AF 250I

Powerful 250 watt IP amplifier

250 W power

Rugged housing

Loudspeaker line monitoring

Fully IP-based

Strong performance

The AF 250I provides a high output range and various connections – from a microphone input to a relay output. That's why the amplifier is universally suitable for any size of application – even for complex public address and Intercom solutions. In order to avoid cabling costs and be more flexible, the AF 250I is specifically optimised for installation either in a 19" rack or on-site.

Thanks to its high flexibility, the AF 250I is applicable in the most diverse areas where a reliable and powerful public address is needed. Thereby, this amplifier covers all requirements from public service facilities, auditoriums and waiting rooms to high noise industrial environments, tunnels and office buildings.

Features and highlights

- 250 watts total output power
- Loudspeaker connectors for 70 V or 100 V powered loudspeakers
- Class-D amplifier optimised for high efficiency at low operating temperatures
- Short-circuit and over-range protected
- Line monitoring between amplifier and Intercom Server
- Loudspeaker line monitoring (requires licence L-AF-LM)
- 16 kHz transmission bandwidth for highest speech intelligibility
- Easy integration in existing Intercom systems
- High level of reliability
- Support of Intercom station features (e.g. connection monitoring, function monitoring and DSP tone)
- Installation in a 19" rack or on-site
- Rugged metal housing

AF 250I
Technical specifications

Technical data

IP rating:	IP20 (acc. EN 60529)
Output power:	250 W_{RMS}
Power supply:	main power supply: 100–240 VAC (50–60 Hz, 330 W) backup power supply: 24 VDC (21–28 VDC, max. 15 A) [1]
Protocol:	IoIP® protocol, based on UDP/IP
Cabling:	min. Cat. 5
Connection:	2 shielded RJ45 modular jacks (IP uplink and IP downlink) pluggable screw terminals (0.14 mm^2–1.5 mm^2): outputs, inputs, microphone, line out pluggable screw terminals (0.25 mm^2–2.5 mm^2): loudspeaker, DC input AC power supply (IEC-60320-C14)
Loudspeaker output:	100 V, switchable to 70 V
Microphone input:	nominal level 14 mV at 3.3 kΩ –43 dBV/Pa (2.5 V feeding voltage)
Line output:	nominal level 0 dBu (0.775 V)
Inputs:	2 inputs for floating contacts (detection of 5 input states)
Outputs:	relay output (changeover contact): max. 60 W (DC)/37.5 VA (AC), max. 2 A, max. 60 V DC / 30 V AC, expected life: min. 5 x 10^4 (2 A), 10^5 (1 A)
Control input:	0–10 V (for remote volume control)
Frequency response:	50 Hz to 15 kHz (–3 dB)
Total harmonic distortion (THD+N):	< 0.2% at 1 kHz at 250 W
Operating temperature range:	–5 °C to +55 °C (+23 °F to +131 °F) [2]
Storage temperature range:	–25 °C to +70 °C (–13 °F to +158 °F)
Relative humidity:	up to 95%, non-condensing
Dimensions (W x H x D):	401 x 44 x 251 mm (15.79 x 1.73 x 9.88 in)
Weight incl. package:	3,500 g (7.7 lbs)

[1] The backup power supply input may only be connected to an ES1 circuit as per IEC/EN 62368-1 (cf. SELV acc. EN 60950-1).
[2] Temperature range: 60 W (continuous at 55 °C (131 °F)), 250 W (1 minute at 50 °C (122 °F))

Extent of supply

- Amplifier
- 4 rubber feet
- Short reference

Line length in LAN

The maximum line length of Cat. 5 cabling in a LAN is 100 m (328 ft) – e.g. from switch to amplifier.

Power cable

For the AF 250I, the power cable with country-specific plug is available separately:

- C-KAB-C13-AU (Australia)
- C-KAB-C13-EU (Europe)
- C-KAB-C13-UK (United Kingdom)
- C-KAB-C13-US (USA)

System requirements

Intercom Server

- GE 800 (min. PRO 800 6.0) with G8-IP (min. G3-8-IP 4.0B01) or
- GE 300 (min. PRO 800 6.0) with G3-IP (min. G3-8-IP 4.0B01) or
- IS 300 (min. PRO 800 6.0) or
- VirtuoSIS (min. PRO 800 6.0) or
- GE 700 with GE700-UPG (min. PRO 800 6.0) with G7-DSP-IP

Configuration software

- min. CCT 800 6.0

Network requirements

IP addresses and ports

- For the AF 250I, the DHCP function is available. If DHCP is not used, the AF 250I must have a fixed IP address.
- In case of a changing public IP address, dynamic registration of an AF 250I is possible.
- Communication from the program IP Station Config is done via port 16399 (not configurable).
- Communication from the AF 250I to the Intercom Server (UDP protocol) is done via port 16400 (configurable).

QoS requirements

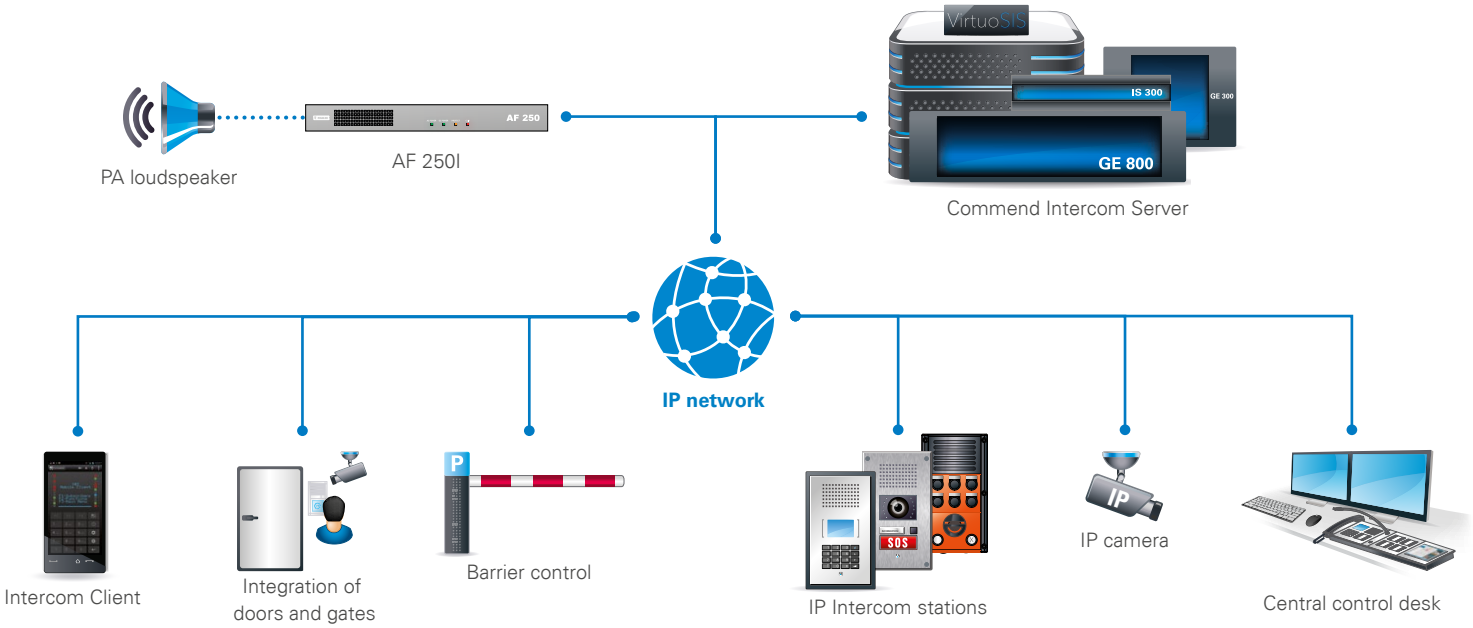
- One-way delay max. 100 ms
- Jitter max. 50 ms
- 0% packet loss for perfect audio quality

Bandwidth

- Required bandwidth incl. protocol overhead per AF 250I for upload and download each speech and data (no video): 96 kBit/s.
- Audio is compressed according to the G.722 standard.

System overview

The following illustration shows an example of the integration of an AF 250I amplifier into an IP network.



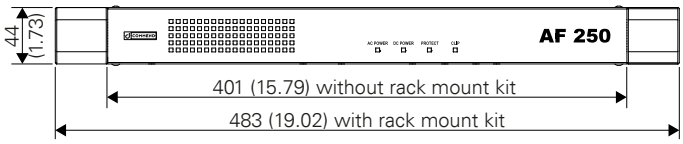
AF 250I
Installation instructions

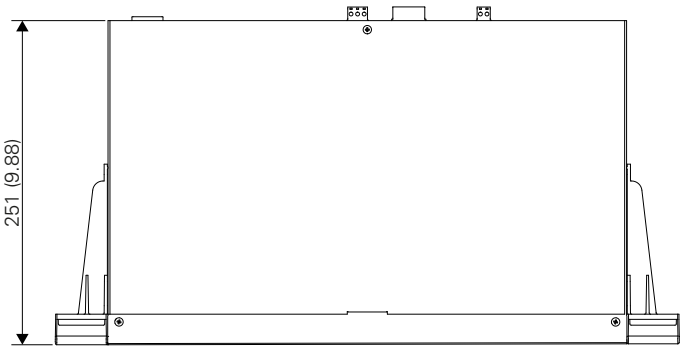
Mounting instructions

- Use the original packaging when transporting the device to prevent damage.
- This device shall be installed or replaced by trained and qualified personnel only. Do not make any unauthorised modifications to the device.
- Do not expose the amplifier to extreme temperatures (see "Technical data" on page TE | 1).
- The device shall only be used indoor.
- Do not place the device in areas where it may become wet or damp.
- Avoid dusty and humid environments.
- For ventilation clearance, min. 100 mm space has to be left on the front and the rear of the device.
- Only use recommended tools when installing the device.
- ⚠ Caution: Exposed connections or cables. During operation, up to 100 volts may be present. Contact may cause electric shock.
- To disconnect the device safely from the power supply, unplug the AC-IN plug (main power supply) and the DC-IN plug (backup power supply).
- If the device is used with a backup power supply, it has to be connected to protective earth (⏚). For this, size the grounding cable according to the national installation requirements.
- Minimum loudspeaker cable size: 0.75 mm² or AWG18.
- When mounting the device on a wall, make sure the electrical connections are facing downwards.
- The Ethernet cable shall only be connected to an inside network environment where over-voltage transients are not likely.
- Do not place heavy objects on the device.
- Before using the device, ensure all cables are connected correctly and not damaged.
- Check the air filter frequently and clean it if necessary. The air filter is located at the bottom of the device directly below the ventilation holes on the front. It can be pulled out from the housing without the use of tools.

Dimensions front panel

Measuring units in mm (in), not to scale!





LED status indication

LED "AC POWER"

- Permanent green: main power supply applied

LED "DC POWER"

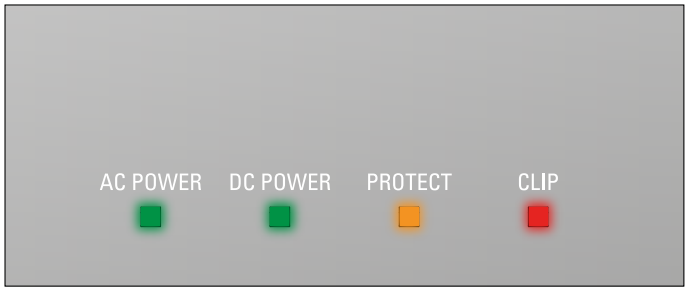
- Permanent green: backup power supply applied
- Green blinking: only PoE power supply applied

LED "PROTECT"

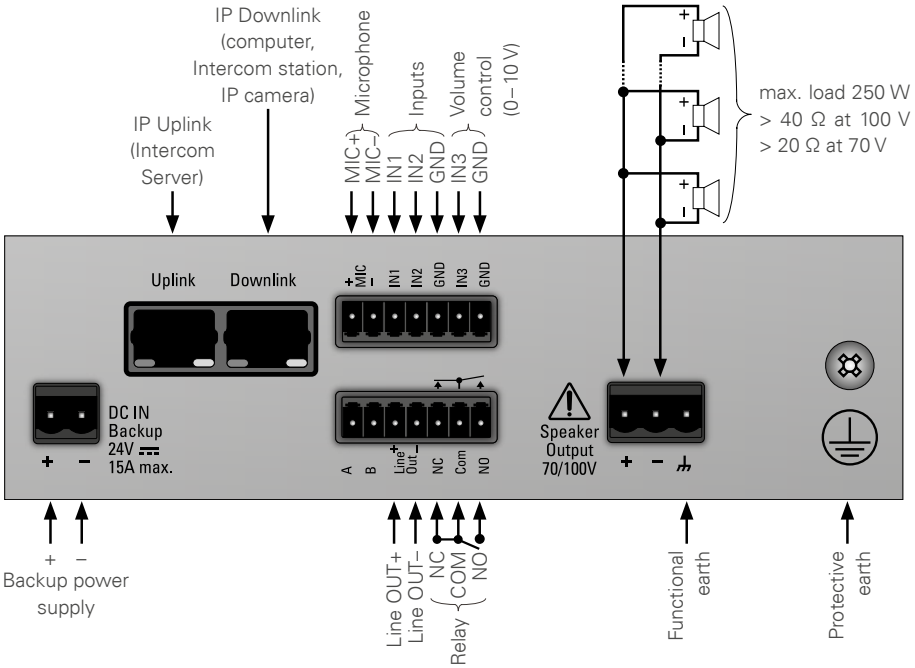
- Permanent yellow: amplifier fault detected
- Yellow blinking: loudspeaker output fault detected by means of line monitoring

LED "CLIP"

- Flickering red: clipping detected



Connection



Volume settings

The volume can be controlled via CCT 800 or via the volume control ("IN3").

Mounting

The AF 250I can be mounted using a wall and desk mount kit or a rack mount kit:

– For wall mounting, a wall mount kit PF-WM is required (available separately; for mounting, see short reference "PF-WM").
– For rack mounting, a 19" rack mount kit PF-RM-1HE is required (available separately; for mounting, see short reference "PF-RM-1").

AF 250I
Complementary information

Loudspeaker line monitoring

Functionality

With loudspeaker line monitoring, it is possible to detect the following errors at the loudspeaker output:

- **Short-circuit** (impedance < 20 Ω at 100 V/< 10 Ω at 70 V)

  ATTENTION: Loop impedance

  The loop impedance for the loudspeaker cable must be lower than 20 Ω at 100 V/10 Ω at 70 V in order to be able to detect short-circuits.
- **Disconnection** (impedance > 1 kΩ)
- **Impedance changing** (± 10%, ± 20%, ± 30%, ± 40% and ± 50%)

Loudspeaker line monitoring is based on an impedance measurement with adjustable tolerance values of ± 10%, ± 20%, ± 30%, ± 40% and ± 50%. These values obviate against errors depending on temperature value changing, deterioration and so on. During the impedance measurement, a pilot signal (67 Hz with –23 dBFS) is put out. The measurement is also carried out during audio output. An error is displayed with measurement cycles every 60 seconds.

System requirements

Software

- Configuration software min. CCT 800 6.0
- Intercom Server software min. PRO 800 6.0
- Licence "L-AF-LM"

Configuration

ATTENTION: Required configuration

For the configuration of loudspeaker line monitoring, an active connection between CCT 800 and the amplifier is required.

- Go to: ***Subscriber > Station Properties > AF series > AF 250I >*** *tab* ***Line Monitoring***
- Activate the checkbox **Line Monitoring**.
- In the drop-down list **Line**, select the used line type ("70 V" or "100 V").
- In the drop-down list **Tolerance**, select the tolerance value for measurements. Within this tolerance, a deviation from the reference value will not be interpreted as error. It is recommended to set the tolerance value to 30%.
- Click on **Measure ...** to measure the impedance of the loudspeaker line. The measurement is displayed in the filed "Impedance".
- Click on **Accept ...** to set the current measured value as nominal value. The current nominal value is displayed in the filed "Impedance nominal value".
- After the configuration, send the CCT 800 configuration to the Intercom Server.

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The development and manufacturing processes are certified in accordance with **EN ISO 9001:2015**.

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