Series EE 7000H

IP industry stations for rough environments

| Rugged housing | Weather-proof IP66 | Audio + functionality | 16 kHz eHD Voice | IoIP® and SIP |

Durable communication solution

By focusing on the highest safety levels, simple operation and futureproof scalability, Commend's IP industry stations of Series EE 7000H are designed for communication in rough environments.

Series EE 7000H station versions provide exactly what the user and the local regulations require. Based on a rugged, corrosion-resistant and lightweight polycarbonate housing, the Series EE 7000H enables simple and rapid installation, eliminates expensive routine servicing and drastically reduces maintenance costs. Additionally, the IP66 certification and a wide permissible temperature range make the Intercom stations the perfect choice for a wide range of applications.

Thanks to the high-quality microphones and the 16 kHz eHD Voice audio quality, the Series EE 7000H comes with highest speech intelligibility. Even in very noisy environments, two powerful amplifiers for the built-in loudspeaker and a connectable PA loudspeaker ensure a crystal clear sound.

Furthermore, the microphone and the IVC feature (Intelligent Volume Control) allow to adjust the volume automatically to the ambient noise – even during playback.

As they support both IoIP connections and SIP solutions (hybrid), the hybrid stations can easily be integrated into any Voice over IP system as well as any existing Commend Intercom system. The desired operation mode is selected via the configuration software.

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Key benefits at a glance

Designed for the most demanding environments

– The rugged and corrosion-resistant housing withstands an **expanded temperature range** (see also "Technical data")
– **IP66 certification** ensures reliable operation in any climatic condition
– Optimised **large tactile button panel** for ease of use with protective gloves eliminates moving parts
– Integrated **flashing beacon control** allows automatic initiation of multiple visual signalling devices in high noise areas
– Bright **orange-coloured housing** for easy location of the Intercom station
– **Three integrated LEDs** for signalisation of active calls and various important system messages

Cost-effective installation and flexible system planning

– **IP network technology** helps to reduce cabling requirements and installation costs
– Flexible and redundant **PoE** and **DC power supply** options
– **Power supply redundancy** option for increased reliability – in case of a failing power supply the second power supply unit takes over (see also "Technical specifications").

Built-in loudspeaker powered by a highly efficient class-D amplifier

Tactile button panel with full keypad and 6 programmable function buttons

Outstanding speech intelligibility with unique features

– Fully-automated, **real-time volume adjustment** to ambient acoustic conditions via IVC (Intelligent Volume Control) to ensure perfect speech intelligibility
– **Built-in loudspeaker** and class-D amplifiers allow high sound pressure levels of up to 118 dB
– Additional **powerful class-D amplifier** for direct connection of an external loudspeaker
– **Dust- and water-resistant microphone** that can be configured as close-talking microphone for high noise environments
– Superior audio quality thanks to **16 kHz eHD Voice** when operated in IoIP mode.
– Whether manual communication direction control (**simplex**) or open communication lines in both directions for natural, fully hands-free conversations (**OpenDuplex®**)

Essential functions based on decades of experience

– **Point-to-point and multi-channel conference** communication (Party Lines) as well as paging and PA capability for cost-saving cabling and installation requirements
– **PAGA readiness** enable the integration of communication channels across the site and provides mission critical voice and alarm broadcast package
– Secure, direct and instant communication **without any dialling and connection delay**
– Full range of **more than 150 proven Commend Intercom features** (e.g. redundancy, audio monitoring, background noise suppression and loudspeaker/microphone surveillance)
– **Monitoring, controlling, automation and interfacing** enable professional industrial workflows for increasing efficiency and security
– Combinable with **virtual server landscapes** via VirtuoSIS – provides all the benefits without the need for extra hardware
– **Easy system maintenance** – e.g. upgrade and analysis

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System overview

The Intercom stations of Series EE 7000H can be used for a wide range of applications.
A few examples are provided in the following:

Series EE 7000H as standard Intercom station

Standard Intercom station with built-in or separate external loudspeaker – for enhanced OpenDuplex® and large speaking distances.

External equipment

E.g. with separate external loudspeaker (connected to "AMP1"), supplied directly via the Intercom station.

AMP1

External loudspeaker

e.g. EE 7506H DC S

Series EE 7000H as Intercom and paging station

Standard Intercom station with built-in or separate external loudspeaker and PA functions – for use in high noise environments.

External equipment

E.g. with built-in or separate external loudspeaker (connected to "AMP1"), external PA loudspeaker (connected to "AMP2") and beacon light (connected to "OUT1").

AMP2

OUT1

AMP1

External loudspeaker

AMP2

External PA loudspeaker

OUT1

Beacon light

e.g. EE 7506H DC S

Series EE 7000H as Intercom station for high noise environments

Intercom station with built-in loudspeaker connected to "AMP2" in stead of "AMP1" (default configuration) – without external loudspeaker.

AMP2 (connected within the housing by cable)

e.g. EE 7506H DC S

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Serie EE 7000H
Technical specifications

Technical data EE 7506H DC S

IP rating:	IP66 (acc. to EN 60529)
Mechanical impact resistance:	IK10 (acc. to EN 62262)
Keypad:	full keypad and 6 function buttons
Housing:	robust polycarbonate
Microphone:	electret condenser microphone polar pattern: omnidirectional
Built-in loudspeaker:	special membrane for optimal sound quality max. sound pressure level built-in loudspeaker connected to "AMP1": 112 dB/0.3 m (1 ft), 102 dB/1 m (3.3 ft) max. sound pressure level built-in loudspeaker connected to "AMP2": 118 dB/0.3 m (1 ft), 108 dB/1 m (3.3 ft)
Amplifier:	class-D amplifiers, total audio power: 30 W "AMP1": 10 W at 4 Ω/6 W at 8 Ω "AMP2": 20 W at 4 Ω/10 W at 8 Ω
Ext. microphone, loudspeaker:	possibility for connection of e.g. a headset/handset EP output: max. 880 mV$_{eff}$ (volume level "11"), R$_i$ = 200 Ω EM input, nominal level: 14 mV on 3.3 kΩ (feeding voltage 2.5 V)
Call indication:	multifunctional LED (colours: red, green, blue)
Inputs:	3 inputs for floating contacts (IoIP: detection of 5 input states)
Outputs:	2 relay outputs (switch-over contacts) [1] max. 60 W (DC)/37.5 VA (AC) max. 2 A max. 60 VDC/30 VAC expected life: min. 5 x 10^4 (2 A), 10^5 (1 A)
Line input:	for feed-in of audio (e.g. music, radio conference) nominal level: 0 dBu (0.775 V) at 10 kΩ
IoIP audio bandwidth:	16 kHz
SIP audio bandwidth:	7 kHz
Operating temperature range:	−40 °C to +70 °C (−40 °F to +158 °F) [2]
Storage temperature range:	−40 °C to +70 °C (−40 °F to +158 °F)
Connection:	spring clamp terminals (conductor cross-section: 0.2 – 1.5 mm^2) expansion plug, e.g. for EB2E2AHE IP uplink: shielded RJ45 modular jack IP downlink: shielded RJ45 modular jack
Power supply:	24 VDC (20 – 26 VDC) PoE (Power over Ethernet [3] IEEE 802.3af/Class 0, IEEE 802.3at/Type 1
Network cabling:	min. shielded Ethernet Cat. 5
Protocols (IoIP):	IoIP protocol based on UDP/IP
Protocols (SIP):	IPv6,IPv4, TCP, UDP, HTTP (RFC 2617, RFC 3310), RTP (RFC 3550), RTCP, DHCP, SDP (RFC 2327), SIP (RFC 3261), SNMPv2, STUN, TFTP, URI (RFC 2396), DTMF Decoding (RFC 2876, RFC 2833), SIP User Agent (UDP RFC 3261), SIP Refer Method (RFC 3515)
Codecs (SIP):	G.711 a-Law, G.711 µ-Law, G.722
Data rate:	2 x 10/100 MBit/s (Full/Half Duplex) auto MDIX

Extent of supply

– Intercom station
– 3 x M20 cable glands and dummy plugs
– Short reference

Line length in LAN

– The maximum line length of Cat. 5 cabling in a LAN environment must not exceed 100 m (328 ft) – e.g. from switch to IP station.

System requirements

IoIP

Intercom Server
– GE 800 (min. PRO 800 6.3) with G8-IP (min. version 6.6A) or
– GE 300 (min. PRO 800 6.3) with G3-IP (min. version 6.6A) or
– IS 300/G8-IP-32 (min. PRO 800 6.3, min. version 6.6A) or
– S3/S6/VirtuoSIS (min. version 7.1)

Configuration software
– CCT 800 (min. version 7.1)
– IP Station Config (included in setup of CCT 800)

SIP
– S3/S6/VirtuoSIS (min. version 7.1) or
– Compatible SIP server (see compatibility list "**Interoperability SIP**") or
– Serverless operation

Device firmware
– IoIP-Device (min. version 7.2)
– SIP Series (min. version 3.8.1, build 61)

Attention:
– Use of the function keys F1–F6 requires min. firmware version SIP Series 4.5.1 build 24.
– Downgrading to firmware version SIP Series 3.9 build 24 or lower is not supported.

Colour:	front panel: black front frame: orange housing: orange
Dimensions (W x H x D):	see "Dimensions" on page IN	4

[1] The relay output may only be connected to a SELV circuit! A SELV circuit as per IEC/EN 60950-1 must be separated safely from a dangerous electrical circuit (e.g. 230 V or 110 V mains power), e.g. by means of double insulation. The SELV circuit must not exceed 60 VDC or 42.4 VAC$_{peak}$ (30 VAC$_{eff}$).
[2] A temperature range of −25 °C to +55 °C (−13 °F to +131 °F) applies for the use of "AMP2".
[3] When using PoE, "AMP2" will not be powered. "AMP2" requires DC power supply.

Requirements to the network for use as SIP device

Ports

– The configuration via the web interface is done via TCP port 80 (cannot be configured).
– The communication from the SIP device to the SIP server is done via the following ports (both are configurable):
    – SIP: UDP port 5060
    – RTP: UDP port 16384 (incoming)

Requirements to the network for use as IoIP device

IP addresses and ports

– For the EE 7000H, the DHCP functionality is available. If DHCP is not used, the EE 7000H must have a fixed IP address.
– In case of a changing public IP address, dynamic registration of an EE 7000H is possible.
– Communication from the program IP Station Config is done via port 16399 (cannot be configured).
– Communication from the EE 7000H to the Intercom Server (UDP protocol) is done via port 16400 (configurable).

QoS requirements

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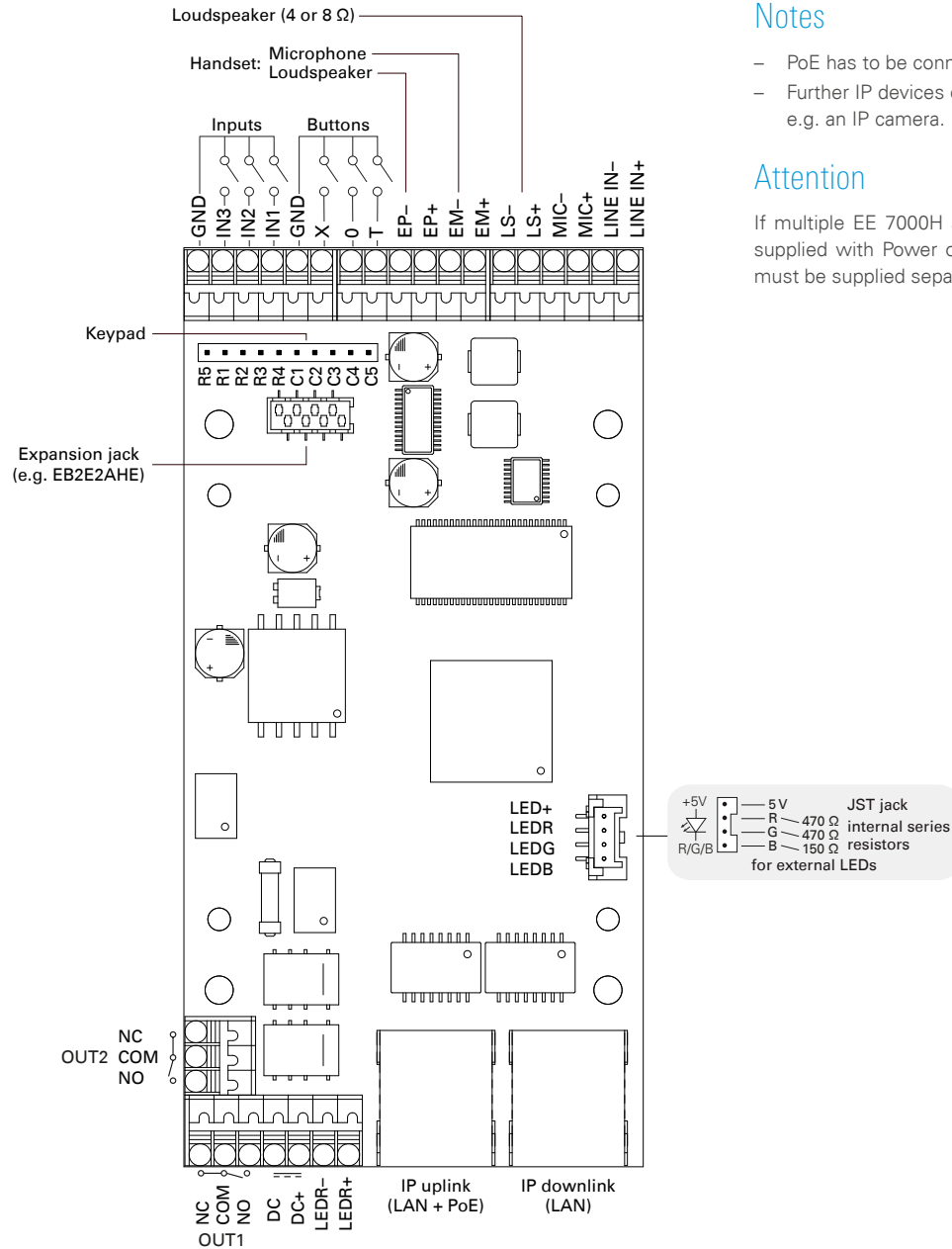– 0% packet loss for perfect audio quality

Bandwidth

For further information on bandwidth, see guideline "**IoIP Technology**".

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Serie EE 7000H
Installation instructions

Connection mainboard

Loudspeaker (4 or 8 Ω)

Handset: Microphone
Loudspeaker

Inputs · Buttons

GND · IN3 · IN2 · IN1 · GND · X · 0 · T · EP– · EP+ · EM– · EM+ · LS– · LS+ · MIC– · MIC+ · LINE IN– · LINE IN+

Keypad

R5 · R1 · R2 · R3 · R4 · C1 · C2 · C3 · C4 · C5

Expansion jack
(e.g. EB2E2AHE)

LED+
LEDR
LEDG
LEDB

+5V
R/G/B

5 V
R — 470 Ω
G — 470 Ω
B — 150 Ω

JST jack
internal series
resistors
for external LEDs

NC
OUT2 COM
NO

NC · COM · NO · DC · DC+ · LEDR– · LEDR+
OUT1

IP uplink
(LAN + PoE)

IP downlink
(LAN)

Notes

– PoE has to be connected to the RJ45 jack "IP uplink".
– Further IP devices can be connected to the RJ45 jack "IP downlink", e.g. an IP camera.

Attention

If multiple EE 7000H are connected in series, only the first device can be supplied with Power over Ethernet. All other devices (connected in series) must be supplied separately by an external power supply unit or PoE injector.

Series EE 7000H
Installation instructions

Connection amplifier module "AMP2"

Optional external loudspeaker (max. 8 Ω)

Optional internal loudspeaker

LED "Power"

20–26 VDC
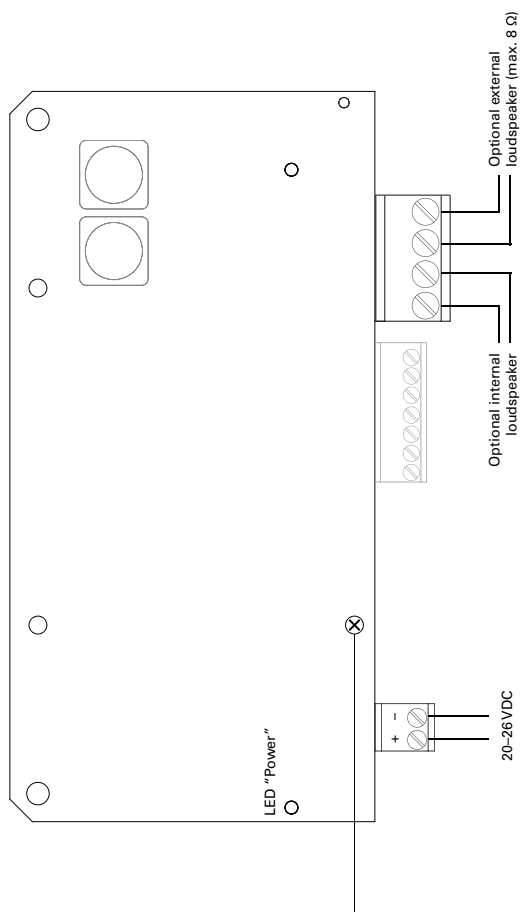
Note:
Remove this screw first, before folding up the module in order to gain access to the connectors of the mainboard.

Safety instructions

– This device shall be installed or replaced by trained and qualified personnel only.
– Conductive housing and mounting plates must be connected to protective earth.
– Before using this device, ensure all cables are connected correctly and are not damaged.
– Disconnect the DC power and all Ethernet cables for any maintenance of the device.
– Allow the device to cool down completely before touching any parts.
– Install or store this device out of the reach of children and do not allow persons unfamiliar with the device and these instructions to handle and operate the device.
– All connected circuits shall fulfil the requirements for ES1 circuits (cf. SELV acc. IEC/EN 60950-1) and PS2 (Limited Power Source) as per IEC/EN 62368-1.
– All changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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Series EE 7000H
Installation instructions

Mounting instructions

Outdoor mounting

In case of outdoor mounting, it is recommended to cut out the two water outlets on the bottom of the housing.
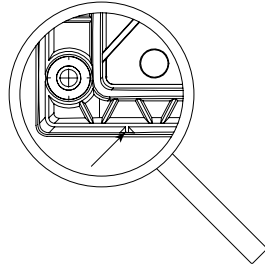

Recommended mounting height

The station shall be mounted in such a way that the microphone is about 1.40 m (4.6 ft) above the floor. Adapt the mounting height to the individual needs.

Mounting gland

① Before mounting the station, break out the expansion openings with a blunt object.

② ¹⁾ Cut the gasket in half (if one expansion opening is used).
²⁾ Put the screw nut into the used gasket opening.
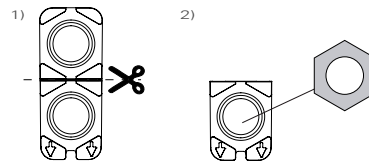
③ Put the gasket and the screw nut into the mounting (note the mounting direction).
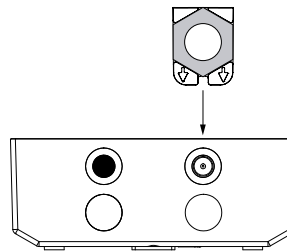
④ Fasten the gland.

⑤ Close the not-used expansion openings with dummy plugs.

Note: The M20 gland (included in extent of supply) is for mounting cables with a diameter between 4 mm and 9 mm (AWG 6 to AWG 00).

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Series EE 7000H
Installation instructions

Dimensions

Measuring units in mm (inch), not scale!

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Series EE 7000H
Complementary information

General configuration

The Intercom station is a hybrid product and can be booted as IoIP device or SIP device. Per factory default, the boot mode of the device is "SIP". The boot mode can be changed to "IoIP" via configuration software IP Station Config (min. version 4.0.5).

IP

Before setting up the IP station, carry out the following general configuration:
– Receive the current configuration.
– Go to **Subscriber > Station properties > IP-Terminals**.
– Carry out the IP configuration for the IP station.

SIP

The IP address is assigned directly via the DHCP server. If DHCP is not available in the network, the default address "192.168.1.200" will be used. The web interface can be accessed via a web browser using the URL "http://<IP address>".

Login
User name: admin
Password: commend

Function key configuration

The function key configuration allows an easy operation with direct dialling buttons and input messages. For this, carry out the following configuration:
– Go to **Subscriber > Station Properties > EE7000 >** tab **Function Keys**.
– Activate the checkbox Input to enable the respective field Call number input for input messages. The associated field Short dial selective will be disabled.
– In the enabled field Call number input, enter the respective input call number.

Microphone configuration

To ensure a high speech quality, the equalization preset for the built-in microphone MIC 480 has to be selected. For this, carry out the following configuration:
– Go to **Subscriber > DSP-Features >** tab **Microphone, Tones**.
– In the drop-down list **Mode MIC - frequency response**, select the option "MIC480".

For realising a permanent close-talking sound characteristic in extreme noisy environments, it is recommended to reduce the microphone gain by 12 dB. For this, carry out the following configuration:
– Go to **Subscriber > DSP-Features >** tab **Microphone, Tones**.
– In the drop-down list mic level internal, select the option "-12 dB".

Note:
By reducing the microphone gain by 12 dB, the ideal speaking distance in extremly noisy environments is approx. 10 cm (4 inch).

Volume Configuration

If for the Intercom station the call mode OpenDuplex® is configured, it is recommended to set the volume level to maximum "5". For this, carry out the following configuration:
– Go to **Subscriber > Audio - Features >** tab **Duplex, Simplex, Full Duplex**.
– In the drop-down list **Full Duplex limit**, select the option "5".

To enable the best call comfort, it is recommended to activate the IVC function (short for "Intelligent Volume Control"). For this, carry out the following configuration:
– Go to **Subscriber > DSP-Features >** tab **voice control**.
– Make sure the checkbox **IVC** is activated.

Note:
For further information about configuring CCT 800, see manual "Intercom Server Configuration".

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COMMEND products are developed and manufactured by Commend International in Salzburg, Austria.

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

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