PRA-ANS Ambient noise sensor
PRAESENSA

The PRA-ANS is an ambient noise sensor to monitor changing ambient noise levels for automatic adjustment of announcement or background music levels (AVC - Automatic Volume Control). This ensures the public address audio is set at a configurable level above the ambient noise in order to guarantee intelligibility of announcements, yet at a comfortable loudness.

Functions

IP-network connection
- Direct connection to the IP-network. One shielded CAT5e cable is sufficient for Power over Ethernet and data exchange.
- The ambient noise sensor communicates ambient noise level data directly to the system controller. The system controller adjusts the output level of the involved amplifier channels accordingly.
- Because only level information is exchanged and no audio data, the occupied network bandwidth for this function is minimized and there is no risk of audio eavesdropping.

Operation
- The ambient noise level is measured using an accurate omni-directional MEMS microphone. An integrated DSP allows for frequency response adjustments for optimum tracking of disturbing noise signals and/or minimizing the influence of non-disturbing out-of-band signals.
- Up to four sensors can operate together to cover a large area; the ambient noise level information of these sensors is combined.

▶ Solid housing for surface-mounting or flush-mounting

▶ Omni-directional MEMS microphone for noise level tracking

▶ Digital signal processing to adapt frequency response

▶ PoE powered device with Gigabit network interface

▶ Up to four sensors can be combined to cover a large zone

- Fail-safe operation: upon failure or disconnection of the device, the announcement volume of the subscribing amplifier channels is automatically set to its maximum within the applicable control range.
- The device uses two modes for operation:
  - The sample-and-hold mode is used for live speech calls and playback of prerecorded messages. The noise level is sampled and the last level information is hold and used during the call, not affected by the sound of the call itself and its associated reverberation and echoes.
  - The tracking mode is used for background music. The noise level is tracked and the volume of the background music is continuously adapted. Because in this mode the ambient noise level is 'polluted' by the sound from the PA system itself, in this mode the ambient noise sensor must be mounted close to the expected noise location and away from the PA-loudspeakers to prevent volume runaway.
- Front side LEDs show the operational status.

Installation
- The ambient noise sensor operates in a wide temperature range and with a wide range of ambient noise levels, fitting most applications and environments.
- A back box is included for mounting on solid ceilings and walls. Cable entry from side or rear.
- Without back box, the sensor can be flush mounted in hollow walls or suspended ceilings.
- Water resistant (IP54), with and without back box, for indoor and sheltered outdoor use.

- Sealed cable gland for cable entry.
- Comes with a black and a white front cover for unobtrusive installation.

Connection and functional diagram
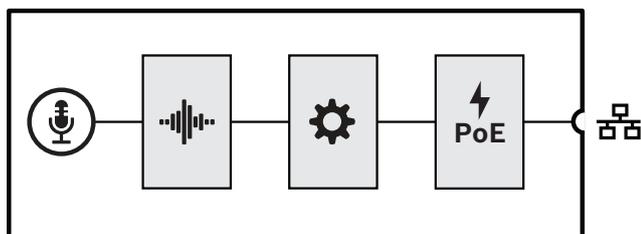
🎙	MEMS microphone	⚙	Controller
ᵢₗₗᵢ	Audio processing (DSP)	⚡	Power over Ethernet

Front-side indicator

⏻	Power on Device in identification mode	Green Green blinking
⚠	Device fault present	Yellow

Front-side control (behind front cover)

↺	Device reset (to factory default)	Button

Rear-side interconnection

🖧	Network port (PoE PD)	

Mounting options

	• Flush in wall or ceiling • For indoor use • Shallow • Front cover in black or white
	• Flush in wall or ceiling • Water resistant, for indoor and sheltered outdoor use • Sealed cable entry • Front cover in black or white
	• Surface mounting on wall or on ceiling • For indoor use • Cable entry on rear or side panel • Front cover in black or white
	• Surface mounting on wall or on ceiling • Water resistant, for indoor and sheltered outdoor use • Cable entry on rear or side panel • Sealed cable entry • Front cover in black or white

Architects' and Engineers' Specifications

The IP-networked ambient noise sensor shall be designed exclusively for use with Bosch PRAESENSA systems. It shall provide an interface for control data over OMNEO using Ethernet. It shall receive Power over Ethernet (PoE) via its network connection. The ambient noise sensor shall have an integrated DSP for software configurable frequency response adjustments to optimize tracking of disturbing noise signals and/or to minimize the influence of non-disturbing out-of-band signals. It shall be IP54 classified for solid particle and liquid ingress protection. The ambient noise sensor shall be certified for EN 54-16 and ISO 7240-16, marked for CE and be compliant with the RoHS directive. Warranty shall be three years minimum. The ambient noise sensor shall be a Bosch PRA-ANS.

Certifications and approvals

Emergency standard certifications

Europe	EN 54-16
International	ISO 7240-16

Regulatory areas

Immunity	EN 55024 EN 55103-2 (E1, E2, E3) EN 50130-4
Emissions	EN 55032 EN 61000-6-3 ICES-003 ANSI C63.4 FCC-47 part 15B class A
Environment	EN/IEC 63000
Plenum rating	UL 2043

Regulatory areas	
Railway applications	EN 50121-4

Conformity declarations	
Europe	CE/CPR
South Korea	KCC

Parts included

Quantity	Component
1	Sensor base unit with front gasket
1	Back box
1	Connection cap with sealing gasket
1	Cable gland, 16 mm
1	Front cover black
1	Front cover white
5	Screws 3 x 12 mm, TX10
3	Wood screws 3 x 30 mm, TX10
1	Quick Installation Guide
1	Safety information

Technical specifications

Electrical

Microphone	
Ambient noise capture range	50 — 100 dBSPL
Frequency range	50 Hz — 10 kHz
Frequency response, +/-2dB	100 Hz — 5.5 kHz
Sensitivity tolerance, pink noise 50 Hz — 10 kHz	< 2 dB
Directivity	Omni-directional

Power transfer	
Power over Ethernet	PoE IEEE 802.3af Type 1
Power consumption	1.6 W
Nominal input voltage	48 VDC

Power transfer	
Input voltage tolerance	37 — 57 VDC

Supervision	
Controller continuity	Watchdog
Network interface	Link presence

Network interface	
Ethernet speed	100BASE-TX, 1000BASE-T
Ethernet protocol	TCP/IP
Control protocol	OMNEO (AES70)
Control data security	TLS
Ports	1

Reliability	
MTBF (extrapolated from calculated MTBF of PRA-AD608)	3,000,000 h

Environmental

Climatic conditions	
Temperature, operating	-25 — 55 ℃ (-13 — 131 ºF)
Temperature, power up	-5 — 55 ℃ (23 — 131 ºF)
Temperature, storage and transport	-30 — 70 ℃ (-22 — 158 ºF)
Humidity	5 — 100 %
Air pressure	560 — 1070 hPa
Altitude, operating	-500 — 5000 m (-1640 — 16404 ft)
Vibration amplitude, operating	< 0.7 mm
Vibration acceleration, operating	< 2 G
Bump, transport	< 10 G

Mechanical

Enclosure	
Dimensions device (∅xH)	131 x 35 mm (5.2 x 1.4 in)
Dimensions device with back box (∅xH)	131 x 71 mm (5.2 x 2.8 in)
Dimensions device front cover (∅xH)	131 x 10 mm (5.2 x 0.4 in)

Enclosure

Ingress protection	IP54 (with mounted front cover)
Material enclosure	Plastic (PC/ABS - UL94-5VA)
Color enclosure	RAL9017
Color front cover	RAL9017 and RAL9003
Weight	0.4 kg (0.88 lb)

Ordering information

PRA-ANS Ambient noise sensor
Network connected, PoE powered, ambient noise sensor.
Order number **PRA-ANS | F.01U.378.928**