

SIEMENS



Model ABHW-4SZ

**Intelligent Audible Base for Sleeping Area
with 520Hz Low Frequency Sounder**

Installation

Legal notice

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1 About the Intelligent Audible Base for Sleeping Area with 520Hz Low Frequency Sounder

1.1 Introduction

The Model ABHW-4SZ audible base from Siemens Industry, Inc. is an intelligent supervised base which is designed for use in sleeping areas. The base generates a 520 Hz square wave audio signal complying with the latest NFPA 72 standard and is UL/ULC-listed. It provides six selectable tone patterns, two volume levels when used with compatible fire detectors and control panels. The ABHW-4SZ audible bases wired in the same device loop are fully synchronized with FD-UL detectors and also support RL-HC, RL-HW remote lamps. The ABHW-4SZ provides 520 Hz Steady, Temporal 3, Temporal 4, Temporal 4 low power, March time 120 and Canadian March time 30.

ABHW-4SZ is fully compatible with all Siemens addressable detectors and recognizes the detector type automatically. (Refer to the list of compatible detectors and control panels in this document).

1.2 Application Note

NOTICE	
!	The ABHW-4SZ is a UL & ULC listed smoke detector supplementary device. It meets or exceeds 85 dB at 10-foot audibility requirement as specified in UL268 & ULC-S529. When used in conjunction with listed, compatible Siemens equipment, the ABHW-4SZ may be used in lieu of single/multiple station smoke alarms to achieve enhanced, system-level functionality. The ABHW-4SZ can also meet the requirements specified in UL464, UL2075 including 520 Hz low frequency requirements for "Sleeping Area".

1.3 Specifications

Physical Specifications:

Operating temperature: 32 °F ~ 120 °F (0 °C ~ 49 °C)

Operating humidity: 10 ~ 95%RH (Non Condensing)

Compatible electrical mounting boxes: 4" square gang box

ONLY with 2.5-inch depth minimum; 4" octagon box is **NOT** compatible

Sound Output:

High: ≥ 85 dB

Low: ≥ 75 dB

Tones:

Steady

Temporal 3

Temporal 4

Temporal 4 low power

March time 120

Canadian March time 30

Electronic Ratings:

Operating voltage:

External power: 16 ~ 33 VDC

Supervisory current (max):

From loop: 250 μ A

From external: 1.0 mA

Alarm current (max):

External powered:

High dBA:

65 mA @ 33 VDC

90 mA @ 24 VDC

165 mA @

16 VDC 0.85 mA from loop

Low dBA:

28 mA @ 33 VDC

33 mA @ 24 VDC

45 mA @ 16 VDC

1.6 mA from loop

Horizontal Axis		Vertical Axis	
Angle	OSPL (dBA)	Angle	OSPL (dBA)
0° (ref)	0 (ref)	0° (ref)	0 (ref)
+/- 35	-3	+/- 40	-3
+/- 75	-6	+/- 70	-6
+/- 90	-7.4	+/- 90	-8.0

Table 1: Calculated Worst Case Limits

1.4 Constraints

1. The alarm current of ABHW-4SZ has to be energized by any UL listed 24 VDC regulated auxiliary power supply including the aux power output of XLS/Desigo Fire Safety Modular/Cerberus PRO Modular, FC2005/FC901, FC2025/ FC2050/FV2025/FV2050, FC922/FC924/FV922/FV924 and 3 PAD-3/PAD-4/PAD-5 (refer to Figure 1), ZIC-4A (FireFinderXLS/Desigo Fire Safety Modular/Cerberus PRO Modular zone indicating card (NAC), refer to Figure 3), PAD-3/ PAD4/PAD-5 (Figure 4), or a 24 VDC NAC circuit such as FC2005/ FC901 (Refer to Figure 5) or NAC circuit such as FC2025/FC2050/FV2025/FV2050, FC922/FC924/FV922/ FV924 (Refer to Figure 6).
2. The alarm current of ABHW-4SZ **CANNOT** be energized by a 24 V FWR power supply.
3. The maximum number of ABHW-4SZ is related to the maximum current rating and the power line resistance of the auxiliary power supplies applied on the ABHW-4SZ. Refer to the related installation instructions of the auxiliary power supply.
4. The maximum loop line resistance cannot exceed the maximum line resistance defined in the compatible fire control panels.
5. T-tapping of the notification appliance circuit is not allowed.
6. The NAC output must be set to a steady DC if it is used for ABHW-4SZ.

1.5 Configuration

Important!

The ABHW-4SZ must be configured by the panel when it is connected with FD-UL detectors (see Table 3). Failure to configure the ABHW-4SZ will cause problems. For additional information please refer to the manual of related

panel. Also, for use with H-Series detectors (see Table 4) it does not require panel configuration as it will function the same as an ADBH-11 which will not be synchronized.

1.6 Detector Wiring

(Refer to Figures 8 and 9) Audible base Model ABHW-4SZ should be interconnected as shown in the Installation/Wiring Diagrams and wired to the specific system modules and control panels following the appropriate instructions. For operation with FireFinder-XLS/Desigo Fire Safety Modular/Cerberus PRO Modular, FC2005/FC901, FC2025/FC2050/FV2025/ FV2050, FC922/FC924/FV922/FV924 system, note any limitations on the number of audible bases permitted on each notification appliance circuit or 24 VDC regulated power supply, depending on the total cable resistance and total load of each circuit. (See ELECTRICAL RATINGS section.)



Recommended wire size: 18 AWG min.; 14 AWG max. Wire larger than 14 AWG can damage the connector.

1.7 Mounting

1.7.1 Detector Mounting

The detector base comes from the factory pre-wired. All signaling and initiating circuits are connected directly to the back of the ABHW-4SZ audible base using the four position terminal blocks.

1.7.2 Base Mounting

1. Route all wires out from the outlet box.
2. When the alarm LED viewing is critical, position the LED mark on the base in the intended direction (Refer to Figure 9).
3. Make connections directly to the audible base terminals located on the back of the base. Refer to the related Installation/Wiring diagram.
4. After all bases are installed, check loop continuity. For ABHW-4SZ loop continuity check, refer to the DPU or SDPU Manual, "Testing a FireFinder-XLS Loop".
5. If loop continuity is acceptable, proceed with detector head installation.

1.8 Detector Placement

Use a 30-foot center spacing (900 sq ft), as a starting point referred to in NFPA Standard 72 National Fire Alarm Code and CAN/ULC-S524, in a detector installation layout. This spacing is based on ideal conditions—smooth ceiling, no air movement, and no physical obstructions. In all installations (except in special circumstances like computer room under floors), locate the detector on the ceiling, a minimum of 6 inches from a side wall, or on a wall, 5 between 4 and 6 inches from the ceiling.

If questions arise regarding detector placement, it is extremely important that the drawings provided or approved by Siemens Industry, Inc., or by its authorized distributors be followed. The detector placements shown on these drawings were chosen after careful evaluation of all facets of protecting the area. Environmental factors such as air current, temperature, humidity, air pressure, and the nature of the fire load are carefully considered. Special consideration is given to room or area configuration and the type of ceiling (sloped or flat, smooth or beamed). Siemens Industry, Inc.'s extensive experience in the design of fire detection systems assures optimum detector placement and is reflected in these drawings. Follow sound engineering judgment made by qualified personnel.

1.9 Compatible Devices

Model	System Type	Doc. P/N
DLC (See Figure 9, Note 1)	FireFinder® XLS FACP	315-034242
FC2005	Desigo™ Fire Safety 50-point panel	A6V10333722
FC901	Cerberus™ PRO 50-point FACP	A6V10336754
FC2025/FC2050/ FV2025/FV2050	Desigo 250 & 500 point Fire Alarm Control Panels	A6V10337045
FC922/FC924/FV922/ FV924	Cerberus PRO 250 & 500 point Fire Alarm Control Panels	A6V10356958
XDLC	Desigo Fire Safety Modular Cerberus PRO Modular	A6V11231620 A6V11231627

Table 2: Compatible fire alarm control panels

Compatible detectors:

Model	Siemens Part #	Doc. P/N	Type / Description
FDO421	S54320-F4-A1	A6V10323926	Desigo optical detector
FDOT421	S54320-F6-A1	A6V10323934	Desigo optical / heat detector
FDT421	S54320-F5-A1	A6V10323930	Desigo heat detector
FDOOT441	S54320-F7-A1	A6V10324655	Desigo dual optical heat detector
FDOOTC441	S54320-F8-A1	A6V10324657	Desigo dual optical heat & CO detector
OOH941	S54320-F7-A2	A6V10324659	Cerberus PRO dual optical heat detector
OOHC941	S54320-F8-A2	A6V10324661	Cerberus PRO dual optical heat & CO detector
OP921	S54320-F4-A2	A6V10323928	Cerberus PRO optical detector
OH921	S54320-F6-A2	A6V10323936	Cerberus PRO optical / heat detector
HI921	S54320-F5-A2	A6V10323932	Cerberus PRO heat detector

Table 3: FD-UL series detectors

Model	Siemens Part #	Doc. P/N	Type / Description
HFP-11	500-033290	315-033290	H-Series optical / heat detector
HFPT-11	500-033380	315-033290	H-Series heat detector
SFP-11	500-033290C	315-033290C	Canada H-Series optical / heat detector
SFPT-11	500-033380C	315-033290C	Canada H-Series heat detector
HFPO-11	500-034800	315-034800	H-Series optical detector

Model	Siemens Part #	Doc. P/N	Type / Description
SFPO-11	500-034800C	315-033290C	Canada H-Series optical detector

Table 4: H-series detectors

Model	Siemens Part #	Doc. P/N	Type / Description
RL-HW	500-033310	315-033230	Remote alarm lamp (wall)
RL-HC	500-033230	315-033230	Remote alarm lamp (ceiling)

Table 5: Compatible remote lamps

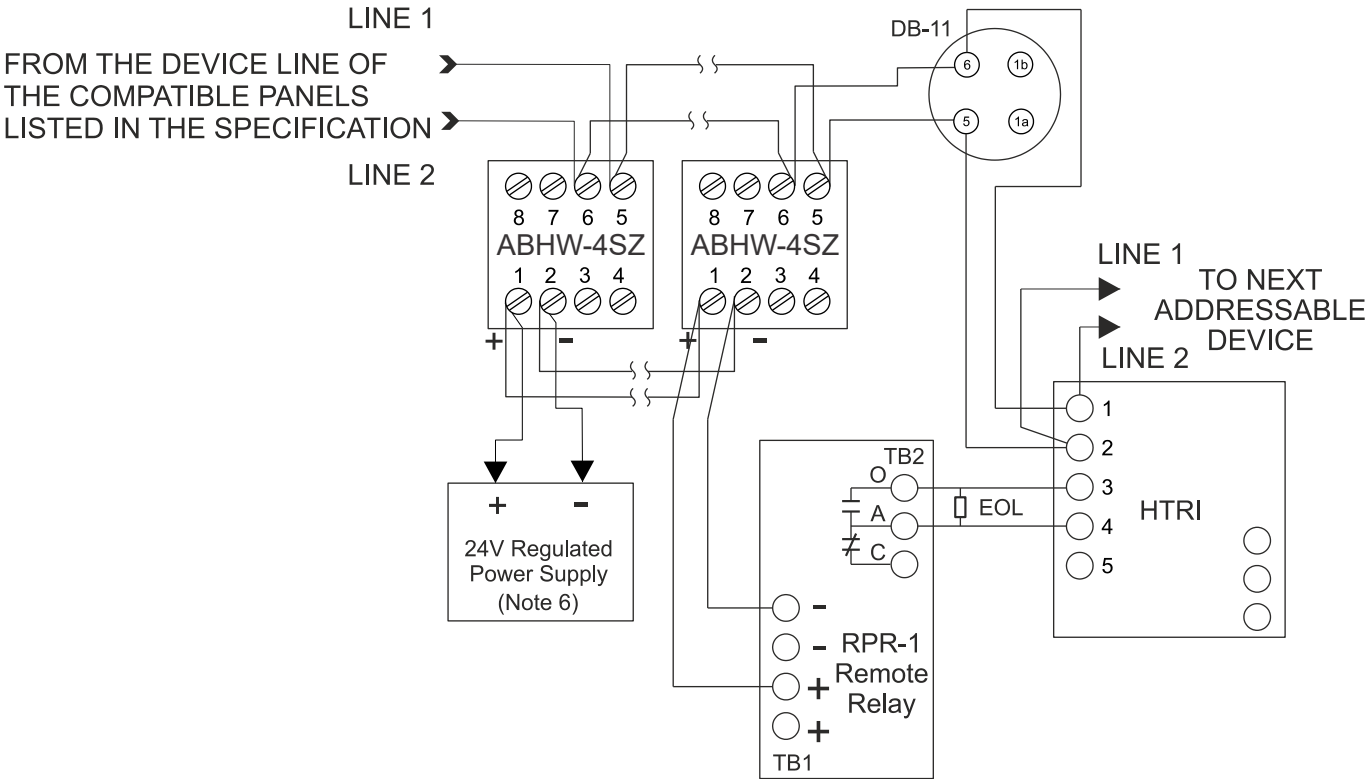


Fig. 1: Typical Non-Isolated Installation/Wiring Diagram for ABHW-4SZ Audible Base Powered by 24 VDC Regulated Power Supply

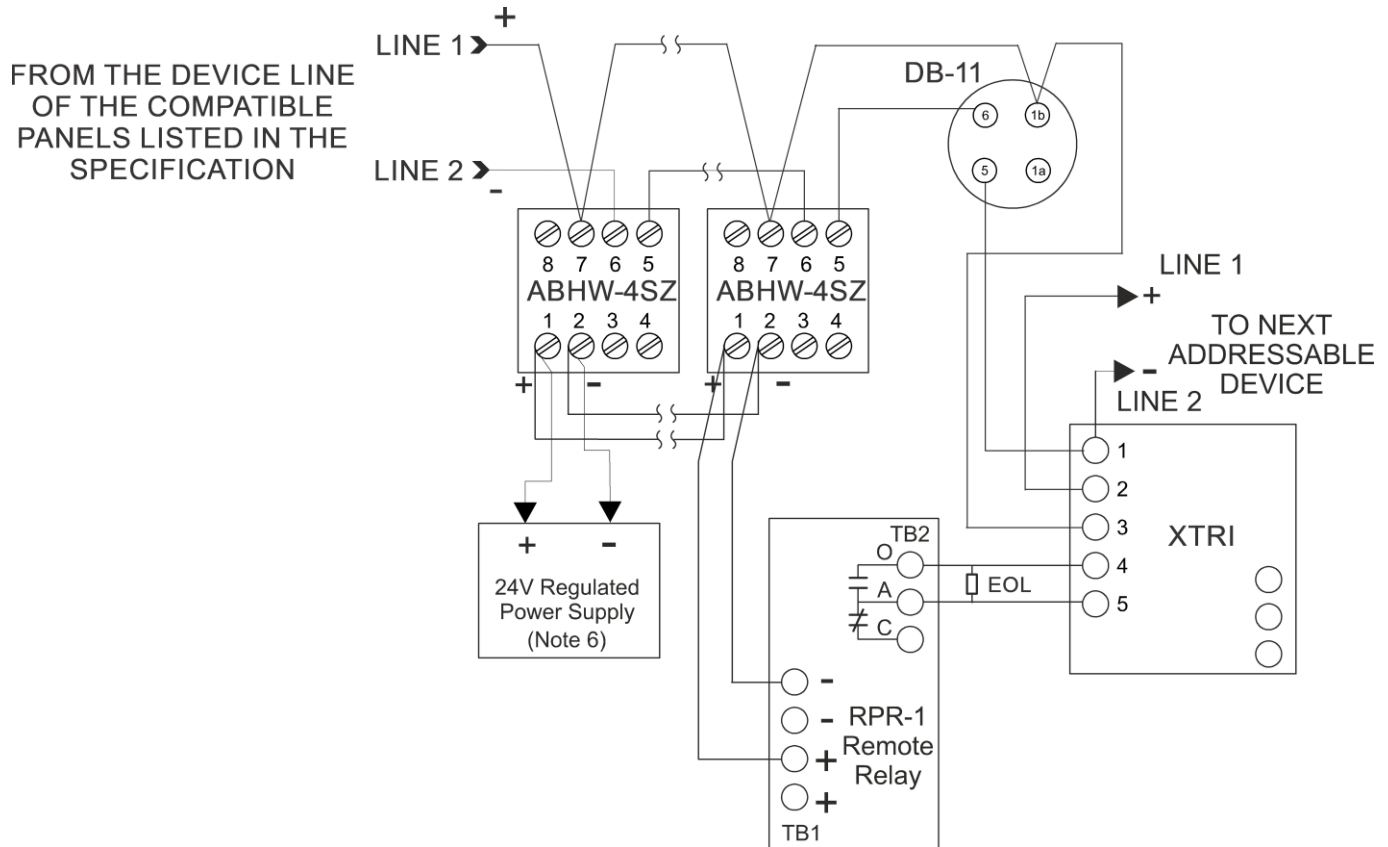


Fig. 2: Typical Isolated Installation/Wiring Diagram for ABHW-4SZ Audible Base Powered by 24 VDC Regulated Power Supply

Figure 1 and 2 Notes:

1. RPR-1 remote relay and HTRI are used for 24 VDC power supervision. 24 VDC wire open will cause trouble reported by HTRI. Refer to Installation Instruction of RPR-1 (315-096055).
2. ABHW-4SZ terminals 5-6 are polarity insensitive. Line 1 and Line 2 can be either line of device loop.
3. EOL device of HTRI: 3.6 K, 1/4 W resistor, P/N 140-820185.
EOL device of HTRI: 470 Ohm, 1/4 W resistor, P/N 140-820164.
EOL device of XTRI: 470 Ohm, 1% 1/2 W Resistor, P/N A5Q00073045.
4. ABHW-4SZ can be wired either Style Z (Class A) or Style Y (Class B).
5. For the max load current, refer to the specifications of the compatible panels listed in this document.
6. The 24 VDC regulated power supply could be the Aux Power Output from the compatible panels or from PAD-3/PAD-4/PAD-5, or other UL listed 24 VDC regulated power supply. 24 V FWR power supply can't be allowed.

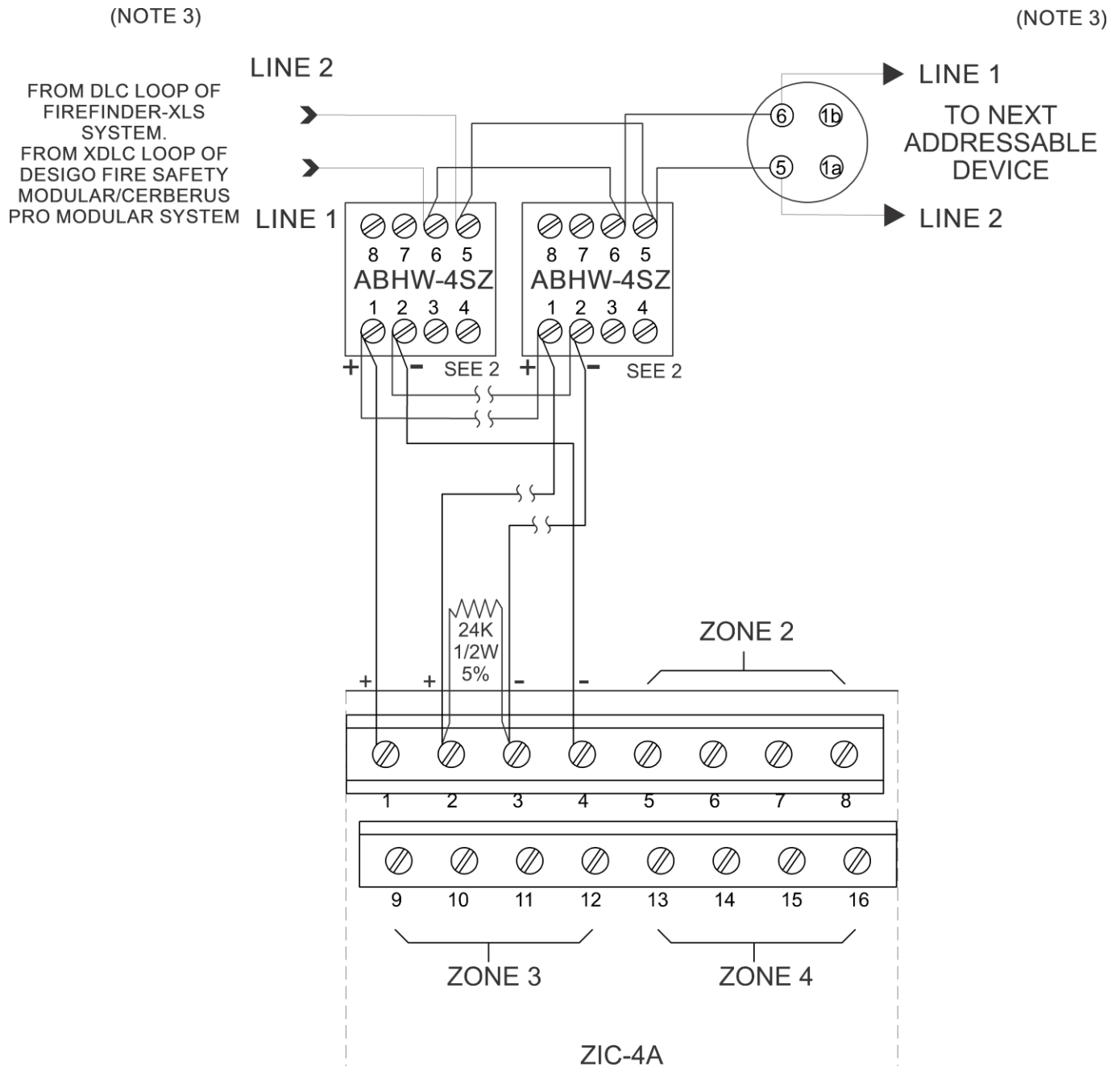


Fig. 3: Installation/Wiring Diagram for ABHW-4SZ Audible Powered by ZIC-4A (NAC of FireFinder-XLS/Desigo Fire Safety Modular/Cerberus PRO Modular System)

Figure 3 Notes:

1. Polarity shown in active state at terminals 1 and 2 of ABHW-4SZ and 1-4 of ZIC-4A. Proper polarity must be maintained, or audible base will not operate properly. Each audible base must be tested to verify operation.
2. Tone selection (Refer to Figure 9, Note 4, for more information).
3. ABHW-4SZ terminals 5-6 are polarity insensitive. Line 1 and Line 2 can be either line of the loop.
4. The wiring of ABHW-4SZ shown in the diagram is Style Z (Class A). It may also be wired as Style Y (Class B).
5. ZIC-4A Notification Appliance Circuits provide 4 outputs that can be configured for Class A. or Class B. Refer to the ZIC-4A Installation Instructions, P/N 315-033050.

6. EOL resistor, 24 k ohms, 1/2 watt, 5%, P/N 140-820405.
7. NAC circuit does not provide isolation.

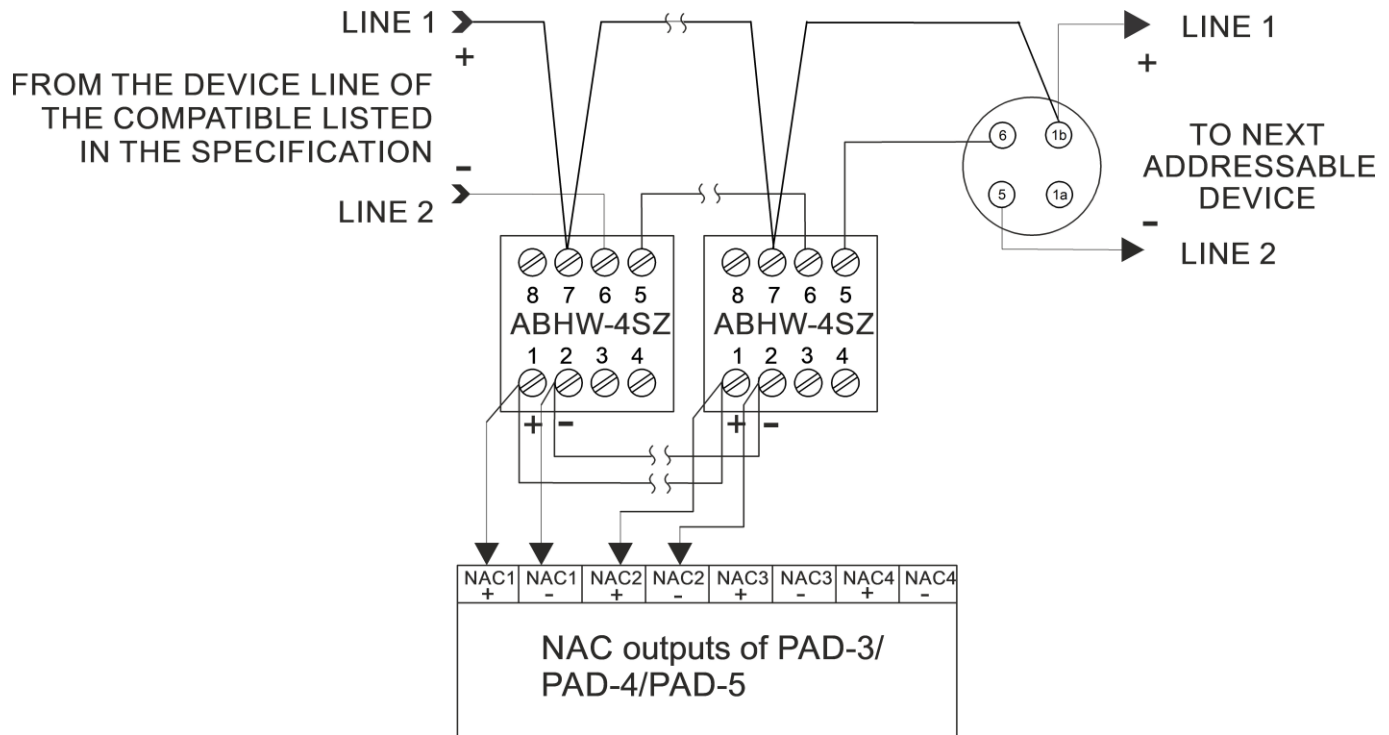


Fig. 4: Typical Isolated Installation/Wiring Diagram for ABHW-4SZ Audible Base Powered by NAC of PAD-3/PAD-4/PAD-5 System

Figure 4 Notes:

1. The NAC circuit shown in the diagram is the active state at terminal 1 and 2 of ABHW-4SZ.
2. ABHW-4SZ terminals 5-6 are polarity insensitive. Line 1 and Line 2 can be either line of device loop.
3. The wiring at NAC of PAD-3/PAD-4/PAD-5 shown in the diagram for ABHW-4SZ is Style Z (Class A) (No EOL needed). If Style Y (Class B) wiring is used at NAC output, EOL (24 K, 0.5 W resistor) must be used.
4. For the max load current and max cable resistance, refer to the specifications of PAD-3/PAD4/PAD-5, P/N: 315-099082/315-050217/A6V101030358.
5. NAC circuit does not provide isolation.

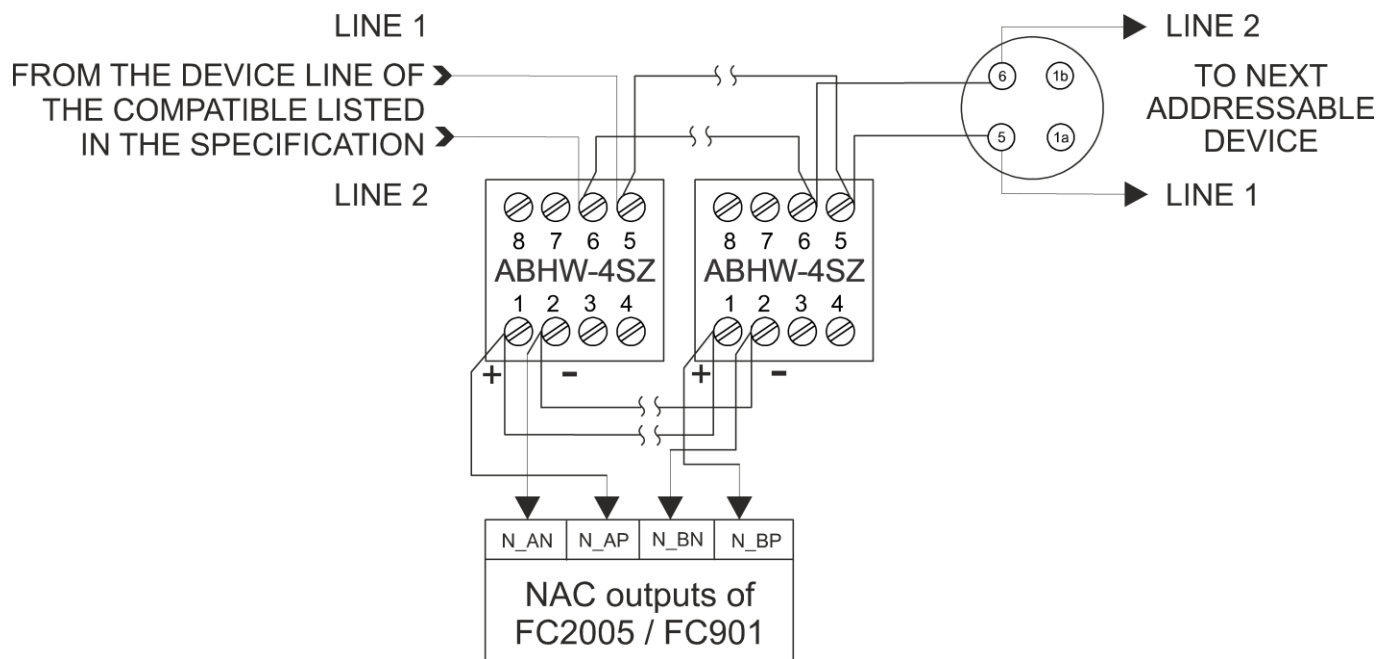


Fig. 5: Installation/Wiring Diagram for ABHW-4SZ Audible Base Powered by NAC of FC2005/FC901 system

Figure 5 Notes:

1. The NAC circuit shown in the diagram is the active state at terminal 1 and 2 of ABHW-4SZ.
2. ABHW-4SZ terminals 5-6 are polarity insensitive. Line 1 and Line 2 can be either line of device loop.
3. The wiring at NAC of FC2005/FC901 shown in the diagram for ABHW-4SZ is Style Z (Class A) (no EOL needed). If Style Y (Class B) wiring is used at NAC output, an EOL (24 K, 0.5 W resistor) must be used.
4. For the max load current and max cable resistance, refer to the specifications of FC2005 / FC901.

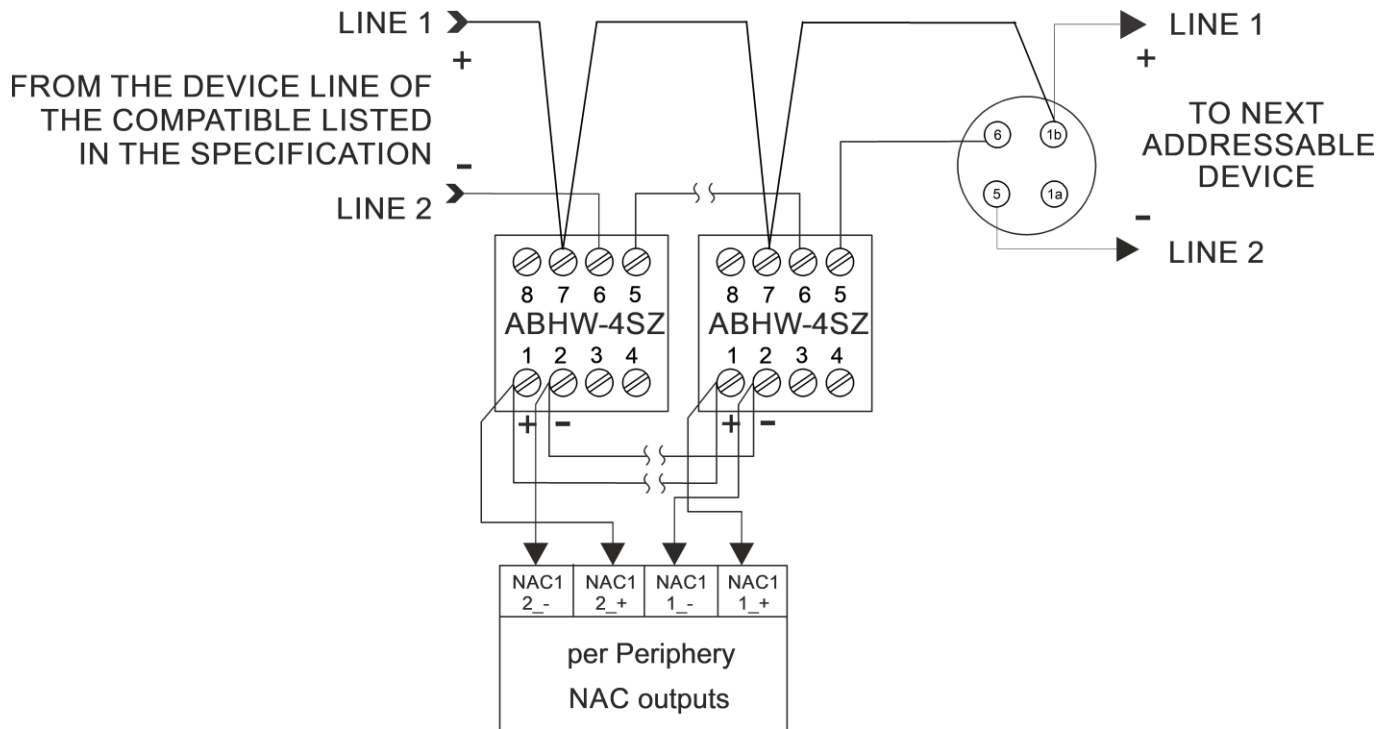


Fig. 6: Typical Isolated Installation/Wiring Diagram for ABHW-4SZ Audible Base Powered by NAC of FC2025/FC2050/FV2025/FV2050 and FC922/FC924/FV922/FV924

Figure 6 Notes:

1. The NAC circuit shown in the diagram is the active state at terminal 1 and 2 of ABHW-4SZ.
2. ABHW-4SZ terminals 5-6 are polarity insensitive. Line 1 and Line 2 can be either line of device loop.
3. The wiring at NAC of FC2025/FC2050/FV2025/FV2050 and FC922/FC924/FV922/FV924 shown in the diagram for ABHW-4SZ is Style Z (Class A) (no EOL needed). If Style Y (Class B) wiring is used at NAC output, EOL (2.4 K, 0.5 W resistor) must be used.
4. For the max load current and max cable resistance, refer to the specifications of FC2025/FC2050/FV2025/FV2050 and FC922/FC924/FV922/FV924.
5. NAC circuit does not provide isolation.

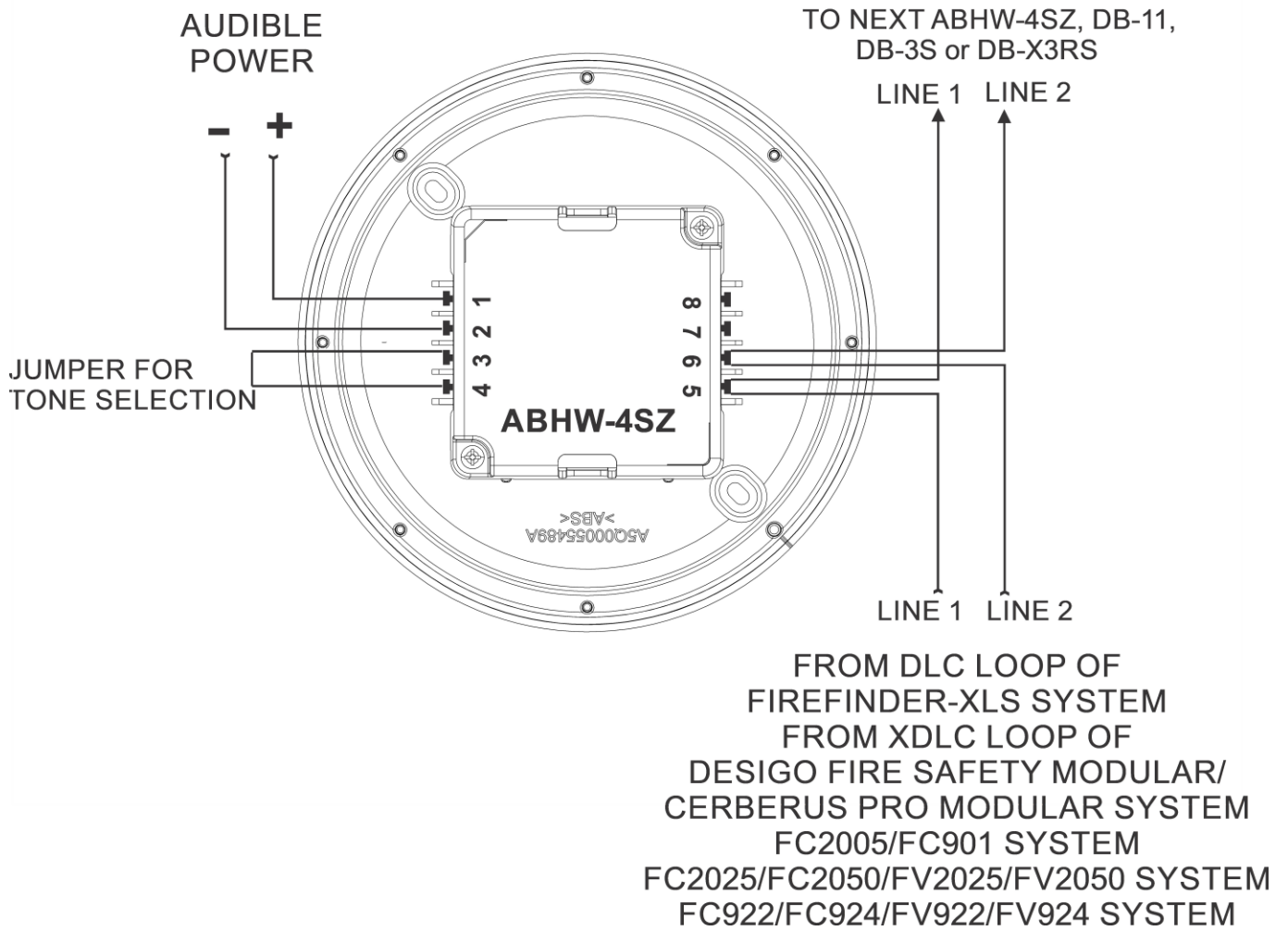


Fig. 7: ABHW-4SZ Audible Base Terminal Blocks (only for HFP-11, HFPT-11, SFP-11, and SFPT-11 detectors)

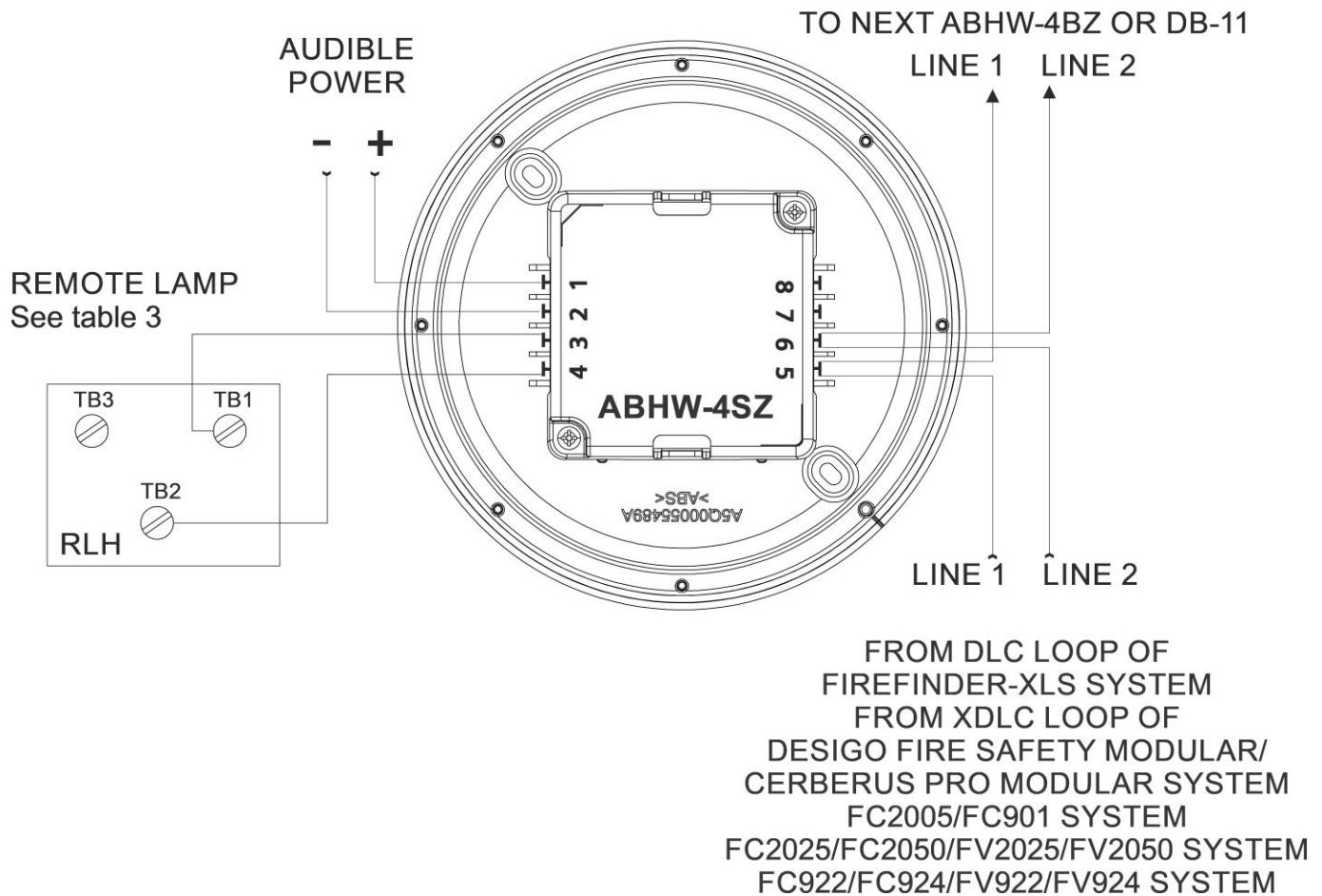


Fig. 8: ABHW-4SZ Audible Base Terminal Blocks (only for FDO421, FDOT421, FDT421, FDOOT441, FDOOTC441, OP921, OH921, HI921, OOH941 and OOH941 detectors.)

Figure 8 Notes:

The ABHW-4SZ terminal 3 should be connected to RL-HC/RL-HW TB1

The ABHW-4SZ terminal 4 should be connected to RL-HC/RL-HW TB2 or TB3

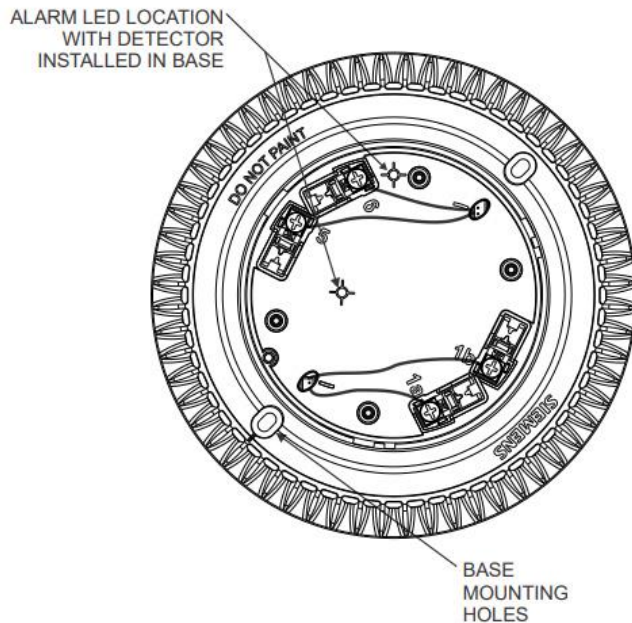


Fig. 9: Positioning the Alarm LED

Figure 9 Notes:

1. When installing FD-UL detectors in a FireFinderXLS/Designo Fire Safety Modular/Cerberus PRO Modular panel, use the following panel versions
 - PMI version 10.02 or later
 - Zeus version 10.02 or later
 - DLC version 06.01 or later
2. ABHW-4SZ alarm current can ONLY be powered from auxiliary power; device loop power is used for the control circuits in ABHW-4SZ.
3. When the audible base ABHW-4SZ works with FD-UL series detectors, up to six tone patterns and two volume levels can be selected by user with system configuration tool.
4. When the audible base ABHW-4SZ works with H-series detector, a fixed 85dB tone is provided and only two tones can be selected (Steady and Temporal 3). Steady: without a jumper at terminals 3 and 4; Temporal 3: terminals 3 and 4 are shorted with jumper.
5. For additional information on the modules used in an individual system, refer to the Installation Instructions for that particular module or contact your authorized Siemens Industry, Inc. representative.

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