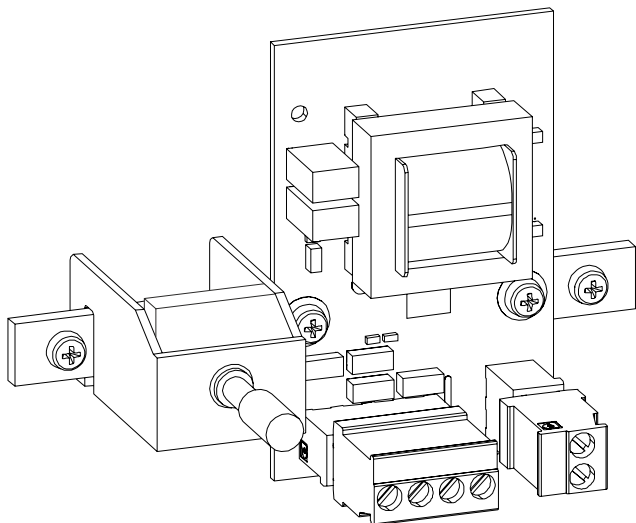


SIEMENS



FHA2054-U1

Audio transformer kit

Mounting

Installation

Legal notice

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1 Description

The FHA2054 audio transformer kit is for a reliable ground disconnection of the low-level audio source in booster amplifier station EBA2001. The FHA2054 audio transformer kit is installed in booster amplifier station EBA2001 and must be connected to 'Line in' 'X4' at the booster amplifier mainboard (100 W) EBA2004.

The FHA2054 comes with all individual parts for installation.

The kit contains a shield connection terminal block, an isolating transformer module with connector for the low-level audio connection, a terminating resistor for supervision and a terminal block for the wiring to the low-level input.

Properties

- Ensure solid Earth Ground connection
- Allows for terminal landing of shielded cables
- Uses 1:0.75 audio transformer with low distortion and good frequency response
- DC decoupling, impedance of 10k Ω at 1kHz
- Allows DC wire supervision and ground fault detection of audio source
- Allows 1.00/1.55 V_{rms} operation
- Harmonic Distortion: <1 %
- Crossover distortion: <1%



You will find more information on booster amplifier mainboard (100 W) EBA2004-A1 in document A6V10407858, e.g. requirements for installation and complete installation instructions.

2 Installation

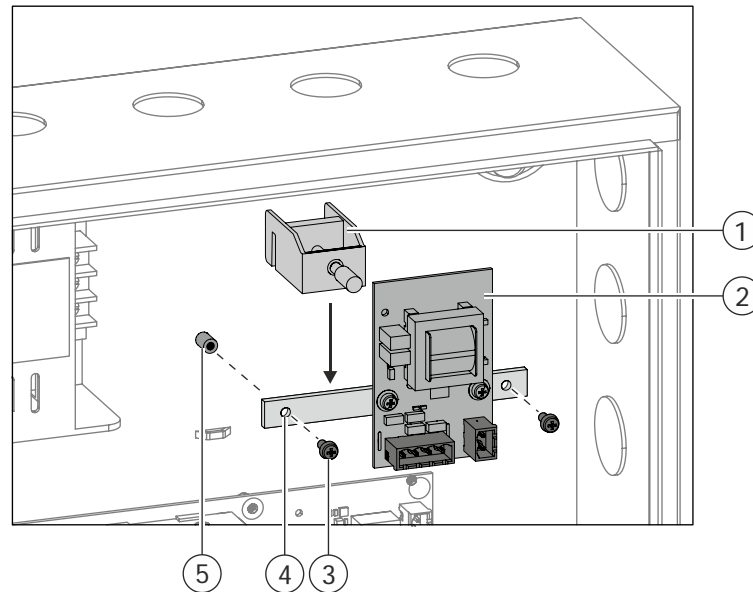


Figure 1: Installing the FHA2054 audio transformer kit

- 1 Shield connection terminal block
- 2 The FHA2054 audio transformer kit is mounted on the busbar
- 3 2x #4-40 pan-head Phillips screws, L ¼"
- 4 Busbar L=100 mm with 2x fastening tabs
- 5 2x threaded standoffs in back box

1. Plug the shield connection terminal block (1) onto the busbar (4) from above.
2. Screw the busbar (4) with pre-mounted audio transformer kit (2) and the shield connection terminal block (1) with both screws (3) into the threaded standoff on the back box (5).

3 Preparing and installing the cable

Preparing the external cable

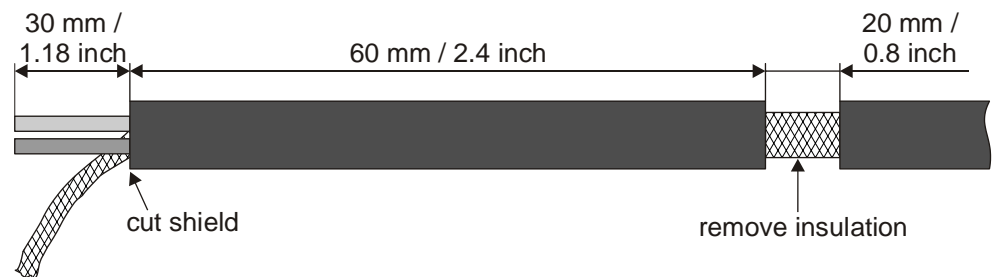


Figure 2: Stripping the external cable for FHA2054

▷ Use a twisted, shielded cable.

1. Cut open the insulation approximately 90 to 110 mm/3.5" to 4.3" from the end of the cable and remove the insulation approximately 20 mm/0.8" from the cable.
2. Strip approximately 30 mm/1.18" from the end of the cable.
3. Open the wire braid of the shielding at the end of the cable and expose the wires.
4. Cut off the wire braid of the shielding at the end of the surround corresponding to the 'cut shield' in the figure.

Preparing the internal cable

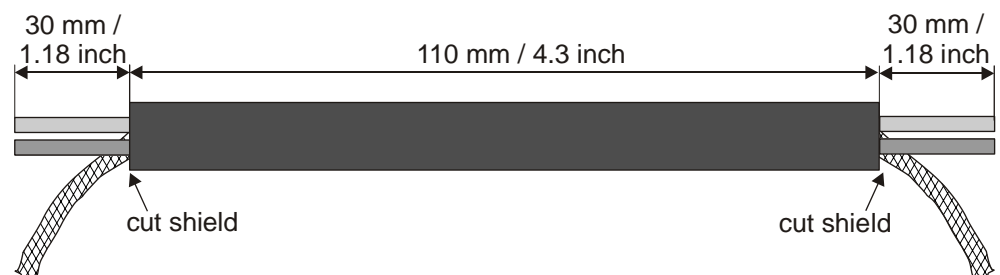


Figure 3: Stripping the internal cable

▷ Use a twisted cable with a max. length of 170 mm/6.7", shielding is not necessary.

1. Strip approximately 30 mm/1.18" from the ends of both cables.
2. Open the wire braid of the shielding and expose the wires.
3. Cut off the wire braid of the shielding at the end of the surround corresponding to the 'cut shield' in the figure.

Laying the cable and connecting the shield

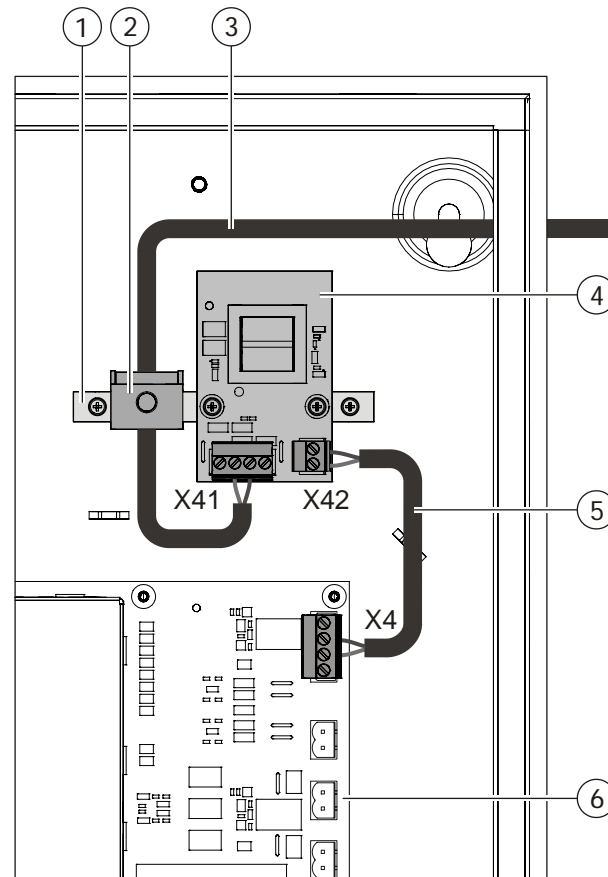


Figure 4: Wiring of the FHA2054 audio transformer kit

- 1 Busbar with FHA2054 audio transformer kit mounted
 - 2 Exposed shielding in the shield connection terminal block
 - 3 External twisted, shielded cable to X41
 - 4 PCB of FHA2054 audio transformer kit
 - 5 Internal twisted cable
 - 6 Booster amplifier mainboard (100 W) EBA2004
1. Lay the external shielded cable (3) so that the exposed braid is positioned in the shield connection terminal block (2).
 2. If necessary, lay a further shielded cable through the same shield connection terminal block.
 3. Tighten the knurled screws for the shield connection terminal block to fix the cable in place.
 4. Connect the external cable (3) to the plug terminal X41, in accordance with chapter Wiring and pin assignments [→ 10].
 5. Lay the internal cable (5) in accordance with the figure above.
 6. Connect the internal cable (5) between X42 of the FHA2054 (4) and X4 of the EBA2004 (6), in accordance with chapter Wiring and pin assignments [→ 10].

4 Views

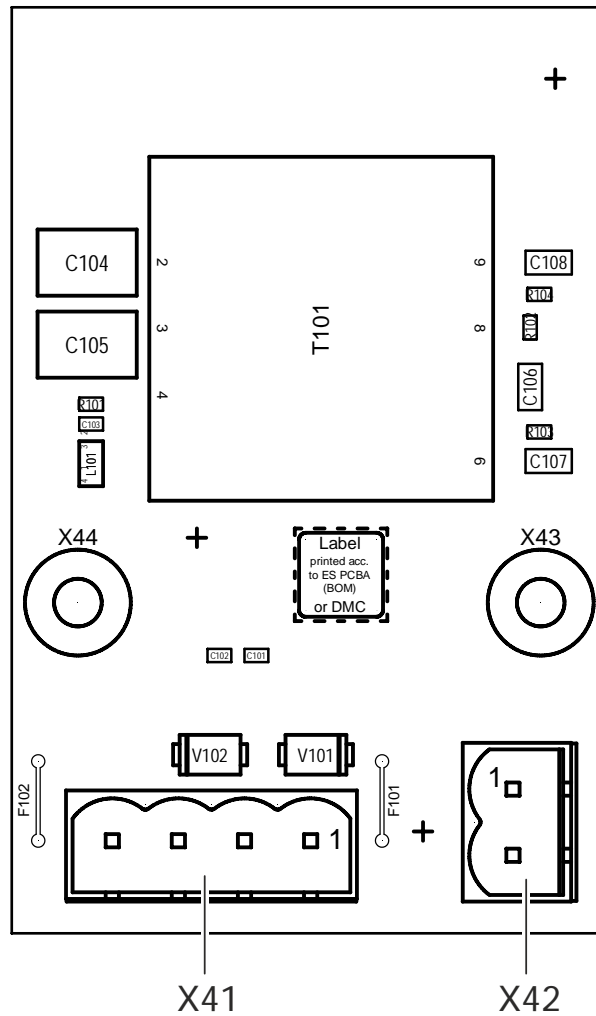


Figure 5: FHA2054 print view

Element	Des.	Function
Connector	X41	'LINE IN', 'Low level' audio input
	X42	'LINE OUT', 'Low level' audio output

5 Wiring and pin assignments

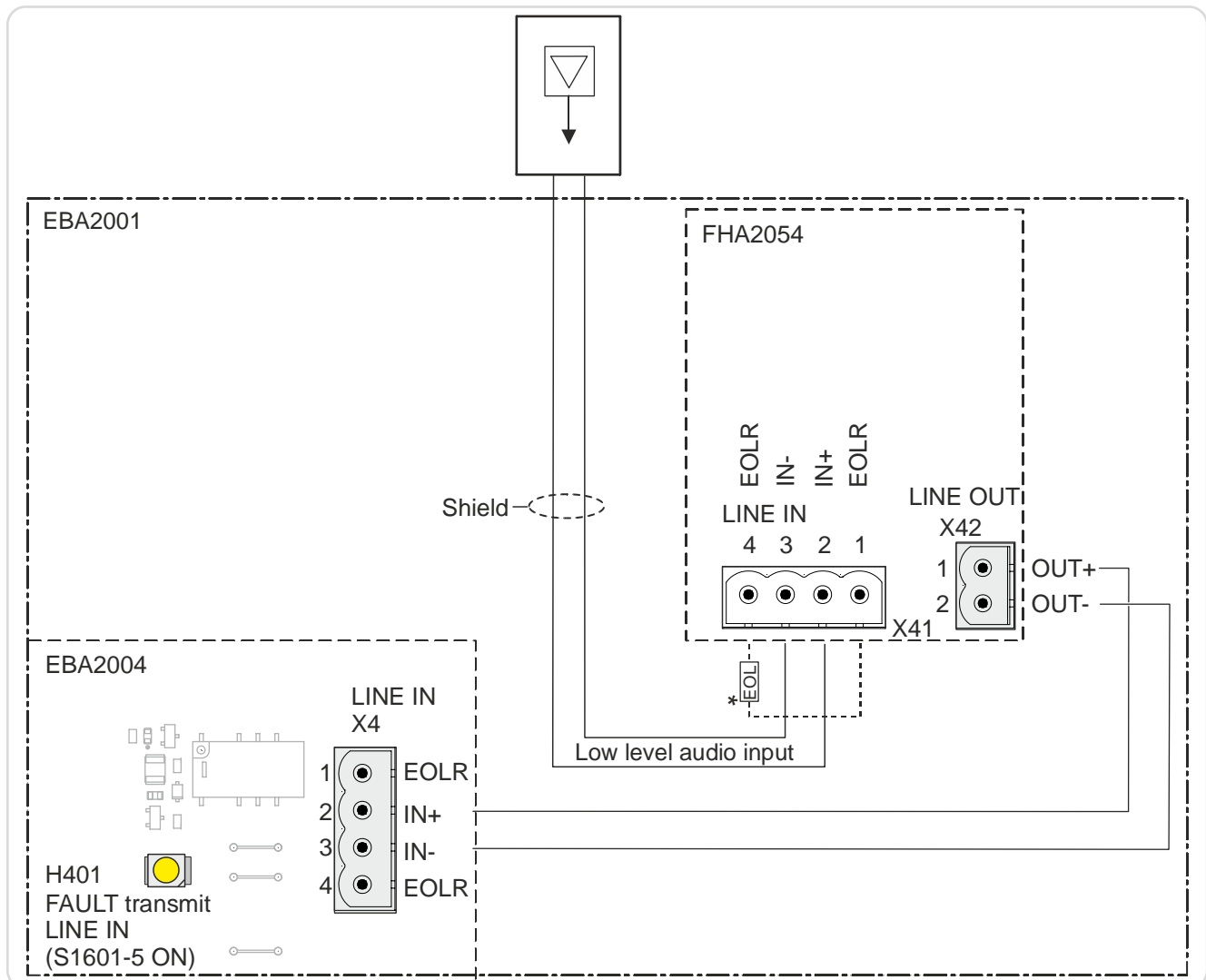


Figure 6: Wiring the plug connections of the FHA2054 audio transformer kit

* The audio line can be monitored by connecting an EOL resistor of 3.3 k Ω , Siemens part no. C24235-A1-K14. The supervision and the appropriate EOLR value are determined by the 'External source'.

Settings on the EBA2004

The DIP switch S1601-5 'FAULT TBL: LINE', must be set to OFF. A fault with LED H401 is not signaled on the booster amplifier mainboard (100 W).

The following DIP switches must be configured, see DIP switch S1501/S1601, configuration:

- S1501-5 'PRIORITY: LINE/SPEAKER'
- S1501-7 and S1501-8 'LINE INPUT LEVEL', recommended 0.75V_{RMS}

You will find detailed information on the configuration and wiring of the EBA2004 in document A6V10407858, Booster Amplifier Mainboard (100W) EBA2004.

Plug connection X41, LINE IN

Pin	Designation	Description
1	E-R	Connection EOL resistance 3.3 kΩ
2	IN+	Low-level audio input +
3	IN-	Low-level audio input -
4	E-R	Connection EOL resistance 3.3 kΩ

Permissible cable cross-section for all plug connections: 1 x 12...18 AWG or 2 x 16...18 AWG

Required cable: Shielded and twisted cable; the shielding must be carried out in accordance with chapter Preparing and installing the cable [→ 7].

Plug connection X42, LINE OUT

Pin	Designation	Description
1	OUT+	Isolated low-level audio output +
2	OUT-	Isolated low-level audio output -

Permissible cable cross-section for all plug connections: 1 x 12...18 AWG or 2 x 16...18 AWG

Required cable: Twisted cable, no shielding required between X42 and X4. The cable must be as short as possible and connected in accordance with chapter Preparing and installing the cable [→ 7].

Plug connection X4, LINE IN on the EBA2004

Pin	Designation	Description
1	E-R	EOLR connector not connected
2	IN+	Low-level audio input +
3	IN-	Low-level audio input -
4	E-R	EOLR connector not connected

You will find detailed information on the configuration and wiring of the EBA2004 in document A6V10407858, Booster Amplifier Mainboard (100W) EBA2004.

See also

- 📄 Preparing and installing the cable [→ 7]

6 Recommended wiring for FHA2054

The low-level audio input can¹ be used for non-emergency applications such as background music or convenience paging. A wiring example is shown below.

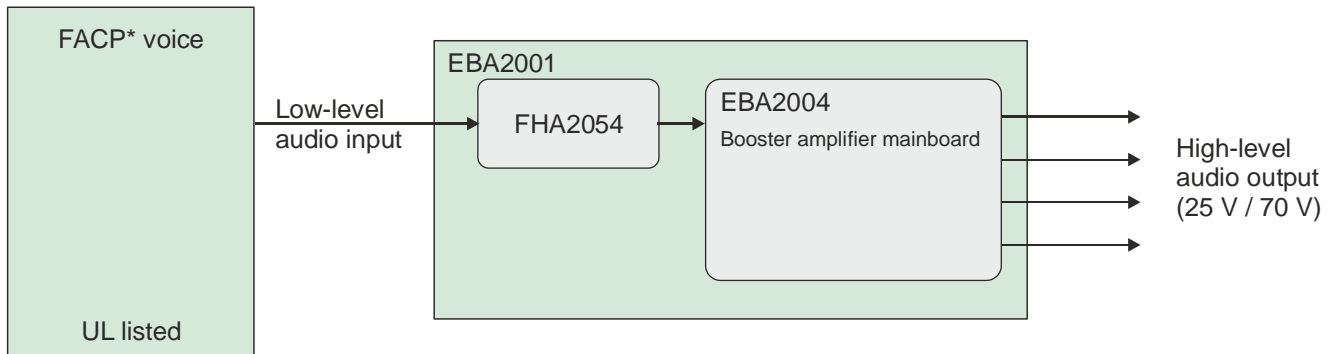


Figure 7: FHA2054 wiring application with single booster amplifier panel

* FACP = Fire alarm control panel

!	NOTICE
	<p>¹ Nonapplicable for Canadian installations</p> <p>Usage not conform with the National Building Code of Canada</p> <ul style="list-style-type: none"> Note that for Canadian installations, playing Background music in a fire alarm or voice communication system is prohibited, per Section 3.2.4.18 of the National Building Code of Canada.

The inputs of the FHA2054 audio transformer kit cannot be cascaded together as this will degrade the low-level audio input by introducing excessive load on the circuit. If a low-level audio signal needs to be transmitted, one output of the booster amplifier mainboard can be used to send the audio signal to other booster amplifier mainboards through the high-level input as shown in the figure below.

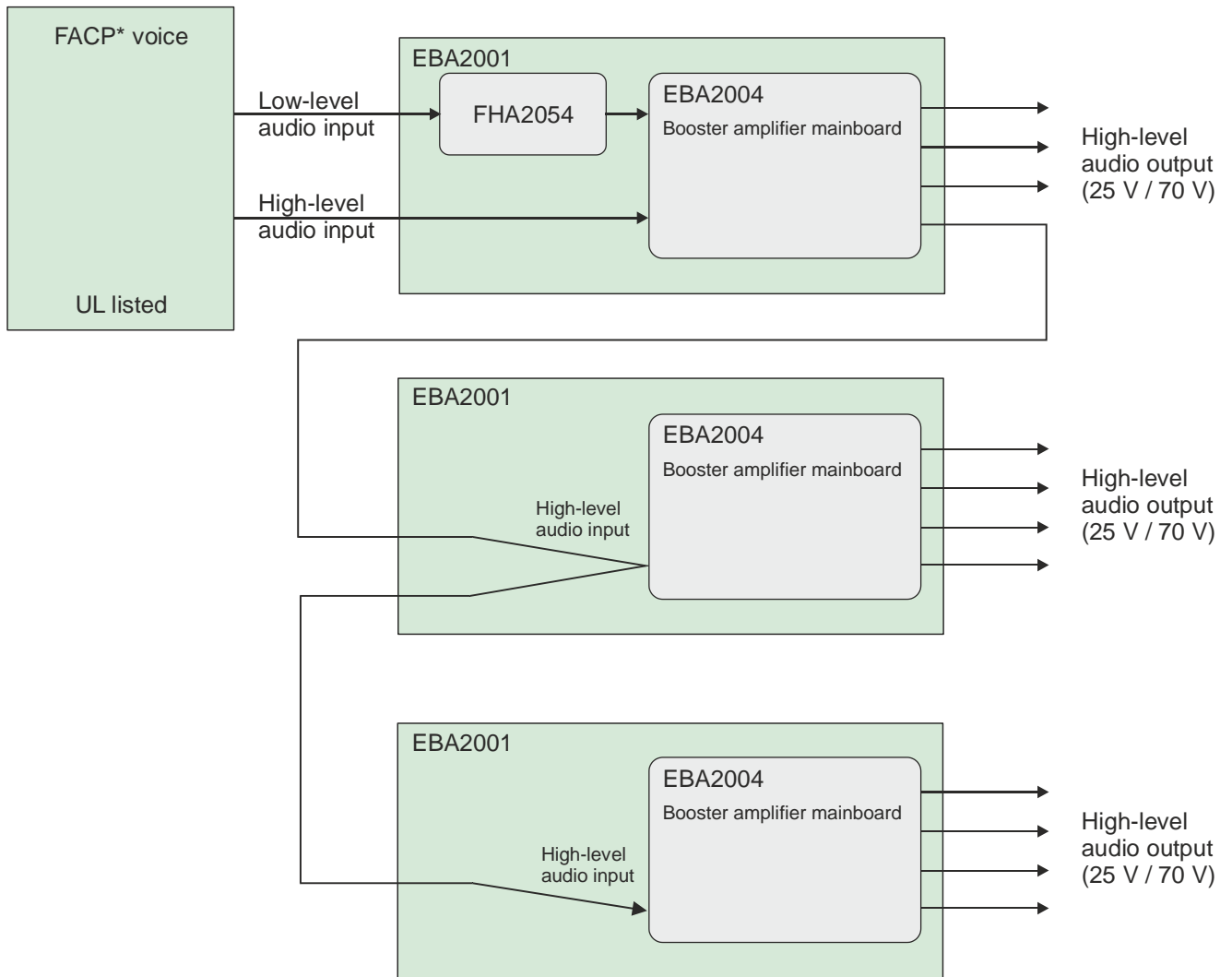



Figure 8: Recommended cascading application with low-level audio input

* FACP = Fire alarm control panel

You will find more information on parameter limits and a wiring diagram for this application in the document A6V10407858 'EBA2004-A1 Booster amplifier mainboard (100 W), Mounting/Installation'.

7 FCC Statement

	<p>⚠ WARNING</p> <p>Installation and usage of equipment is not in accordance with instructions manual</p> <p>Radiation of radio frequency energy Interference to radio communications</p> <ul style="list-style-type: none">• Install and use equipment in accordance with instructions manual.• Read the following information.
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This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications.

It has been tested and found to comply with the limits for a Class A computing device pursuant to Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.

Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

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