PAVIRO End-of-line supervision module

PVA-1WEOL

en User manual

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1 Short information

The End-of-line (EOL) supervision module monitors the integrity of a loudspeaker line and can be used in applications where continuous business music is requested.
In combination with the EOL master, integrated in every Controller and Router of the PAVIRO system, the loudspeaker line can be monitored for short and open circuits.
The status LED on the module can be used to check the installation. For more information, refer to the user documentation for the IRIS-Net, Controller or Router.

Parts included

Quantity	Component
1	End-of-line supervision module
1	Set of screws
1	User manual

2 Installation

To install the End-of-line supervision module you have to:
- Mount the module.
- Set the module address.
- Connect the module to the speaker line.
- Connect the module to earth or ground.
- Check the installation.

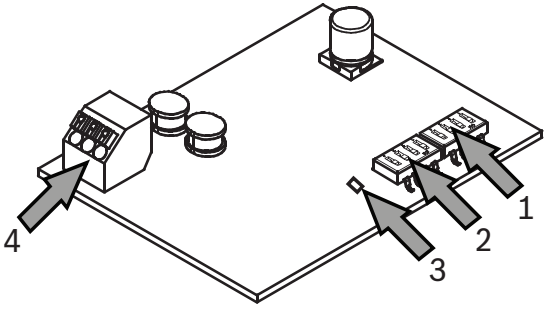

Figure 2.1: End-of-line supervision module

Item	Description
1	DIP switch S1
2	DIP switch S2
3	Status LED
4	Connector (Speaker line + / Speaker line - / Earth)

Mount the module

Caution!
Make sure all safety regulations are observed. Mounting the module on spacers is strongly recommended.

Set the module address

Before connecting the module, a module address must be set with the DIP switches S2 and S1 (see previous figure and following table). The module address allows for identification of the affected loudspeaker line in case an error occurred, such as an open-circuit.

		6	5	4	3	2	1	**Module address**
DIP switch S2				**DIP switch S1**				
4	**3**	**2**	**1**	**4**	**3**	**2**	**1**	
		OFF	**OFF**	**OFF**	**OFF**	**OFF**	**OFF**	**0 (not connected)**
		OFF	OFF	OFF	OFF	OFF	ON	1
		OFF	OFF	OFF	OFF	ON	OFF	2
		OFF	OFF	OFF	OFF	ON	ON	3
		OFF	OFF	OFF	ON	OFF	OFF	4
		OFF	OFF	OFF	ON	OFF	ON	5
		OFF	OFF	OFF	ON	ON	OFF	6
		OFF	OFF	OFF	ON	ON	ON	7

		6	5	4	3	2	1	**Module address**
DIP switch S2				**DIP switch S1**				
4	**3**	**2**	**1**	**4**	**3**	**2**	**1**	
		OFF	OFF	ON	OFF	OFF	OFF	8
		OFF	OFF	ON	OFF	OFF	ON	9
		OFF	OFF	ON	OFF	ON	OFF	10
		OFF	OFF	ON	OFF	ON	ON	11
		OFF	OFF	ON	ON	OFF	OFF	12
		OFF	OFF	ON	ON	OFF	ON	13
		OFF	OFF	ON	ON	ON	OFF	14
		OFF	OFF	ON	ON	ON	ON	15
		OFF	ON	OFF	OFF	OFF	OFF	16
		OFF	ON	OFF	OFF	OFF	ON	17
			:	:	:	:	:	:
		ON	ON	ON	ON	OFF	OFF	60
	OFF							Reserved
	ON							
OFF								To activate the status LED for five minutes,
ON								

		6	5	4	3	2	1	**Module address**
DIP switch S2				**DIP switch S1**				
4	**3**	**2**	**1**	**4**	**3**	**2**	**1**	
								set the switch to OFF and back to ON.

Tab. 2.1: DIP switch settings on the module (the settings on delivery are shown in bold)

Notice!
The module address must be unique within each zone topology (each controller, router, or amplifier).

Connect the module to the speaker line

Connect the speaker line wires to the plus (+) and minus (-) contacts of the connector. Make sure the capacitance limit of parallel connected speaker lines is not exceeded, as described in *Technical data, page 10*.

Connect the module to earth or ground

Use the earth contact on the connector to connect the module to earth or ground. To make this connection, you can use:
– a short wire to earth or ground near the installed module,
– the cable shield, or
– any free wire on the cable.

Notice!
The connection to earth or ground should be below 1kOhm to enable good communication between the module and the EOL-Master.

Check the installation

Use the LED on the module to check the connection to the speaker line and earth:

1. Activate the LED for five minutes, by setting switch 4 on DIP switch S2 to OFF and back to ON.
2. Use the following table to check the status of the installation.

Status LED	Description
OFF	No voltage supply (for example, pilot tone is deactivated).
Slow flashing (2 Hz)	Correct power supply (pilot tone is on the speaker line). Module is ready.
Rapid flashing (10 Hz), every 40 seconds	A valid command is being received from the EOL Master. This indicates a good ground connection.

Tab. 2.2: Status LED for checking installation

3 Technical data

The technical data in this section is valid for PVA-1WEOL hardware version 1.2 and firmware version 1.3 in combination with PVA-4CR12 or PVA-4R24 hardware version 02/00. For information on previous versions, see *Compatibility with older EOL modules, page 14*.

Electrical

Power supply	18-22 kHz, 8 V_{eff}, 20 mW

Wire limits

Minimum R_G	3 MΩ
Maximum Cg	2500 nF
Number of modules	60

Mechanical

Product dimensions (Height x Width x Depth)	15 mm x 78 mm x 60 mm
Net weight	30 g

Environmental

Operating temperature	-5 °C to +45 °C

Relative humidity (non-condensing)	< 95%

Caution!

Depending on the installation, a speaker line with EOL modules can be in parallel with other EOL modules on other speaker lines. The capacitance of parallel connected speaker lines must be summed to determine the total capacitance Cg that one EOL Master can drive. Make sure the worst case situation does not exceed the maximum allowed capacitance. A capacitance calculator to check if the capacitance is in the safe zone, and an additional application note, can be downloaded from the Bosch website.

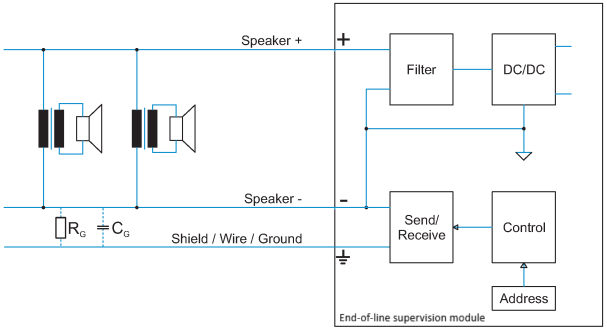

Figure 3.1: Circuit diagram (R_G and C_G are caused by the loudspeaker installation, e.g. wire type, length)

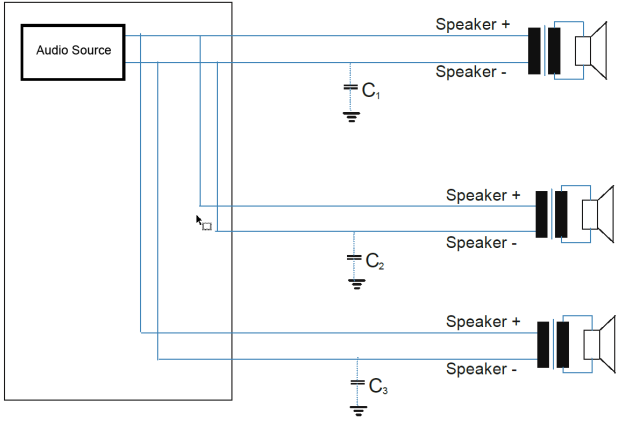

Figure 3.2: Wiring diagram $C_G = C_1 + C_2 + C_3$

4 Standards and compliancy

The device meets the following standards:

- IEC 60065
- EN 55032
- EN 50130-4
- EN 60945
- FCC - This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:
  - This device may not cause harmful interference, and
  - This device must accept any interference received, including interference that may cause undesired operation.
- ICES-003 - This class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
- EN 54-16 / ISO7240-16 - End-of-line supervision module tested in combination with a certified PAVIRO system.

5 Compatibility with older EOL modules

Notice!

Different hardware and software versions can be used in the same system; however, the lowest Cg must be taken as the maximum Cg for the system.

The limits in this section are valid for PVA-1WEOL in combination with PVA-4CR12 or PVA-4R24 hardware version 02/00.

PVA-1WEOL - HW 1.1, FW 1.1

Minimum R_G	1.5 MΩ
Maximum Cg	200 nF
Number of modules	60

PVA-1WEOL - HW 1.1, FW 1.2

Minimum R_G	1.5 MΩ
Maximum Cg	800 nF
Number of modules	58

Bosch Security Systems B.V.
Torenallee 49
5617 BA Eindhoven
Netherlands
www.boschsecurity.com