Series EX 7000D 2

Digital Intercom stations for explosive environments – Ex zone 2 and 22

Weather-proof **IP66** (IEC 60079-0)	**Rugged** housing	**ATEX**- and **IECEx**-certified	**Audio +** functionality	**16**kHz *e*HD Voice

Safe communication at the push of a button

By focusing on the highest safety levels, simple operation and future-proof scalability, Commend's Series EX 7000D 2 is especially designed for communication in potentially explosive atmospheres. In order to verify their absolute reliability for use in Ex zone 2 and 22 with hazardous gases or dusts, the Intercom stations are both ATEX- and IECEx-certified.

A wide product range means that Intercom stations are available for any application: three different keypads with a variety of features can be combined with built-in loudspeaker and/or handset. Additionally, there is the option to use an AC power supply (100–240 VAC) or a DC power supply (22–60 VDC or 18–30 AC). In total, there are 18 Series EX 7000D 2 station versions for Ex zone 2 and 22 to provide exactly what the user and the local regulations require.

Based on a rugged, corrosion-resistant and lightweight "Ex e" polycarbonate housing, the Series EX 7000D 2 enables simple and rapid installation, eliminates expensive routine servicing and drastically reduces maintenance costs. Additionally, the IP66 certification (acc. to EN/IEC 60079-0) and a wide permissible temperature range make the Intercom stations the perfect choice for a wide range of applications in explosive environments.

Thanks to the dust- and water-insensitive microphones and the 16 kHz eHD Voice audio quality, the Series EX 7000D 2 comes with highest speech intelligibility. Even in very noisy environments, two powerful amplifiers for the optional 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.

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Key benefits at a glance

Designed for the most demanding environments

– **ATEX**- and **IECEx**-certified for gases (G) and dusts (D)

– Highest **explosion hazard group** (IIC) and **temperature class** (T6)

– The rugged and corrosion-resistant housing withstands an **expanded temperature range** (see also "Technical data")

– **IP66 certification** (acc. to EN/IEC 60079-0) ensures reliable operation in any climatic condition – even after many years of operation

– Optimised **large tactile button panel** for ease of use with protective gloves eliminates moving parts – e.g. old technology selector levers

– 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

– **2-wire digital technology** helps to reduce cabling requirements and installation costs

– Simple but absolutely **secure IP network integration** using Commend specific Ethernet interfaces (ET 901-D)

– Flexible AC (100 – 240 VAC) or DC (22 – 60 VDC or 18 – 30 AC) **power supply options**

– Direct connection and supply of external Ex field devices – e.g. beacons, PA loudspeakers or sensors

– Redundant **backup power supply** mode via 2-wire data connection

– **Lightweight housing** ("Ex e") enables reduced transport costs, avoids costly "Ex d" cable glands, speeds up installation time, can be installed by only one person, eliminates expensive routine services and drastically reduces maintenance costs

– **Wide product range** with different features

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

Tactile button panel with Party Line keypad and
4 programmable function buttons

Handset for noisy environments
or private communication

Tactile button panel with full keypad and
4 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

– **Optional handset** for environments with extreme background noise or private conversations

– Completely **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**

– 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

– Push button **Party Lines** functionality enables open channel and selective communication

– **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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Versions

Series EX 7000D 2 Intercom stations with 8 function buttons

Article code	Features	Picture
EX 7008D 2 AC H	• 8 function buttons • Handset • AC power supply	
EX 7008D 2 DC H	• 8 function buttons • Handset • DC power supply	
EX 7008D 2 AC S	• 8 function buttons • Built-in loudspeaker • AC power supply	
EX 7008D 2 DC S	• 8 function buttons • Built-in loudspeaker • DC power supply	

Article code	Features	Picture
EX 7008D 2 AC S H	• 8 function buttons • Built-in loudspeaker • Handset • AC power supply	
EX 7008D 2 DC S H	• 8 function buttons • Built-in loudspeaker • Handset • DC power supply	

Series EX 7000D 2 Intercom stations with Party Line keypad and 4 function buttons

Article code	Features	Picture
EX 7P04D 2 AC H	• Party Line keypad • 4 function buttons • Handset • AC power supply	
EX 7P04D 2 DC H	• Party Line keypad • 4 function buttons • Handset • DC power supply	
EX 7P04D 2 AC S	• Party Line keypad • 4 function buttons • Built-in loudspeaker • AC power supply	
EX 7P04D 2 DC S	• Party Line keypad • 4 function buttons • Built-in loudspeaker • DC power supply	

Article code	Features	Picture
EX 7P04D 2 AC S H	• Party Line keypad • 4 function buttons • Built-in loudspeaker • Handset • AC power supply	
EX 7P04D 2 DC S H	• Party Line keypad • 4 function buttons • Built-in loudspeaker • Handset • DC power supply	

Series EX 7000D 2 Intercom stations with full keypad and 4 function buttons

Article code	Features	Picture
EX 7504D 2 AC H	• Full keypad • 4 function buttons • Handset • AC power supply	
EX 7504D 2 DC H	• Full keypad • 4 function buttons • Handset • DC power supply	
EX 7504D 2 AC S	• Full keypad • 4 function buttons • Built-in loudspeaker • AC power supply	
EX 7504D 2 DC S	• Full keypad • 4 function buttons • Built-in loudspeaker • DC power supply	

Article code	Features	Picture
EX 7504D 2 AC S H	• Full keypad • 4 function buttons • Built-in loudspeaker • Handset • AC power supply	
EX 7504D 2 DC S H	• Full keypad • 4 function buttons • Built-in loudspeaker • Handset • DC power supply	

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System overview

Thanks to the variety of options, Series EX 7000D 2 Intercom stations can be used for a wide range of applications. A few examples are provided in the following:

Series EX 7000D 2 as standard Intercom station

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

e.g. EX 7504D 2 S

Series EX 7000D 2 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 [1] (connected within the housing by cable)

e.g. EX 7504D 2 S

Series EX 7000D 2 as Intercom and paging station

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

External equipment

E.g. with built-in loudspeaker (connected to "AMP1"), external PA loudspeaker (connected to "AMP2") and beacon light (connected to "OUT1"), all supplied directly via the Intercom station.

AMP2 [1]

OUT1 [1]

External PA loudspeaker

Beacon light

e.g. EX 7504D 2 S

[1] Requires the additional software licence L-EX-AF-OUT.

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Series EX 7000D 2 Intercom stations in an IP network

It is possible to integrate a Series EX 7000D 2 Intercom station into an IP network by means of an ET 901-D. An example for a Series EX 7000D 2 Intercom station in an IP network is shown in the following:

2-wire connection

ET 901-D

virtuosis by commend

GE 300

GE 800

Commend Intercom Server

e.g. EX 7504D 2 S

IP network

PAGA (Public Address and General Alarm systems)

Integration of doors and gates

Ex mobile phones and mobile radios

Intercom stations

IP camera

Central control desk
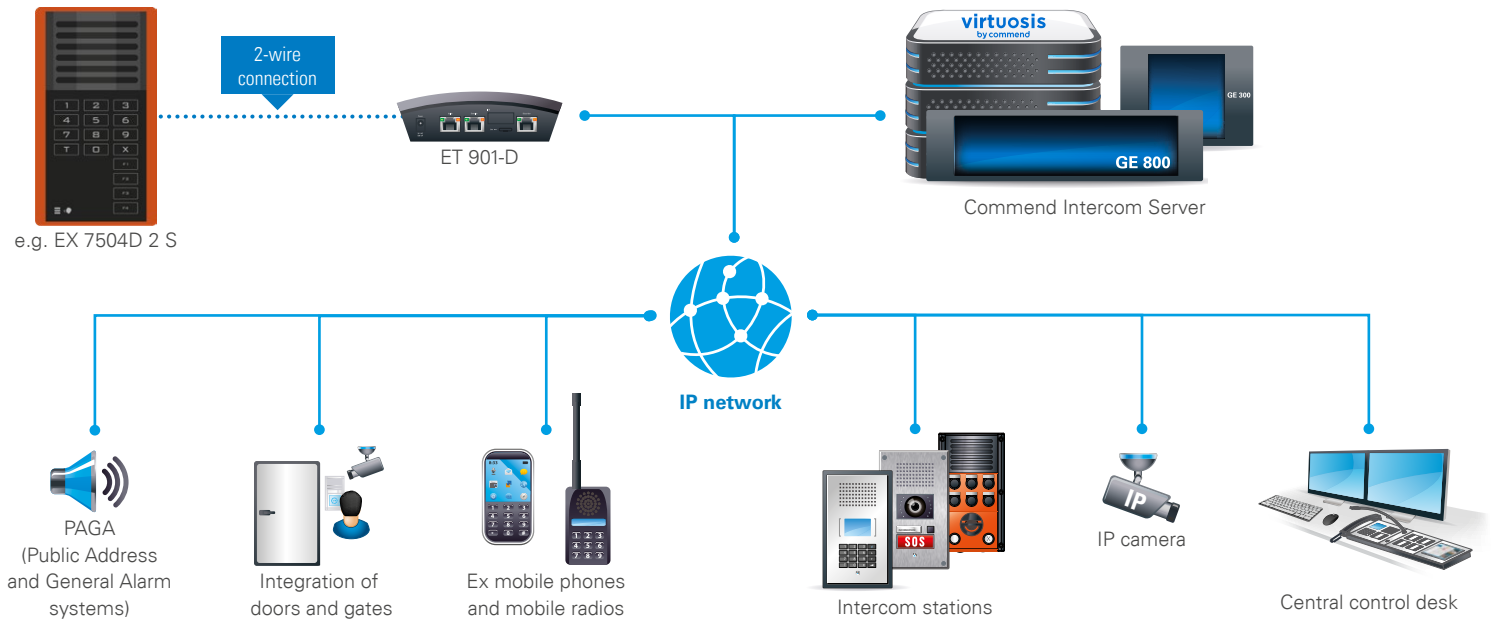
Application

With regard to the Ex mark, the Series EX 7000D 2 Intercom stations are suitable for the following types of hazard zones: Ex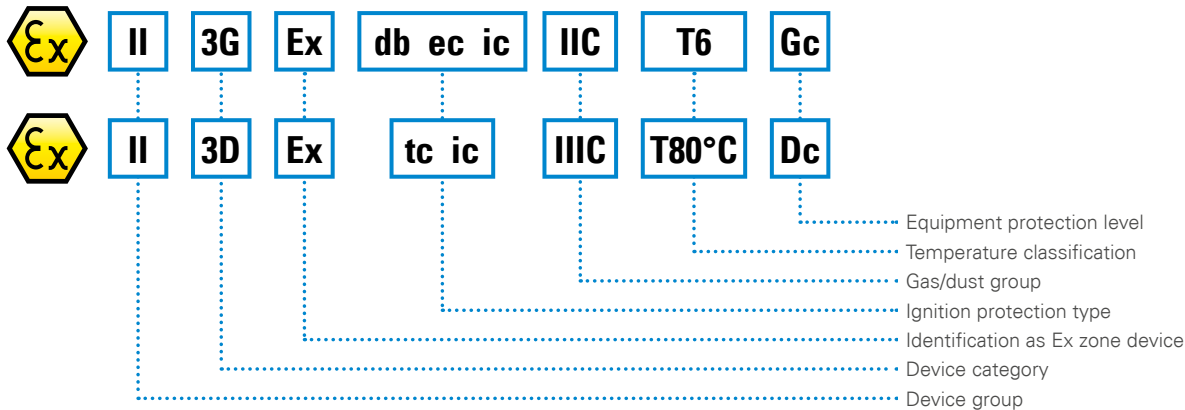 zone 2 and Ex zone 22. Equipment in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists, or air/dust mixtures are unlikely to occur or, if they do occur, are likely to do so only infrequently and for a short period only.

ATEX/IECEx certifications

The Series EX 7000D 2 Intercom stations have the following ATEX certifications:

II	3G	Ex	db ec ic	IIC	T6	Gc
II	3D	Ex	tc ic	IIIC	T80°C	Dc

- Equipment protection level
- Temperature classification
- Gas/dust group
- Ignition protection type
- Identification as Ex zone device
- Device category
- Device group

II	Electrical equipment intended for use in places with an explosive gas or dust atmosphere other than mines susceptible to firedamp
3G	Area in which an explosive atmosphere is unlikely to occur or, if it occurs, is likely to do so only infrequently and for a short period only (gas)
3D	Area in which an explosive atmosphere is unlikely to occur or, if it occurs, is likely to do so only infrequently and for a short period only (dust)
Ex	Explosion protection
db	Type of protection "pressure-proof encapsulation"
ec	Type of protection "increased safety"
ic	Type of protection "intrinsic safety"
tc	Type of protection "protection by enclosure"
IIC	Highest gas protection group
IIIC	Highest dust group (conductive dust)
T6	Max. surface temperature < 85 °C (gas)
T80°C	Max. surface temperature < 80 °C (dust)
Gc	Equipment suitable for zone 2 (gas)
Dc	Equipment suitable for zone 22 (dust)

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Series EX 7000D 2
Technical specifications

Technical data

IP rating:	without handset: IP66 (acc. to EN/IEC 60079-0, EN 60529) handset: IP44 (acc. to EN 60529)
Mechanical impact resistance:	without handset: IK10 (acc. to EN 62262) handset: IK09 (acc. to EN 62262)
Keypad [1]:	EX 7008D: 8 function buttons EX 7P04D: Party Line keypad and 4 function buttons EX 7504D: full keypad and 4 function buttons
Housing:	robust polycarbonate
Microphone:	MEMS microphone
Built-in loudspeaker [1]:	20 W / 8 Ω, special membrane for optimal sound quality, max. sound pressure level, built-in loudspeaker connected to "AMP1": 116 dB/0.3 m (1 ft), 106 dB/1 m (3.3 ft) max. sound pressure level, built-in loudspeaker connected to "AMP2": 126 dB/0.3 m (1 ft), 116 dB/1 m (3.3 ft) [2]
Amplifier:	2 integrated class-D amplifiers "AMP1": 5 W, impedance: min. 8 Ω "AMP2": 25 W, impedance: min. 8 Ω [2]
Call and status indication:	3 LEDs (colours: red, green, blue)
Inputs:	2 inputs for floating contacts
Outputs:	"OUT1": voltage controlled relay contact [2] max. switching power: 150 W, 1,200 VA, max. switching current: 5 A [3] "OUT2": floating relay output with NO and NC contact max. switching power: 60 W, 62.5 VA, max. switching current: 2 A
Transmission bandwidth:	16 kHz
Operating temperature range:	without handset: –40 °C to +60 °C (–40 °F to 140 °F) handset: –25 °C to +55 °C (–13 °F to 131 °F)
Storage temperature range:	without handset: –40 °C to +60 °C (–40 °F to 140 °F) handset: –25 °C to +55 °C (–13 °F to 131 °F)
Relative humidity:	up to 95%, not condensing (acc. to EN 60068-2-30)
Plugs:	Ex-certified screw terminals
Handset cable length [1]:	700 mm (27.56 in)
Power supply [1]:	power consumption: max. 25 W [4] versions EX 7x0xD 2 AC x x: 100 – 240 VAC (50/60 Hz) versions EX 7x0xD 2 DC x x: 22 – 60 VDC or 18 – 30 VAC (50/60 Hz) [5]
Cabling to Intercom Server:	star feed, 2-wire twisted
Signalling:	2B + D (2 x 64 kBit/s speech, 16 kBit/s data)
Emergency operation:	max. 3 W from the Intercom Server
Dimensions (W x H x D):	without headset, with loudspeaker: 175 x 344 x 127 mm (6.89 x 13.54 x 5.00 in) with handset, with/without loudspeaker: 251 x 344 x 143 mm (9.88 x 13.54 x 5.63 in)

Weight incl. package:	approx. 6 kg (13.3 lbs)
Colour:	orange and black

[1] For detailed information about the different Series EX 7000D 2 station versions, see "Versions".
[2] For the amplifier "AMP2" and the relay output "OUT1", the additional software licence L-EX-AF-OUT is required.
[3] The output voltage of relay output "OUT1" equals the Intercom station's supply voltage.
[4] The max. power consumption applies only if the relay output "OUT1" is not used.
[5] The "low voltage" mains supply input may only be connected to an ES1 (SELV) circuit as per IEC/EN 62368-1. The ES1 (SELV) circuit must not exceed 60 VDC or 30 VAC$_{RMS}$.

Extent of supply

– Intercom station
– Product manual
– EU declaration of conformity

System requirements

Intercom Server
– GE 800 (min. PRO 800 6.3 build 12) with G8-GED (firmware version min. 4.4) or
– GE 300 (min. PRO 800 6.3 build 12) with G3-GED (firmware version min. 4.4) or
– VirtuoSIS/S3/S6 (min. 8.1) with ET 901-D (firmware version min. 5.0)

Configuration software
– CCT 800 (min. version 6.1)

Device firmware
– DSP800B (min. version 2.5 Build 2)

ATTENTION: Downgrade
Downgrading to firmware version DSP800B 2.5 build 1 or lower is not supported.

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Emergency operation

The device automatically switches to emergency mode in case of a main power supply failure. This results in a decrease of volume of −15 dB (relative to the max. volume). In emergency operation, the device ("AMP1") is therefore limited to max. volume level "4", the amplifier "AMP2" is deactivated and switched relay outputs ("OUT1"/"OUT2") are opened. When normal operation is resumed, the relay outputs are set into the appropriate states and the amplifier "AMP2" is reactivated. For this, no configuration in CCT 800 is necessary.

Planning tips for emergency operation

In order to ensure emergency operation at a main power supply failure of the Intercom station, max. 20 units of the Series EX 7000D 2 can be operated with an Intercom Server GE 800 or GE 300.

Recommended power supply

– **GE 800**: 30 VDC/80 W, 24 VA/80 VA
– **GE 300**: 24 VDC/60 W

Note that the overall Intercom Server power supply must be appropriate for all connected Intercom stations.

NOTE: Line monitoring

It is recommended to activate "line monitoring". For appropriate configuration, see manual "**Intercom Server Configuration**".

Connection data wire cross section

Wire cross section AWG:	min. 24 max. 14
2 wires of the same cross section, rigid:	min. 0.2 mm² max. 0.75 mm²
2 wires of the same cross section, flexible:	min. 0.2 mm² max. 0.75 mm²
2 wires of the same cross section, flexible, with electric wire ferrule, without plastic sleeve:	min. 0.25 mm² max. 0.34 mm²
Stripping length:	9 mm
Tightening torque:	min. 0.4 Nm max. 0.5 Nm

Line length

Cable type	Normal operation	Emergency operation [1] (GE 800/ GE 300)	Emergency operation [1] (ET 901)
Ethernet cable, e.g. Cat. 5 Loop resistance: 190 Ω/km Capacity: 48 nF/km (14.4 nF/1,000 ft)	2,600 m (8,530 ft)	900 m (2,953 ft)	600 m (1,969 ft)
Telecommunication cable, e.g. F-YAY; ø 0.6/0.8 mm; AWG: 22/20 Loop resistance: >135 Ω/>73 Ω/km Capacity: 100 nF/km (30.5 nF/1,000 ft)	1,600 m (5,249 ft)	1,200 m (3,937 ft)	600 m (1,969 ft)

[1] The indicated max. line length applies to versions with built-in loudspeaker.

Table of loudspeaker control

Per default, the amplifiers "AMP1" and "AMP2" are controlled in parallel. In order to achieve the loudspeaker control behaviour as shown in the table below, a configuration in CCT 800 is required. For this, activate the checkbox **Separate control loudspeakers** at **Subscriber > Audio - Features >** tab **General** and activate the software licence L-EX-AF-OUT.

State	AMP1 (built-in or external loudspeaker)	AMP2 [2] (external loudspeaker)
Privacy	✓	–
Music	– [3]	✓
Simplex (listen)	✓	–
Duplex	✓	–
OpenDuplex	✓	–
Busy	✓	–
Alarm	✓	✓
All Call	✓	✓
Radio conference	✓	–
Conference	✓	–
Duplex conference	✓	–
Normal call	✓	–
Emergency call	✓	–
Error	✓	–

[2] Requires the additional software licence L-EX-AF-OUT.
[3] If the checkbox **Separate control loudspeakers** is activated but no software licence L-EX-AF-OUT is available, music is put out via the amplifier "AMP1".

NOTE: ICX messages

An adjustment of the loudspeaker control via ICX message is possible. For further information, see manual "**ICX Protocol**".

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Series EX 7000D 2
Installation instructions

Dimensions front view and side view

Measuring units in mm (in), not to scale!
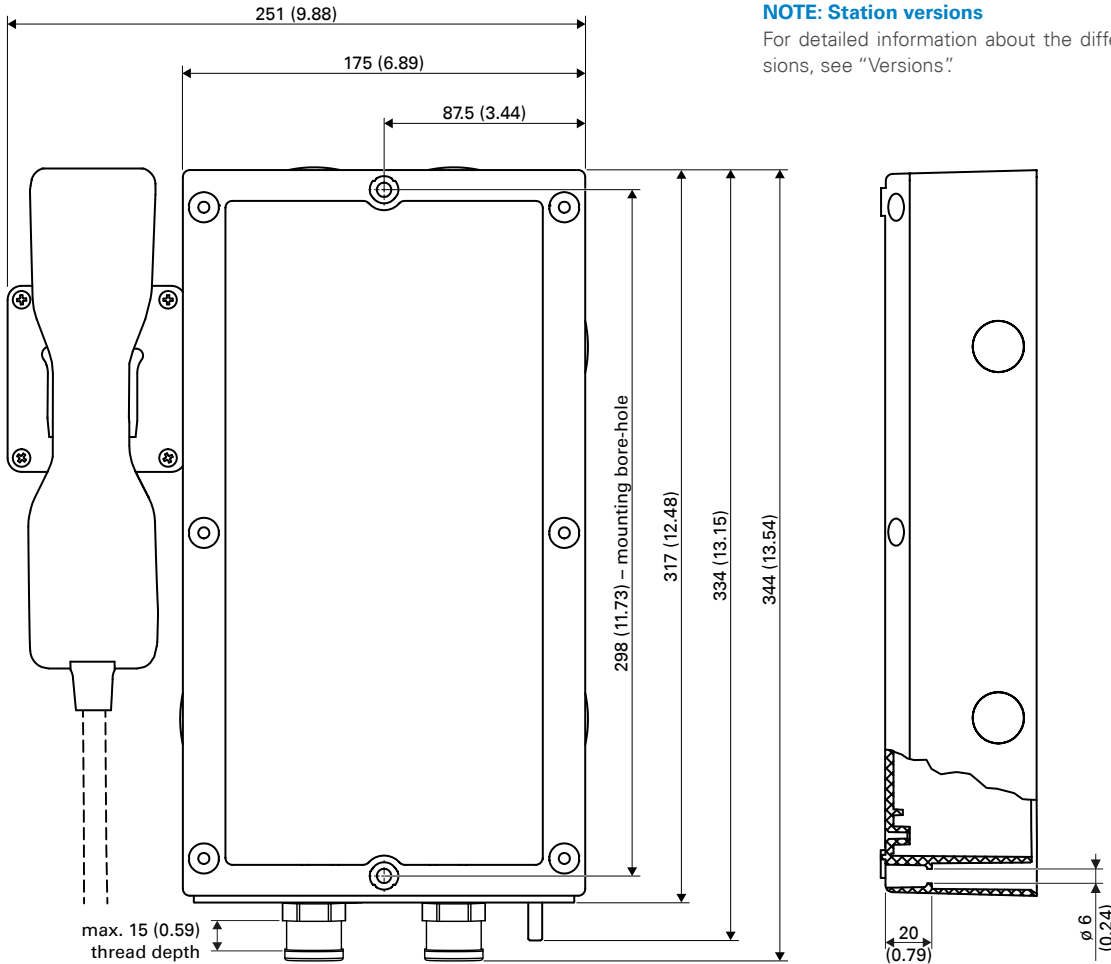
NOTE: Station versions
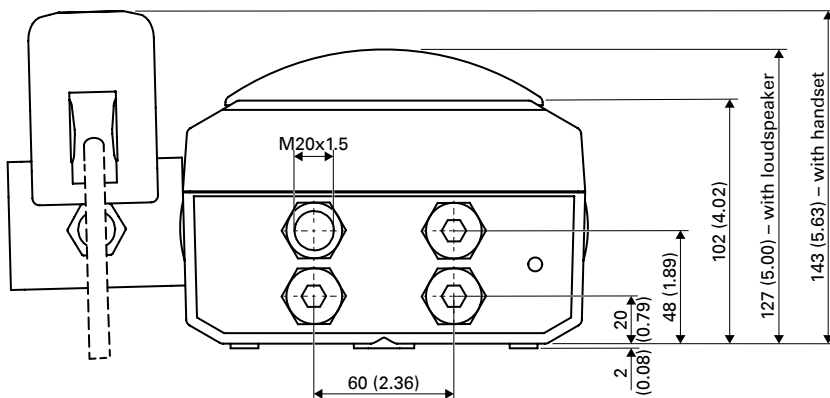
For detailed information about the different Series EX 7000D 2 station versions, see "Versions".

251 (9.88)
175 (6.89)
87.5 (3.44)
298 (11.73) – mounting bore-hole
317 (12.48)
334 (13.15)
344 (13.54)
max. 15 (0.59) thread depth
20 (0.79)
ø 6 (0.24)

Dimensions bottom view

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

M20x1.5
102 (4.02)
127 (5.00) – with loudspeaker
143 (5.63) – with handset
48 (1.89)
20 (0.79)
2 (0.08)
60 (2.36)

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Mounting instructions

– Do not expose the Intercom stations to extreme temperatures (see "Technical data").
– Observe the precautions for handling of electrostatic sensitive devices.
– The Intercom stations may only be installed by authorised service engineers.
– When opening the Intercom stations, ESD precautions must be observed.
– Observe the relevant national and local regulations for the installation.
– The different versions of the Series EX 7000D 2 are all mounted the same way.
– Do not modify Series EX 7000D 2 Intercom stations in any case – otherwise, the Ex safety cannot be ensured and the certificate and the warranty becomes void.
– The housing must be protected from electrostatic charge hazards.
– For further information on mounting, see manual "Series EX 7000D 2".
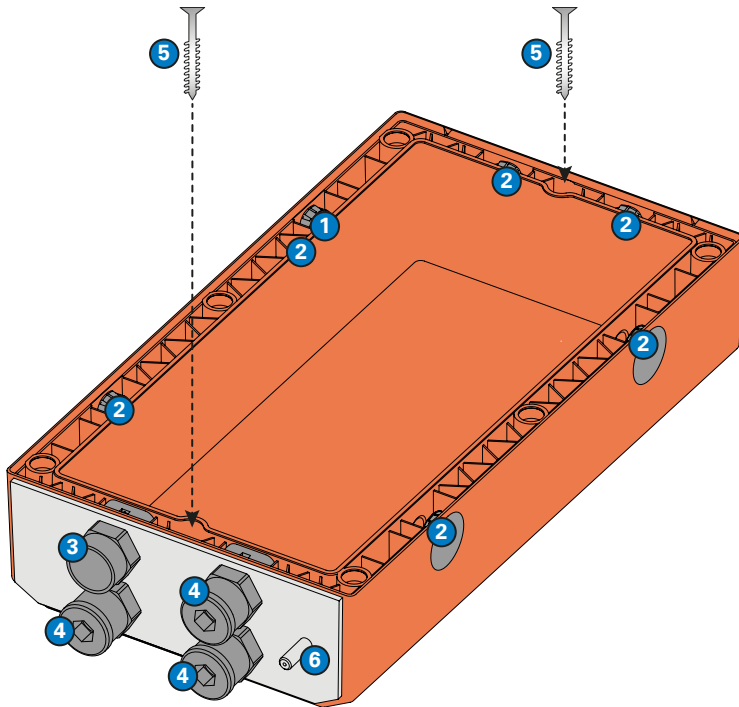
1 If an Intercom station with handset is used, do not remove the handset connection box with the cradle.
2 Do not remove any stopping plugs.
3 Remove the one-way filler plug. It is only determined for transport and installation purposes and has to be replaced by an IP66 Ex e cable gland with a diameter of max. 28 mm (1.1 in) prior to operation.
4 Remove IP66 Ex e filler plugs (hex key, size 10) and insert IP66 "Ex e" cable glands with a diameter of max. 28 mm (1.1 in) if more than one cable gland is required for cabling – otherwise, the IP66 rating cannot be ensured.
5 The screw openings have a diameter of 6 mm/0.24 in (screw head diameter: max. 9.5 mm/0.37 in).
6 This grounding stud must be connected to the protective earth.
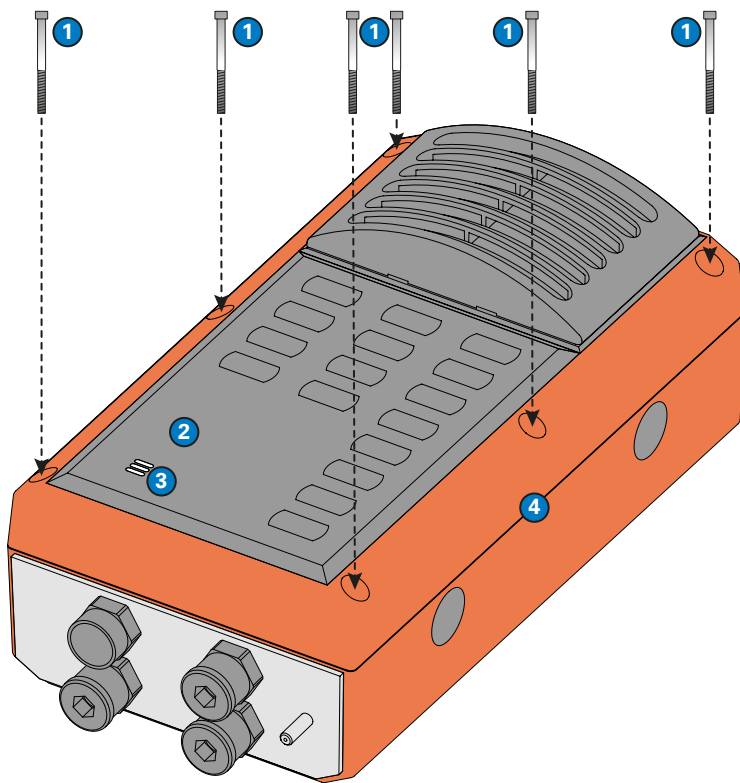
Mounting height

It is recommended to mount Series EX 7000D 2 stations with a height of 1.65 m (5.4 ft) from the finished floor to the upper edge of the housing. Adapt the mounting height to the individual needs.

approx. 1.65 m (5.4 ft)

finished floor
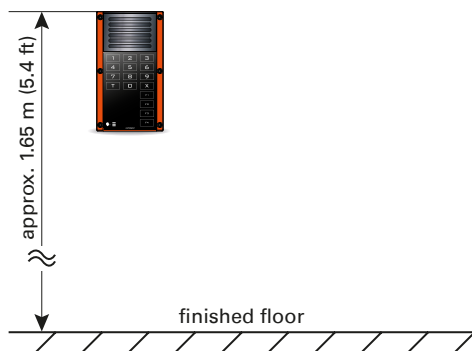
ATTENTION: Installation
Do not install the device on unstable walls or on surfaces that cannot support the weight of the device.

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Fitting the cover


ATTENTION: Fitting the cover
The maximum permissible tightening torque of the six cover screws is 1.5 Nm.

1. Only use front cover retaining bolts to fit the cover.
2. Position of the microphone behind the membrane keypad.
3. Position of the three LEDs.
4. "Ex e" housing.

Labelling

Labels for the function buttons can be attached directly to the membrane keypad.
Ensure to not label the area shown below:
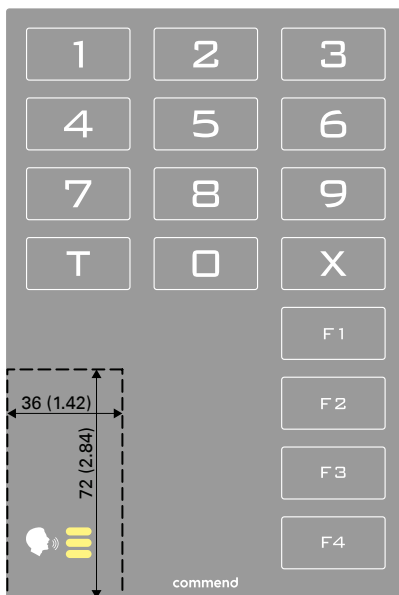
ATTENTION: Decreasing intelligibility
The intelligibility can be influenced negatively by labelling the area around the microphone (e.g. by attaching a sticker).

NOTE: Membrane keypad
The need to avoid covering the marked keypad area applies to all versions of the Series EX 7000D 2. For detailed information, see "Versions".

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Quality tested. Reliable. Smart.

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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A strong worldwide network

COMMEND is represented all over the world by local Commend Partners and helps to improve security and communication with tailored Intercom solutions.

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