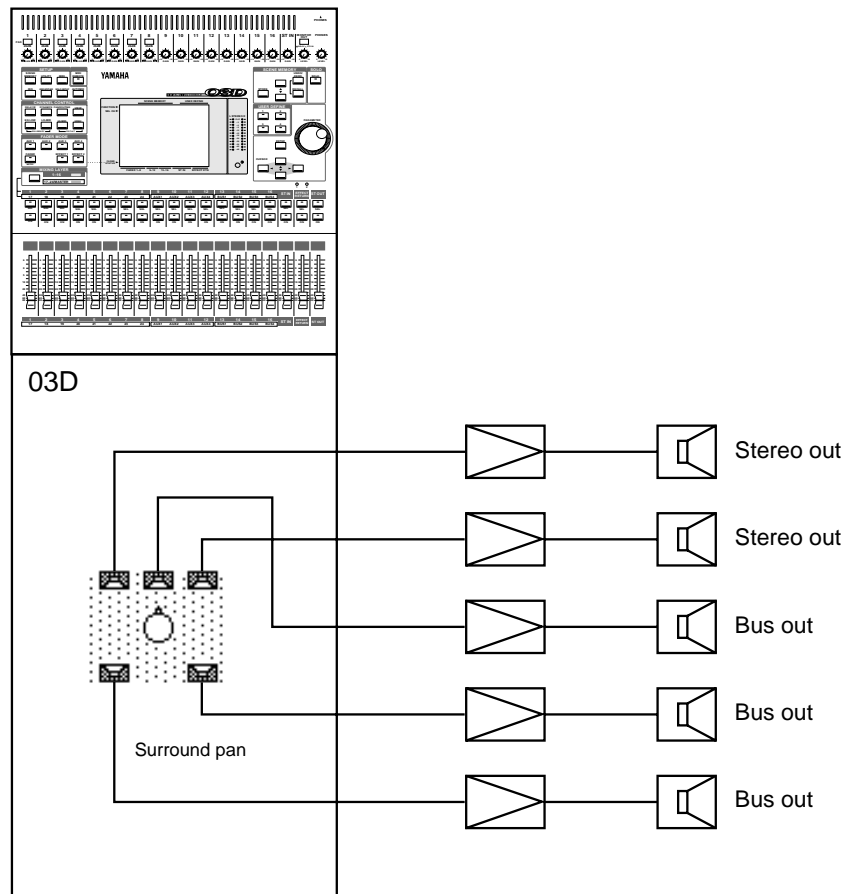
$(\text{distance between front and rear speakers}/344) + 10\text{--}20 \text{ ms}$



Dynamic Sound Image Control (Using Surround Pan)

In addition to sound localization, sounds can also be moved around to make novel sound effects in a performance or theme park.

Sounds can also be positioned using the 5.1 surround pan function (i.e., localizing sounds using volume, instead of the Hass Effect, which was introduced on the previous page). The difference with using pan is that sounds are localized using actual level changes. The 03D has a unique surround pan function built-in and can be automated referenced to external MIDI Timecode.



Hall Simulation (Applying Reverb Ambience)

In city halls and churches with dead acoustics, a more natural ambience can be created by adding reverb to sub-speakers, while using the main stereo speakers for the direct sound.

Using the stereo output to feed the main speakers and the bus outputs in combination with the built-in effects processors to feed effects speakers, reverberation can be used to simulate different environments. The 03D has two independent multi-effects processors, each with 64 preset programs.

In the following example, hall reverb programs are selected for both effects processors, with one feeding the front sub-speakers, the other feeding the rear sub-speakers. No effects are applied to the stereo front speakers. By adjusting the parameters of each processor, a more natural sound can be achieved.

