

SIEMENS

Installation Instructions

MODEL EL-410D

Audio Amplifier for CPV90: AT-EX and AT-1
and, for the MXLV Voice Equipment

(Note: The CPV90 is listed per UL864 8th Edition only)

INTRODUCTION

The model EL-410D audio amplifier from Siemens Industry, Inc., may be used in the CPV90 Voice Alarm System (Refer to the *CPV90 Manual*, P/N 315-081079) as well as in the MXLV System (Refer to the *MXL/MXLV Manual*, P/N 315-092036). It is rated at 100 watts for either a 25V RMS output or a 70.7V RMS output.

When EL-410D is used in a CPV90 System, choose **only** the 70.7V RMS output terminal of the EL-410D. Place a jumper between the **COM** terminal and terminal 16 as shown in Figure 1.

When EL-410D is used in an MXLV System, choose an amplifier output of either 25V RMS or 70.7V RMS by selecting the appropriate amplifier terminal for the connection. **DO NOT USE** the jumper between the **COM** terminal and terminal 16 with the MXLV System.

When the EL-410D amplifier does not require battery backup, connect the resistors as shown in Figure 4 (page 4) to override the battery supervision fault condition.

CPV90 VOICE ALARM SYSTEM CONNECTIONS

EL-410D amplifiers using the AT-1 and the AT-EX Transfer modules in a CPV90 System can be backed up on a one-to-one basis, or multiple amplifiers can share a common backup.

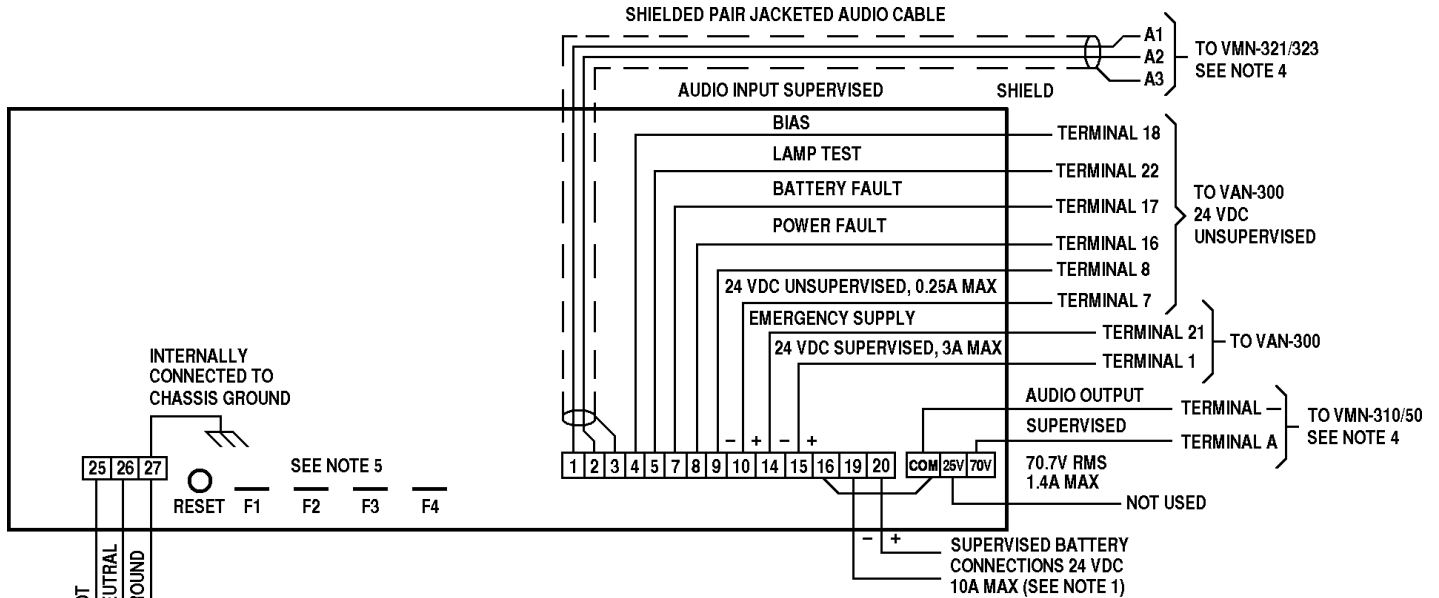
The one-to-one amplifier backup setup requires an AT-1 Transfer module for the active amplifier and its backup amplifier.

When two or more active amplifiers are used with a single backup amplifier, the AT-1 and AT-EX modules are both required.

When an installation requires multiple channels, separate amplifiers or separate groups of amplifiers (along with their transfer modules AT-1 and AT-EX) are required for each channel of operation.

Figure 1 shows the typical wiring for the EL-410D in a CPV90 System for a single amplifier (100 watts output) without backup. Figure 2 shows the typical wiring for the EL-410D in a one-channel CPV90 System with multiple amplifiers (more than 100 watts output) and a single backup.

WITH CPV90 SYSTEM ONLY (NOT FOR MXLV)



NOTES:

1. When battery backup is not used, place a 1K, 1/2W, 5% resistor between terminals 15 and 20, and a 5K, 1/2W, 5% resistor between terminals 19 and 20. Omit the connection from terminal 7.

2. Terminals:

- 1 and 2 = 22 AWG minimum shielded
- 4, 5, 7, 8, 9, and 10 = 18 AWG minimum
- 14, 15, COM, and 70V = $\begin{cases} \text{Less than 20 feet,} \\ \text{use 16 AWG min} \\ \text{More than 20 feet,} \\ \text{use 14 AWG} \\ \text{50 foot max run} \end{cases}$

3. FUNCTION

FUNCTION	TERMINALS
Input Signal	1 and 2
24 VDC Trouble Supply	9 and 10
24 VDC Operating Supply	14 and 15
Output Audio	COM and 70V

4. Run audio input (terminals 1, 2, and 3) in separate conduit from audio output (terminals COM and 70V).

5. Fuses:

F1	12A Audio Output
F2	4A Primary DC Power
F3	15A Battery Power
F4	0.75A Trouble Indication Supply
RESET	Circuitbreaker Reset

Figure 1
CPV90 System EL-410D with Single Amplifier,
Single Channel, without Backup

Adjustment of AT-1/AT-EX

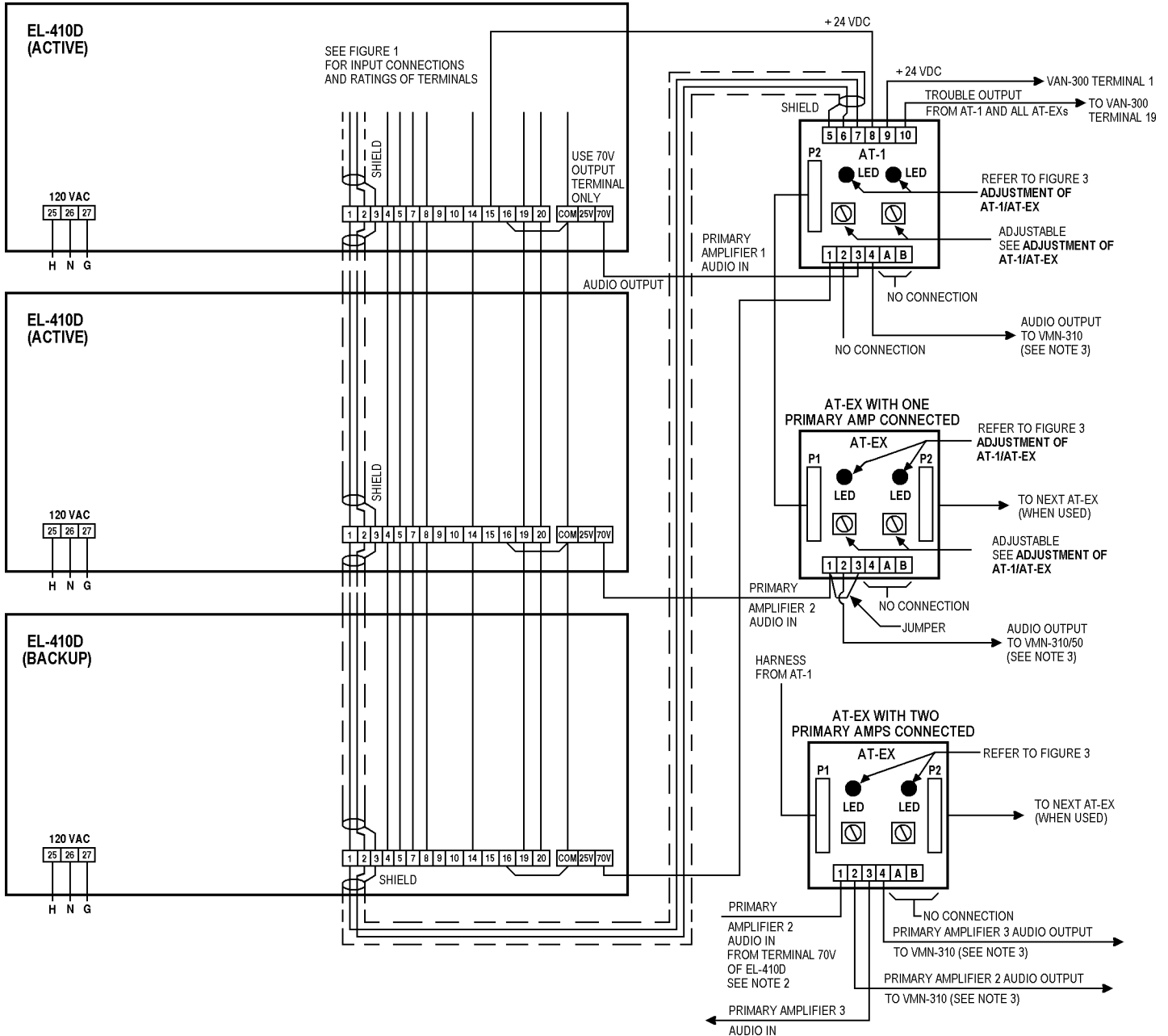
(The adjustment potentiometers R33 and R34 are preset at the factory; however, if the problem described below occurs, the following procedures may be used to correct the problem.)

The AT-1 and its extender, the AT-EX, compare the low level audio input signal of a specific audio channel to that of the amplified output level of each amplifier on that channel. When the compared output level of that amplifier is below that of the factory preset value, the

modules transfer the output power from that amplifier to that of a backup amplifier. Such a transfer is indicated when the related yellow LED on the module lights as follows:

AT-1/AT-EX		
Audio Input Screw Terminal		
	1	3
Trouble LED	DS-1	DS-2
Adjustment Pot	R33	R34

WITH CPV90 SYSTEM ONLY (NOT FOR MXLV)



NOTES:

1. Use only the AT-1 for one-to-one backup of the EL-410D.
2. The connection shown is for an even number of active amplifiers. When an odd number of active amplifiers are used, connect the audio output of the last active amplifier (terminal 70V) to AT-EX, terminal 3, and the audio output to the System from AT-EX, terminal 4.
3. The audio output from the AT-EX connects to the VMN-310/50. The VMN-310/50 controls the speaker zones that the amplifier powers. The VMN-310 has two sets of connectors, D1 and D2. Each set of connectors has a terminal 0 as the common, and terminals A, B, and C, which are available for audio channels.

(Refer to the CPV90 Voice Alarm manual, P/N 315-081079.) Since each card on the VMN-310 uses 20W (or on the VMN-310/50, 50W), one amplifier connected to D1 covers five speaker zones. If more than 100W are used by a VMN-310, connect an additional amplifier to D2 and cut the appropriate jumpers determined by the speaker zone load distribution.

For multi-channel configuration, refer to the CPV90 Voice Alarm manual, P/N 315-081079, Table F and Figures 3-4 through 3-6.

**Figure 2
CPV90 Wiring - Any One Channel,
Multi-Amplifier, with Single Backup**

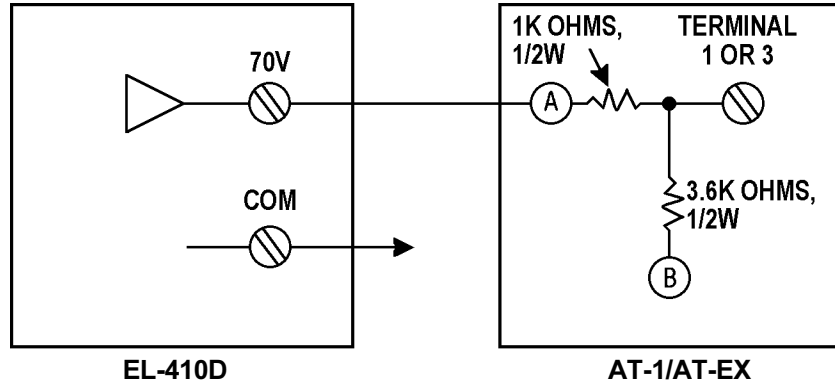


Figure 3
Adjustment of AT-1/AT-EX (CPV90 System)

**CHECKOUT AND ADJUSTMENT
 PROCEDURE OF THE POTS**

1. Rotate the potentiometer indicated above completely clockwise. After a few seconds delay, the module transfers back to a normal untransferred condition.
2. With the System in full load operation (ALL EVACUATION or ALL ALERT), measure the RMS voltage at the input terminal in question. If the measured value is less than 80% of the expected value, investigate the amplifier or input signal(s).

Note: Operation of the All Call or message unit results in a voltage that is not constant, which presents a measurement problem for this step.

3. Readjustment of the transfer level:
 - a. With the System not operating, connect the attenuation network (as shown in Figure 3) to the required input circuit and terminal.
 - b. With the System in full operation (Step 2), slowly adjust the related pot counter-clockwise until transfer occurs. Leave the pot at this setting. If that particular module receives a lot of vibration, seal the pot with a substance such as liquid solder, etc.
 - c. Remove the attenuation network. Re-connect the amplifier output to its previous connection.

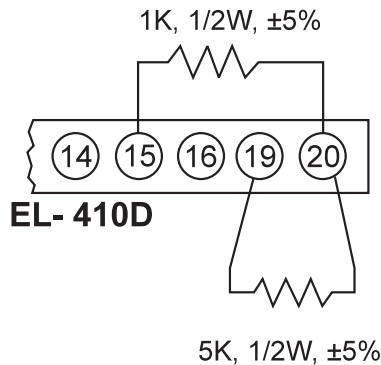


Figure 4
EL-410D without Battery (CPV90 and MXLV)

MXLV BATTERY CALCULATIONS

When using the EL-410D amplifier in MXLV Systems, include EL-410D power requirements when calculating battery backup size (Refer to the *MXLV Manual*, P/N 315-092036).

1. Account for all amplifiers in the system.
 - a. There is one for each audio channel.
 - b. There are backup amplifiers, if required.
2. Based upon the application, determine:
 - a. The number of amplifiers the system uses.
 - b. The number of active amplifiers during an alarm condition.
3. Follow the guidelines in the *MXLV Manual*, P/N 315-092036, for overall system battery requirements.
4. Add the speaker power requirements in watts for all audio zones. Determine the power for each speaker by the placement of the jumper wire on the PC board on the back of the speaker. Refer to the speaker installation sheet, if necessary. This is the total amplifier power with all speaker zones active.
5. Standby current for the EL-410D amplifier is 0.200 ampere. Active current varies with the speaker load on the output. Refer to Table 1.

Output Power (Watts)	Battery Current (Amperes)
10	1.3
20	2.3
30	3.3
40	4.3
50	5.3
60	6.2
70	7.2
80	8.2
90	9.2
100	10.0

MXLV VOICE SYSTEM CONNECTIONS

(Refer to Figures 5 and 6, pages 6 and 7, for wiring diagrams of an MXLV application.)

When using a System 3 enclosure to install EL-410D modules, use the following items:

- EB series System 3 backbox
- EK series System 3 rail assemblies
- ED series System 3 door
- Single space blank plate for door—P/N 305-087493 or, eight space blank plate for door—P/N 225-180696

ELECTRICAL RATINGS

Active 5VDC Module Current	0mA
Active 24VDC Module Current	0mA
Standby 24VDC Module Current	200mA
Active 120VAC Current (maximum load of 100W)	3A max.

When using an MME-3 or MLE-6 enclosure to install the EL-410D, use these items:

- MME-3 or MLE-6 enclosure (includes backbox and door)
- MSR-1 Rail Kit
- MDG-1 Plate

Notes for Figures 5 and 6:

1. For information on the riser connections refer to the following appropriate documentation as necessary:

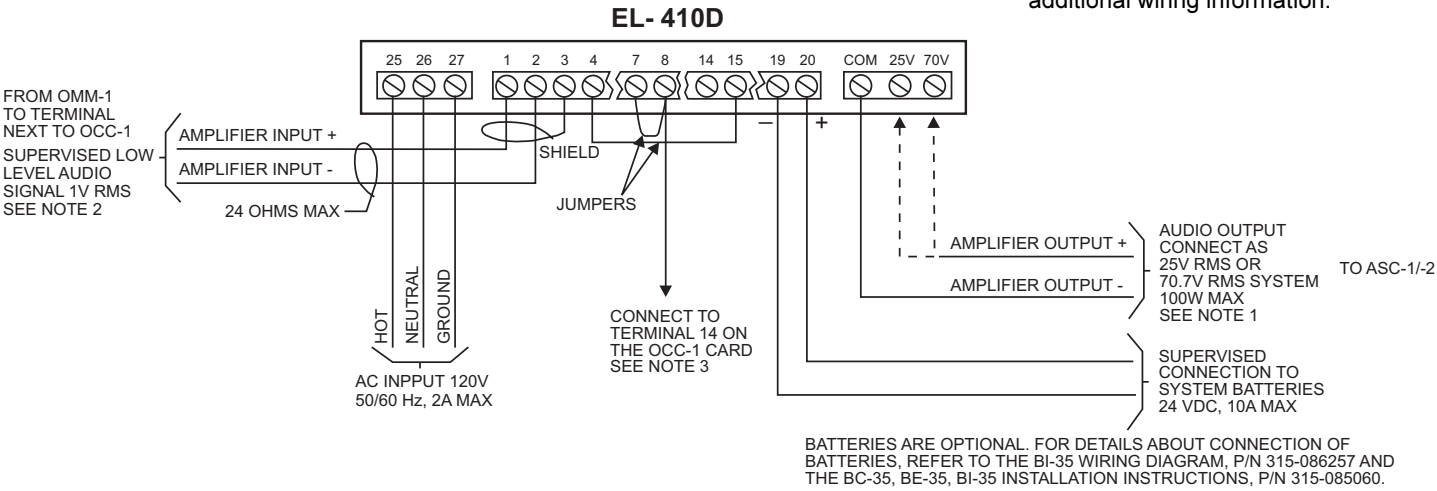
MXLV Manual	P/N 315-092036
OCC-1 Instructions	P/N 315-090918
ASC-1 Instructions	P/N 315-091263
ASC-2 Instructions	P/N 315-092085

2. Run the **low level audio input lines** from the OCC-1 in **shielded cable and separate conduit from the high level audio output lines** of the amplifiers. See OCC-1 Instructions, P/N 315-090918.

3. If multiple EL-410Ds are used, connect the EL-410Ds together using terminals 7 and 8. Then connect them to the OCC-1. This supervises the battery and AC fault at the EL-410D. If there is no battery connected to the EL-410D, this wiring configuration is not necessary.

4. Configure the OCC-1 input with CSG-M (AccuLINK) for normally low 5/24 VDC input. **The EL-410D power/battery supervision is normally low input.**

Refer to Wiring Specification for MXL, MXL-IQ and MXLV Systems, P/N 315-091772 revision 6 or higher, for additional wiring information.



**Figure 5
MXLV Amplifier Connection**

Refer to Wiring Specification for
 MXL, MXL-IQ and MXLV
 Systems, P/N 315-091772
 revision 6 or higher, for
 additional wiring information.

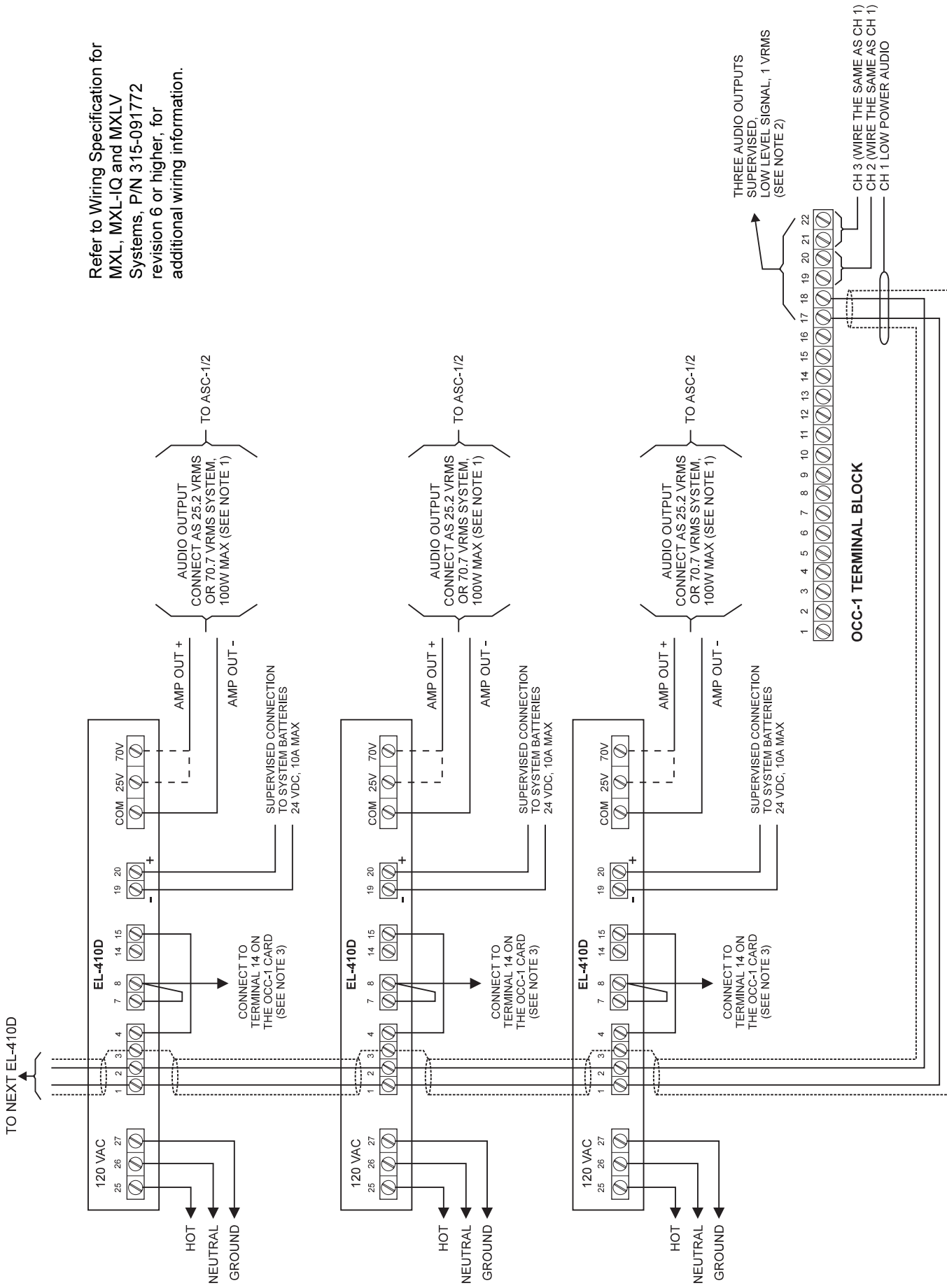


Figure 6
MXLV Wiring Diagram for One Channel to Multiple EL-410D Amplifiers
(Wire Channels 2 and 3 the Same Way)

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