YAMAHA

DME 32
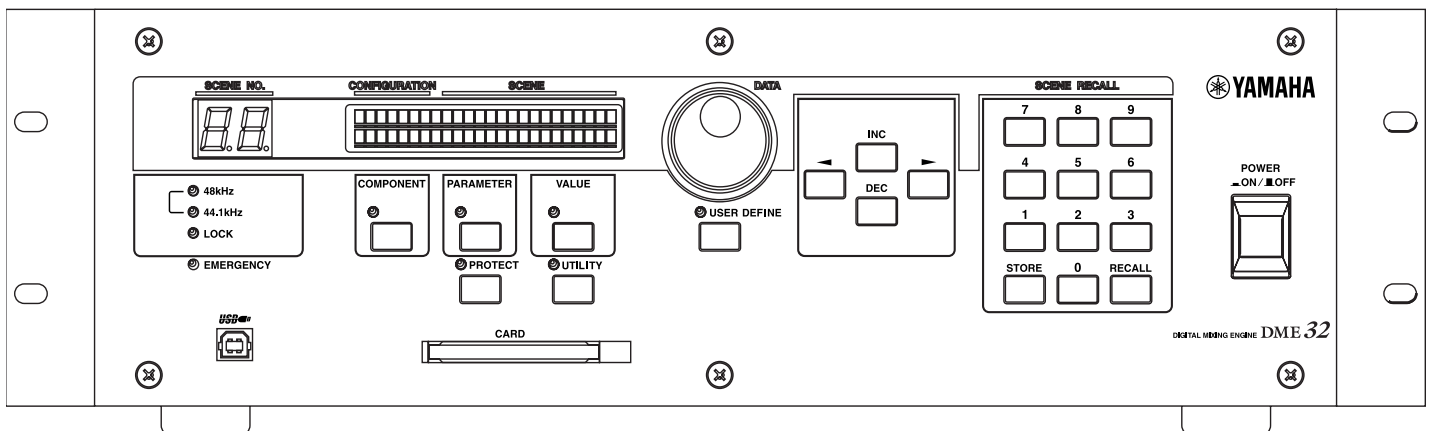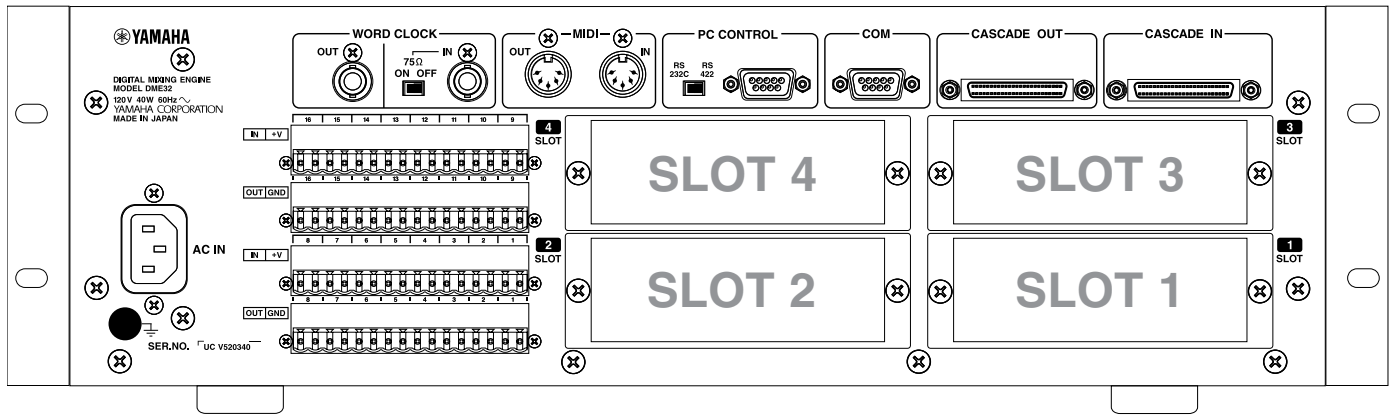## DIGITAL MIXING ENGINE

Hardware Setup Guide

1. Available I/O Options

DME32 has four "MY-Card"(Mini-Yamaha Generic Digital Audio Interface) Slots for I/O. Each card slot can handle up to 8 channels of I/O for a maximum of 32 I/O per DME32 unit, depending on the cards chosen.
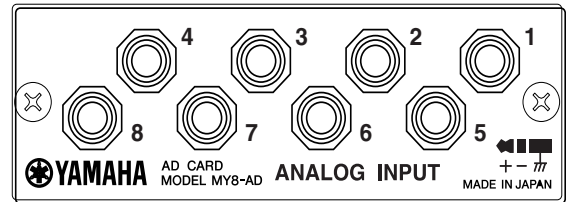

The current MY-Cards available from Yamaha are a variety of analog and digital formats. It is possible to mix analog and digital cards in a single DME32 unit. There are no restrictions to any combination of MY-cards used together in a single unit.
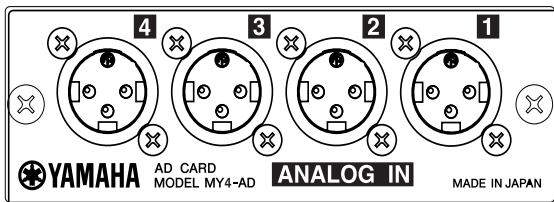
MY4-AD
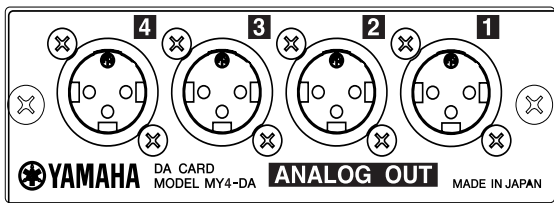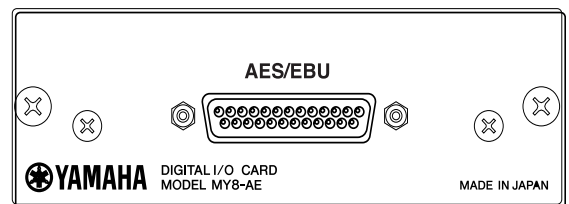Four 24-bit Analog Inputs on XLR Connectors

MY8-AD
Eight 20-bit Analog Inputs on 1/4" TRS Connectors
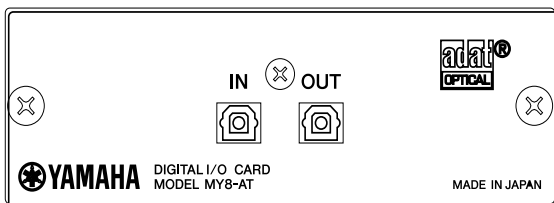

MY4-DA
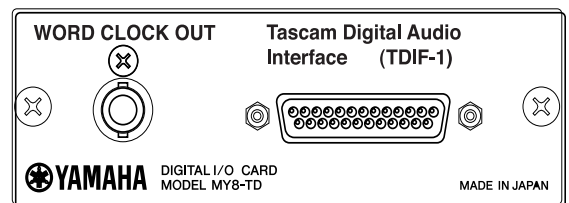Four 20-bit Analog Outputs on XLR Connectors

MY8-AE
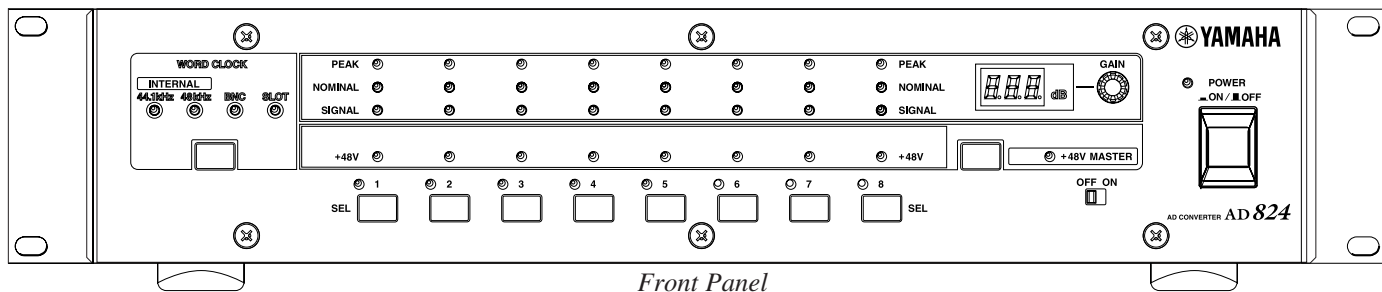Eight AES/EBU Digital Inputs and Outputs on a 25-pin D-sub connector

MY8-AT
Eight ADAT Digital Inputs and Outputs on Optical Connectors

MY8-TD
Eight TDIF Digital Inputs and Outputs on 25-pin D-sub connector

These are the current Remotable External Input/Output devices from Yamaha:

Front Panel
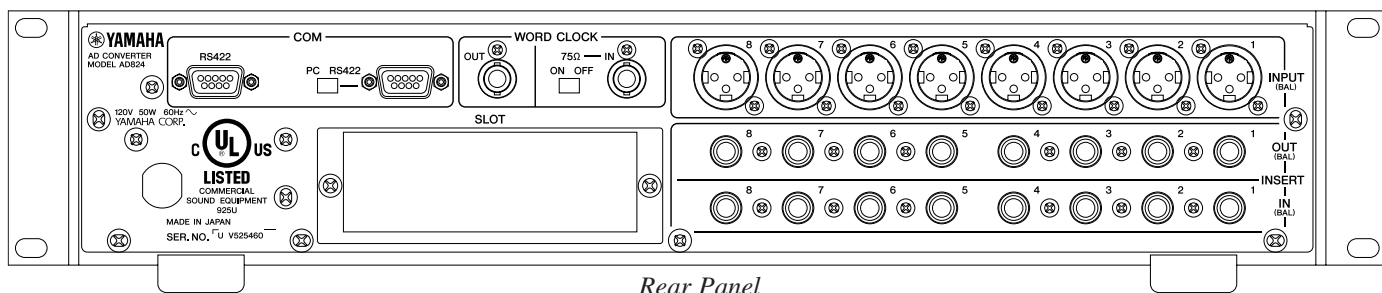
Rear Panel

AD824
Eight 24-bit Mic/Line Level Inputs on XLR, with Balanced Inserts on 1/4" TRS connectors, and +48V Phantom Power. All Functions (Gain Trim and Phantom Power On/Off) can be controlled remotely via RS-422 (up to 200 meters away). This device accepts one digital MY-Card for its outputs.
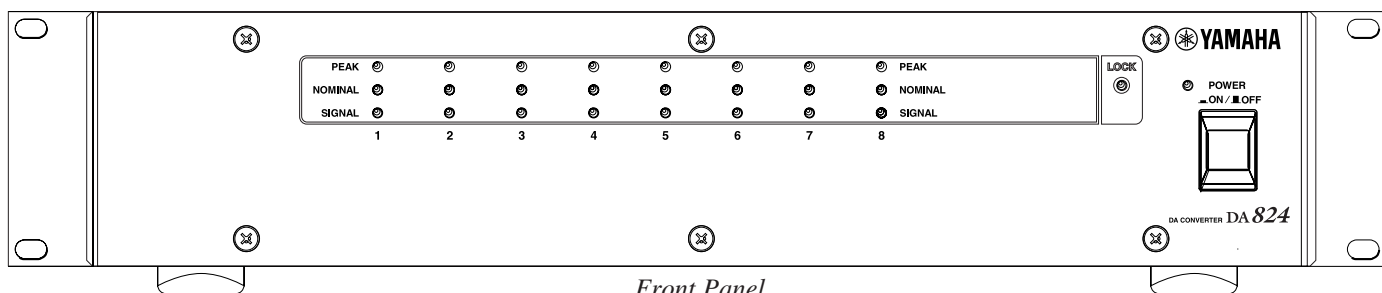
Front Panel
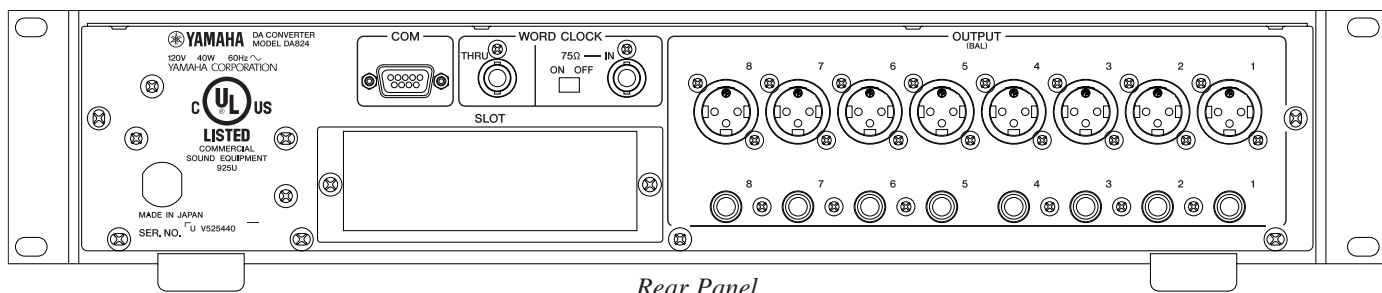
Rear Panel

DA824
Eight 24-bit Line Level Outputs on XLR and 1/4" TRS. Selectable maximum output levels of +4, +15, +18, and +24db by internal DIP switches independently per channel. This device accepts one digital MY-Card for its inputs.

Using AES/EBU Transmission (via MY8-AE cards), distances of up to 200 meters can be achieved between these units and the DME32.

Using ADAT Optical Transmission (via MY8-AT cards), distances of up to 6 meters can be achieved.

2. Analog Line Level Only

Here are some examples of utilizing all four card slots for maximum analog line-level card I/O, and the cards required:

4 XLR Inputs, 12 XLR Outputs:
    (1) MY4-AD
    (3) MY4-DA

8 XLR Inputs, 8 XLR Outputs:
    (2) MY4-AD
    (2) MY4-DA

12 XLR Inputs, 4 XLR Outputs:
    (3) MY4-AD
    (1) MY4-DA

8 1/4" TRS Inputs, 12 XLR Outputs:
    (1) MY8-AD
    (3) MY4-DA

16 1/4" TRS Inputs, 8 XLR Outputs:
    (2) MY8-AD
    (2) MY4-DA

24 1/4" TRS Inputs, 4 XLR Outputs:
   (3) MY8-AD
    (1) MY4-DA

Of course, there are more combinations than the examples above. For example, a 20-input and 4-output system can be made by using (1) MY4-AD, (2)MY8-AD, and (1) MY-4-DA cards. This gives 4 XLR inputs, 16 1/4" inputs, and 4 XLR outputs.

And not all card slots need to be filled. If a system only requires 4 inputs and 8 outputs, then a logical choice for cards would be (1) MY4-AD and (2) MY4-DA.

There is no particular order you have to follow for putting the cards in the slots. Each card slot corresponds to a specific input and output component block in the software. So if you have only two cards, it doesn't matter if you place them in slots 1 and 4, or 2 and 3. You just have to correctly address them by their card slot numbers in the software.

Slot	Component
1	Input 1Ch-8Ch and Output 1Ch-8Ch
2	Input 9Ch-16Ch and Output 9Ch-16Ch
3	Input 17Ch-24Ch and Output 17Ch -24Ch
4	Input 25Ch-32Ch and Output 25Ch-32Ch
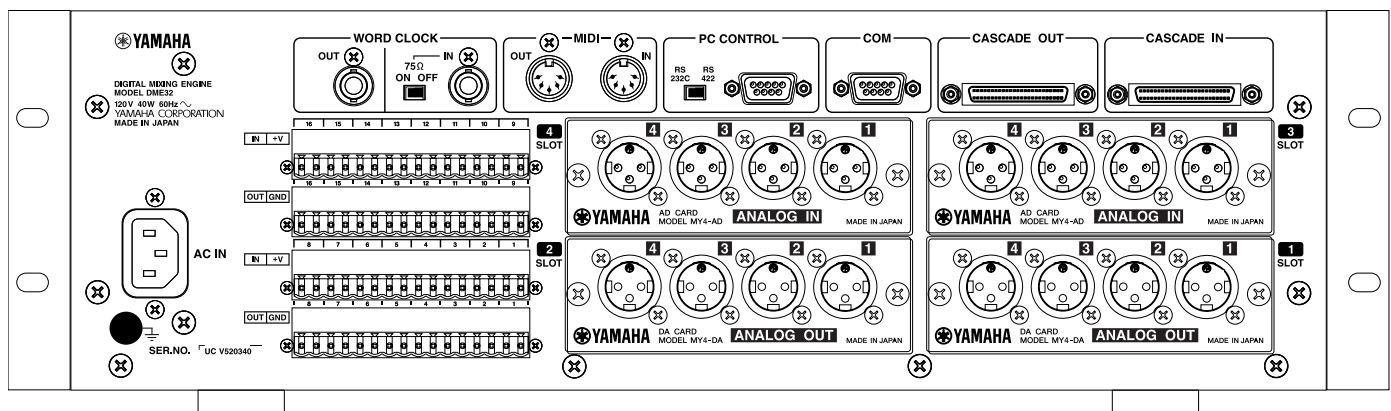
This setup has 8 inputs and 8 outputs using (2) MY4-AD and (2) MY4-DA

3. Digital I/O

Each of the digital MY-Cards are capable of 8 channels of input and output (MY8-AE, MY8-AT, MY8-TD). Different format cards can be used together in a single DME32 unit. You can also mix analog and digital cards together in a single DME32 unit.

For 8 Channels of Digital I/O:
Use one digital MY8 card.

For 16 Channels of Digital I/O:
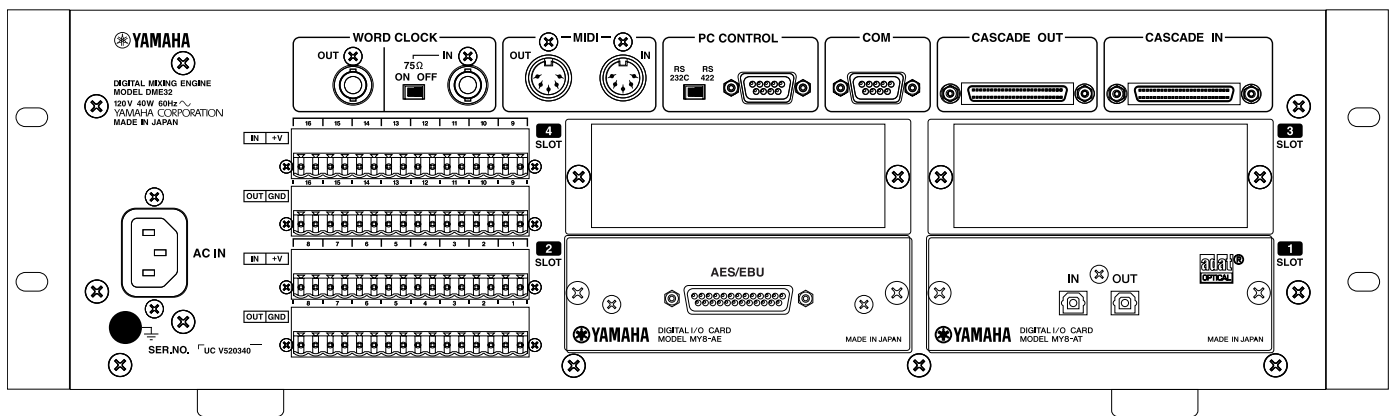Use two digital MY8 Cards

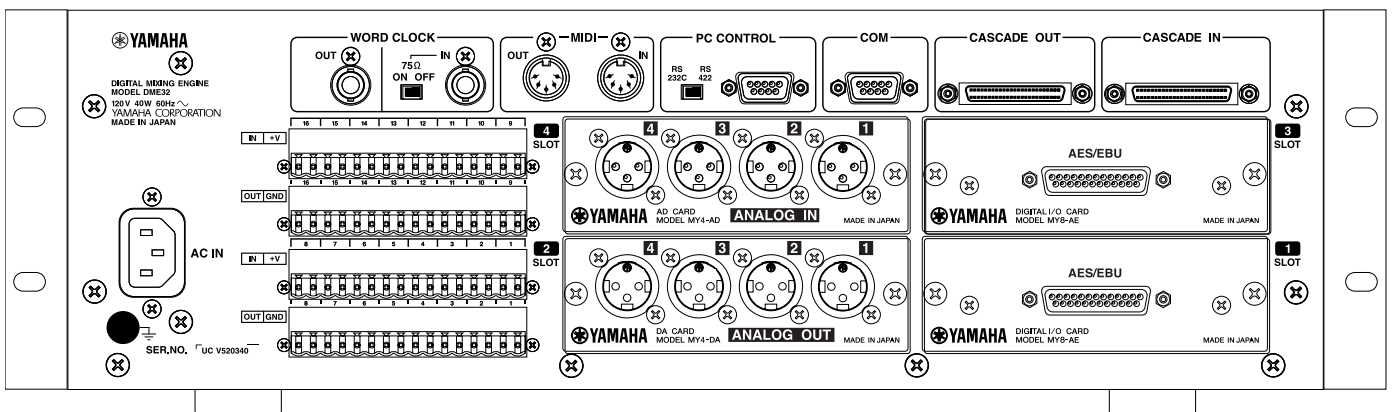For 24 Channels of Digital I/O:
Use three digital MY8 Cards

For 32 Channels of Digital I/O:
Use four digital MY8 Cards

This setup has 16 digital inputs and 16 digital outputs using (1) MY8-AE and (1) MY8-AT
(8 AES/EBU I/O and 8 ADAT I/O)

This setup has 20 inputs and 20 outputs using (2) MY4-AE , (1) MY4-AD, and (1) MY4-DA
(4 analog I/O and 16 AES/EBU I/O)

4. Using the AD824 and DA824

The AD824 and the DA824 have MY-Card slots as well. Using digital MY-Cards, an audio connection between the DME32 and the AD824 and/or DA824 can be established. Using AES/EBU (MY8-AE Cards), distances of 200 meters can be achieved. Using ADAT optical transmission (MY8-AT cards), you can separate the units by 6 meters.

8 Channels of Analog I/O
(1) AD824
(1) DA824
(3) MY8-AE or MY8-AT (One card goes into each DME32, AD824, and DA824)

16 Channels of Analog I/O
(2) AD824
(2) DA824
(6) MY8-AE or MY8-AT (Two cards go into DME32 and one card into each AD824 and DA824)

24 Channels of Analog I/O
(3) AD824
(3) DA824
(9) MY8-AE or MY8-AT (Three cards go into DME32, and one card into each AD824 and DA824)

32 Channels of Analog I/O
(4) AD824
(4) DA824
(12) MY8-AE or MY8-AT (Four cards go into DME32, and one card into each AD824 and DA824)

BNC Cable (wordclock)   **DME32**

Optical Cables

AD824   **DA824**
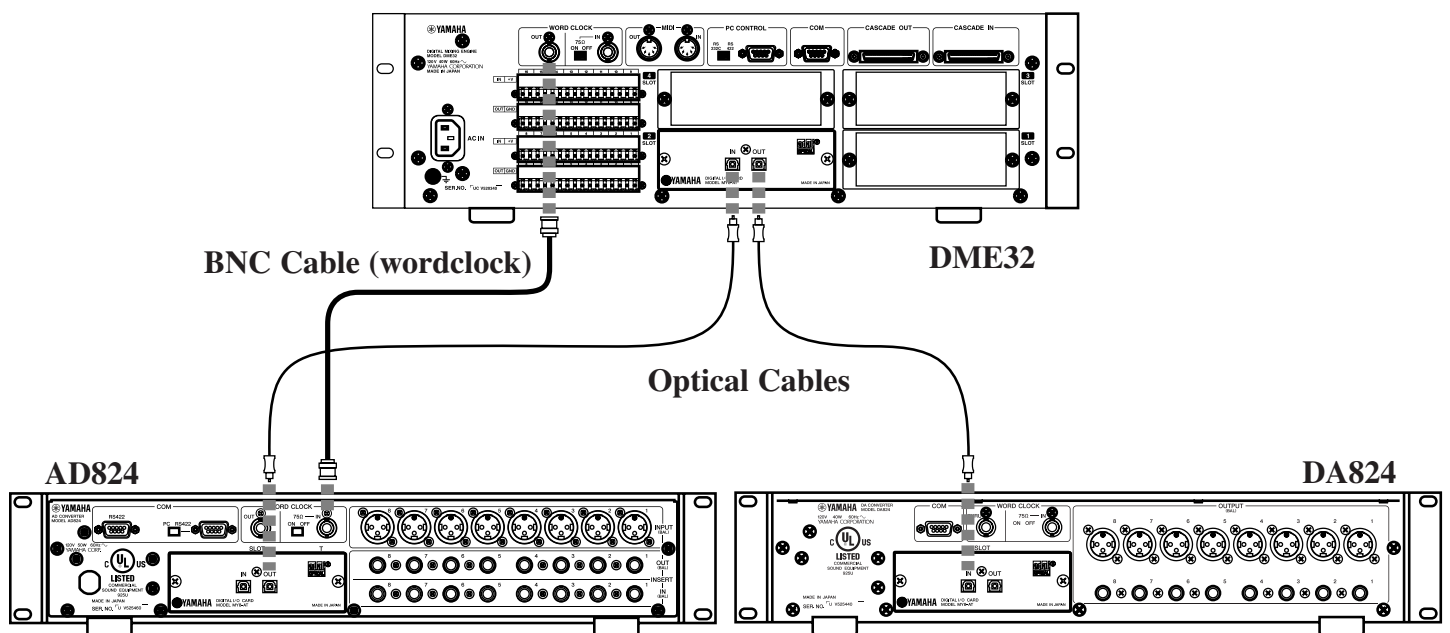
An 8-Channel I/O system using ADAT optical transmission. Up to 6 meters of separation is possible.

A 16-Channel I/O sytem using AES/EBU transmission. Up to 200 meters of separation between the DME32 and the I/O components is possible.

In the example above, a split AES/EBU cable is utilized to connect the DME32 to the AD824 and DA824. See the next section for details on creating this cable.

Since no Wordclock signal is sent to the AD824 units in either the AES/EBU or ADAT connection examples, Wordclock BNC Cables must be run from the DME32 to the AD824. Please see Chapter 13 (page 227) of the DME32 Owner's Manual for more information on Wordclocks.

WORDCLOCK SOURCE SETTING CAUTION

When the wordclock source is changed on the wordclock master device (e.g. AD824 or DME32), noise may occur from the DA824's analog outputs, especially if an MY8-AT I/O card is installed, so turn down your power amps, or turn off the DA824 beforehand, otherwise any connected speakers may be damaged.

5. Creating Split AES Cables

The MY8-AE Card is capable of 8 AES/EBU inputs and outputs via a 25-pin Female D-sub connector. In order to use this card with a DME32 and AD824/DA824 configuration, a split AES/EBU cable must be created. You must use shielded 110-ohm twisted-pair AES cable and 25-pin Male D-sub connector on each end.

Split AES/EBU Cable
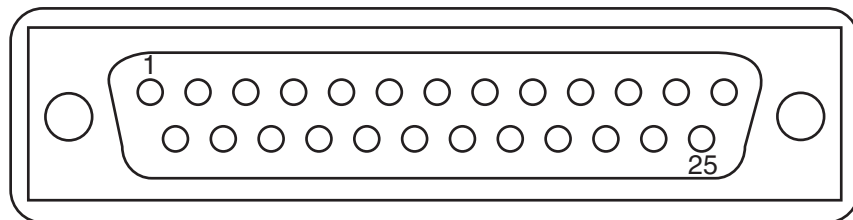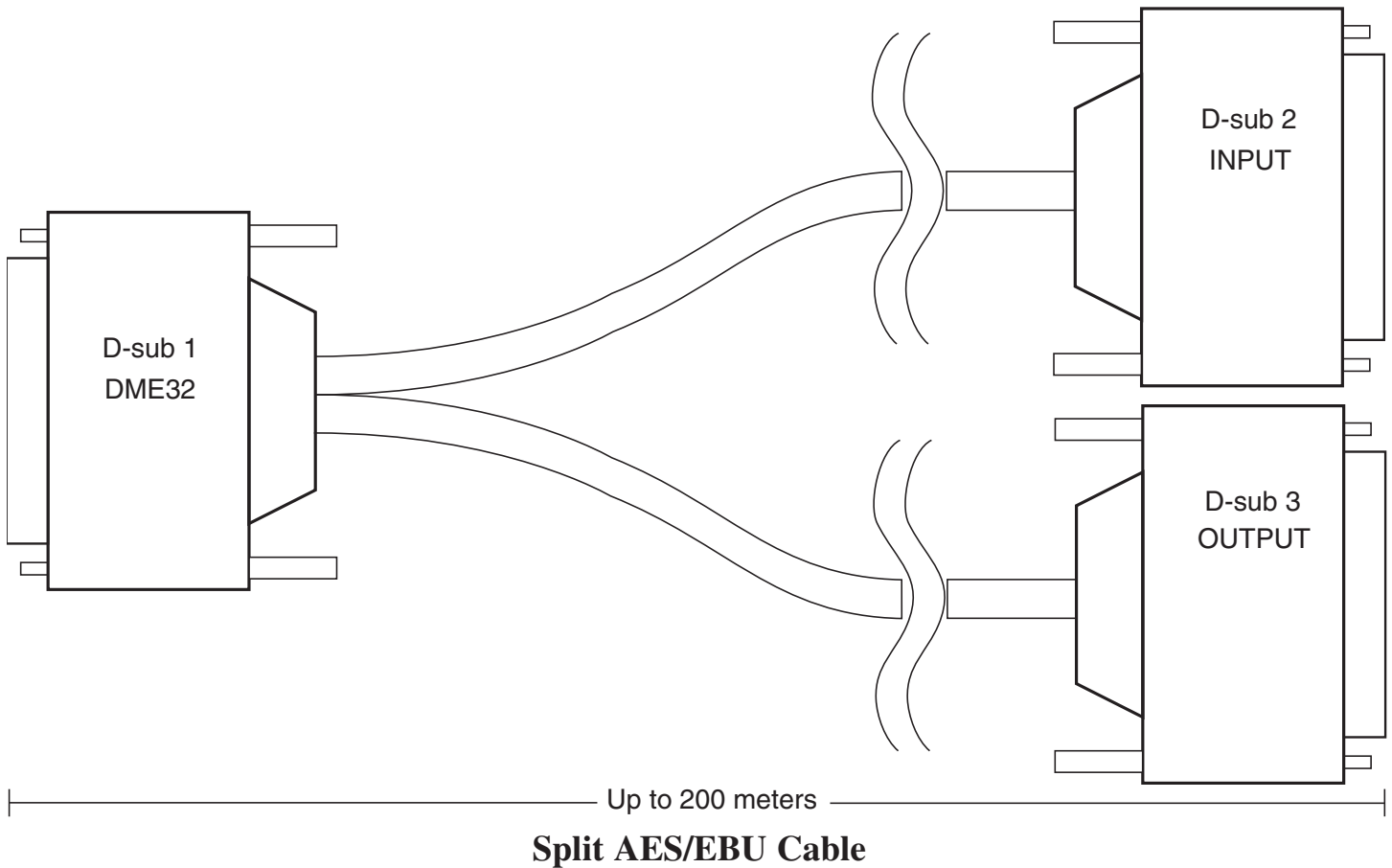
25-pin Male D-sub (Front View)

The pin configuration is as follows:

D-sub 1(DME32)	D-sub 2 (Input)	D-sub 3 (Output)	Signal Description
1	5		Input 1/2 +
2	6		Input 3/4 +
3	7		Input 5/6 +
4	8		Input 7/8 +
5		1	Output 1/2 +
6		2	Output 3/4 +
7		3	Output 5/6 +
8		4	Output 7/8 +
9			No Connection
10	10*		GND
11			No Connection
12	12*		GND
13	13*		GND
14	18		Input 1/2 -
15	19		Input 1/2 -
16	20		Input 1/2 -
17	21		Input 1/2 -
18		14	Output 1/2 -
19		15	Output 1/2 -
20		16	Output 1/2 -
21		17	Output 1/2 -
22		22*	GND
23		23*	GND
24		24*	GND
25		25*	GND

Optional Connection

All that is required is 8 twisted-pairs of shielded 110-ohm wire. Pin to pin ground connections are optional as long as the shield is connected to the connector hood.

The twisted pairs are as follows:

Twisted Pairs		Signal Description
1	14	Input 1/2
2	15	Input 3/4
3	16	Input 5/6
4	17	Input 7/8
5	18	Output 1/2
6	19	Output 3/4
7	20	Output 5/6
8	21	Output 7/8

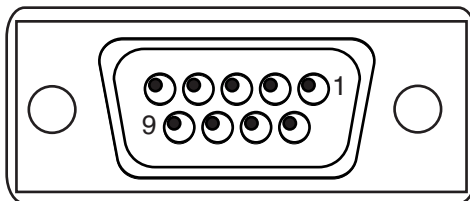# 6. AD824 Connection for Remote Control

The AD824 can be controlled remotely from the DME32 via RS-422. Gain Control and Phantom Power On/Off can be manipulated and recalled by the DME32. In order to do this, RS-422 Cables need to be run from the DME32 to the first AD824, and then daisy-chained to subsequent AD824 units.

DME32

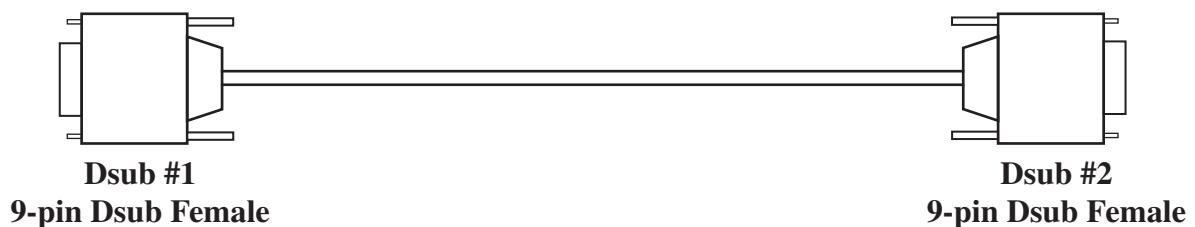AD824 #1

AD824 #2
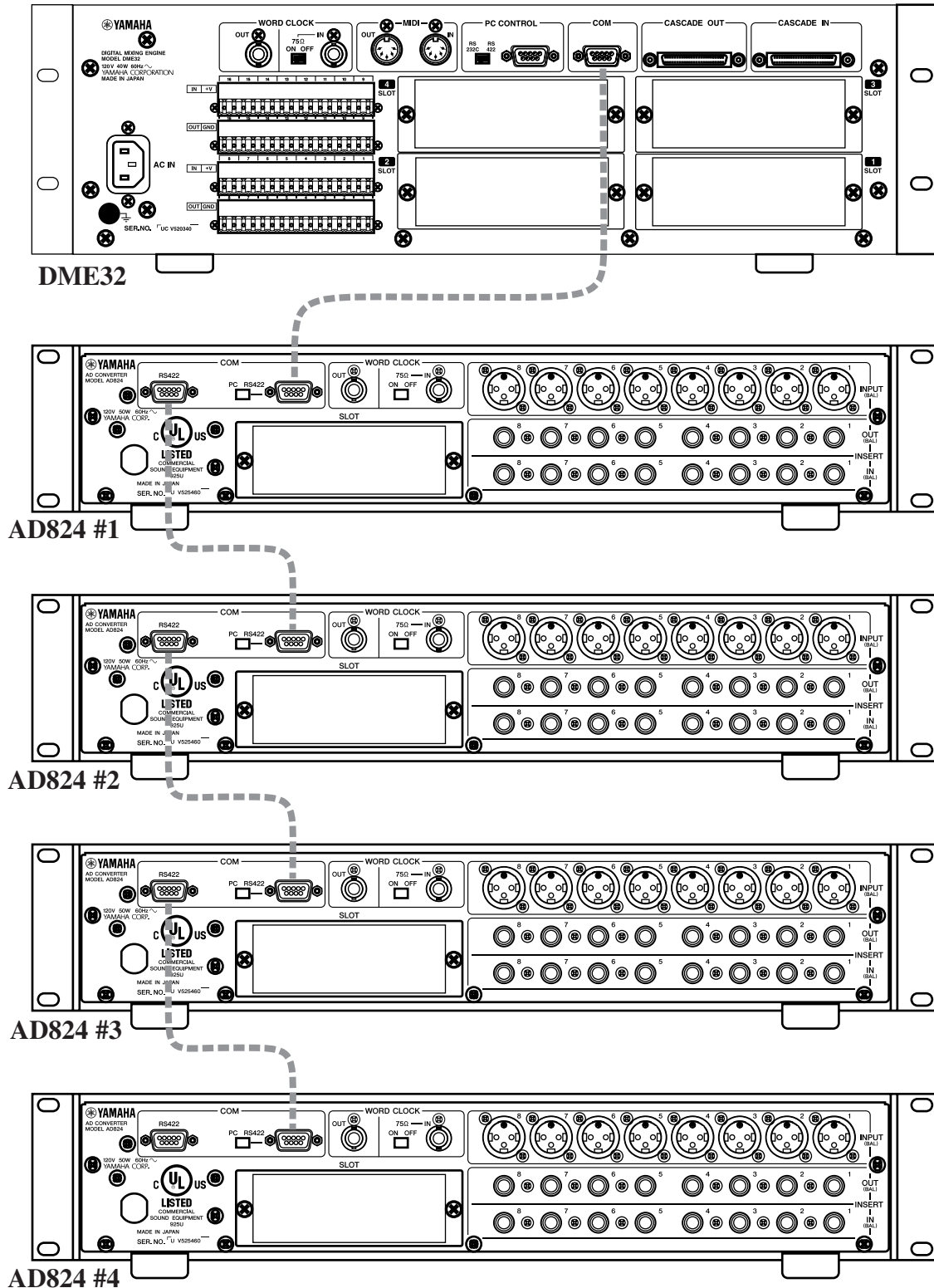
AD824 #3

AD824 #4

AD824 ID numbers are automatically set by their position in the chain. The first AD824 connected to DME32 is unit #1, and the second AD824 is unit #2, and so on. The IDs have no relation to the slot number they are plugged into. The ID numbers should be noted and will be used by the software to address them.

This is the pin configuration for the RS-422 Cable:

D-sub 1	Signal	D-sub 2	Signal
2	RX-	3	TX-
3	TX-	2	RX-
4	TX+	6	RX+
5	GND	5	GND
6	RX+	4	TX+
7	RTS	8	CTS
8	CTS	7	RTS

9-Pin Female Dsub Connector (Front View)

Dsub #1
9-pin Dsub Female

Dsub #2
9-pin Dsub Female

RS-422 Serial Cable - Up to 200 Meters in Length

AD824

DA824

BNC Cables (wordclock)

Split AES/EBU Cable

Serial Cable

Serial Cable

DME32

Split AES/EBU Cable

AD824

DA824
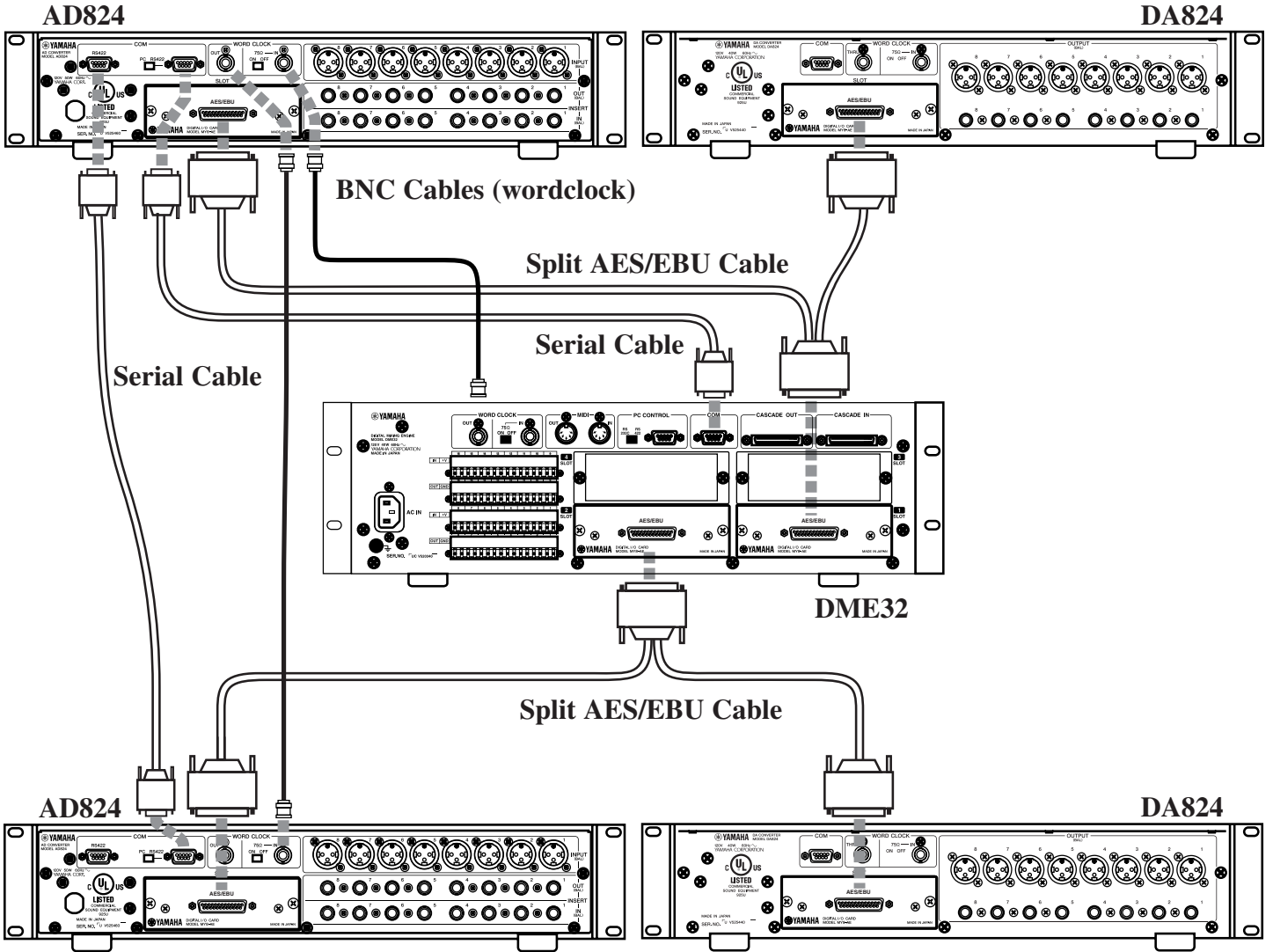
A 16-Channel I/O sytem using AES/EBU transmission. An RS-422 connection is also made to remotely control the AD824 functions. Up to 200 meters of separation between the DME32 and the I/O components is possible.

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