

Data sheet
LX-220



Linea-Series

Directional Speakers.



FOHNN®
HYBRID LINE ARRAY TECHNOLOGY





Description

PEAK PERFORMANCE POWER.

Linea LX-220 is an extremely high performance, hybrid line source system incorporating state-of-the-art 4-way speaker technology. It combines innovative line array technology with elegant design. The system was specially developed to provide the best possible sound quality for speech and live music applications in challenging acoustic environments, as well as enabling effective integration into architectural surroundings.

18 x 4" high performance speakers arranged in a column, plus three 1" compression drivers with horn loaded Fohhn Waveguide system, produce a very direct, cylindrical beam characteristic. At the heart of these cylindrical waveforms, the sound pressure level remains much more constant over distance compared with conventional loudspeakers. This has a very positive effect on the overall sound coverage. What's more, the sound reaches the audience more directly than with other conventional systems. Unwanted reflections from the ceiling or floor can be avoided, which greatly improves speech intelligibility especially in reverberant rooms. Using the LX-220, complex microphone set-ups can also be quickly and easily implemented. The inclusion of high quality aluminium housing and laminated speakers enables the unit to be used outside. For live applications, the LX-220 can be combined with Fohhn AS-20, AS-30, AS-40 or XS-20, XS-30 and XS-4 subwoofers.

Recommended amplifiers for the LX-220:
Fohhn D-2.1500 or D-4.1200 DSP-controlled systems.

Fohhn® Linea LX-220 is an extremely high performance, hybrid line source system incorporating state-of-the-art 4-way speaker technology. It combines innovative line array technology with elegant design.

The Main Facts at a Glance

- High performance 4-way hybrid line source / mini line array system
- Long reach and excellent speech intelligibility
- State-of-the-art loudspeaker technology: 18 x 4" neodymium long excursions chassis and 3 x 1" compression drivers with specially developed waveform
- Sophisticated multi-zone crossover points with electronic IPC high frequency protection
- Excellent sound quality for both speech and live music
- Very even, controlled sound coverage with high resistance to feedback
- Weatherproof aluminium housing
- Elegant design, perfect integration into room architecture

Controlling Linea LX speakers

We always integrate a sophisticated passive crossover with electronic high-frequency protection so you can operate the LX-220 with any professional amplifier. For maximum sound performance and operating reliability, we recommend our digital DSP amplifiers (e.g. D-4.1200 or D-2.1500). Its integrated DSP technology includes a number of factory loudspeaker presets. These guarantee total operating reliability and superb performance at any sound pressure level. Programmable audio tools, such as the 10-band parametric EQ, enable quick adjustments to suit the room acoustic and any related microphone set-ups. All DSP functions can be carried out remotely using a laptop.

DSP technology

Fohhn® DSP processor technology modulates the Linea LX-220 and Fohhn subwoofers perfectly. Digital Fohhn signal processors are integral components of active Fohhn subwoofers, Fohhn DSP amplifiers and Fohhn DSP controllers. DSP-controlled Fohhn devices can be controlled remotely from a central location in the room or on the stage via intuitive remote control units. Fohhn therefore offers a perfectly adapted sound system that fulfils all the requirements of a modern speaker system regarding design, sound quality and operating comfort in every respect.

Accessories

L-bracket WAL-1, wallbracket WLX-220

Applications

Ideal for fixed installation in churches, cathedrals, universities, conference rooms, halls, open air events etc.

Optional versions

Optional 100 volts version. All RAL colours.

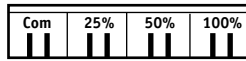
Connectors

8-way Phoenix terminal strip, two adjacent pins are always connected in parallel to loop through another speaker system.

LowZ Version (low impedance)



100 volts version with pickups



Technical specifications

electro-acoustical features

acoustic design	weatherproof passive hybrid line source, 4-way
components [*]	18 x 4" long excursion chassis, laminated, 3 x 1" compression drivers on horn loaded Waveguide with self-regulating IPC – high frequency protection [*], neodymium
power rating (nominal) ^[1]	900 W
power rating (program) ^[2]	1800 W
power rating (peak) ^[3]	3600 W
sensitivity ^[4]	96 dB
maximum SPL ^[3]	131 dB
frequency range ^[5]	65 Hz – 20 kHz
nominal dispersion (h x v) ^[6]	130° x 15°
nominal impedance	4 ohms

features

enclosure	Aluminium design
protection grille	ball impact resistant metal, powder coating
suspension points	12x M6 thread
connections	8-pin Phoenix terminal
standard colours	black or white powder coating
front design	metal grille in enclosure colour
dimensions (W x H x D)	130 x 2200 x 120 mm
weight ^[7]	16 kg

optional features

integrated 100 V-transformer	60/30/15 W
optional colours	all RAL-colours
weather resistance	-

CAAD simulation data

EASE

The manufacturer reserves the right to make technical modifications according to legal regulations stipulating the continual improvement of product features.

^[1] according to IEC-60268-5 long term

^[2] according to IEC-60268-5 short term

^[3] Peak, 20 ms with bandpass filtered pink noise signal according to IEC 60268-2 at one octave above the lower limit of the frequency range

^[4] 2,83 V at 8 ohms (2 V at 4 ohms, 4 V at 16 ohms) at a distance of 1 meter under anechoic fullspace conditions

^[5] -10 dB under anechoic halfspace-conditions

^[6] horizontal x vertical at -6 dB, averaged 1-4 kHz

^[7] net weight without optional equipment

^[*] Intelligent Protection Circuit. Voltage-controlled semiconductor circuit protecting the HF-driver against overload highly effective and with very short attack time.



Fohhn® Hybrid Line Array technology.

Fohhn® Linea Live Systems redefine the concept of balanced sound, excellent sound quality and sophisticated design.

Fohhn's specially developed Hybrid Line Array Technology integrates high performance, vertically aligned loudspeakers and powerful high frequency drivers with Waveguide in a compact housing. Systems from the Fohhn Linea LX series have a hybrid design that is based on a combination of classic two-way speakers and modular line array, and incorporates the functional advantages of both principles.

For many years we have carried out research and development in the field of high powered Mini Line Array Systems. Our original aim was to take the benefits associated with large modular line array systems such as directionality, even coverage, long throw and transport them into more compact, easy to install systems. We successfully achieved our aim in 2006 with the release of our Linea-Series. By 2007 our Linea LX systems had set new standards for line source column speakers. Our engineering team developed the unique Fohhn Hybrid Line Array principle by combining, for the first time ever, high performance bass-mid speakers and 1" compression drivers with a Waveguide system. The result – a new generation of high powered Mini Line Array Systems. The Fohhn Hybrid principle has led to the achievement of outstanding sound quality in speech and music, superb dynamics and even coverage of audience areas.

Linea LX: An overview of the main advantages

* First-class sound with excellent dynamics

Whether used for full-on live music and DJ events, or for demanding speech applications, Linea LX systems guarantee superb sound quality at any loudspeaker level.

* Even sound distribution with Fohhn Hybrid Line Array Technology

Compared with conventional systems, sound is distributed much more evenly throughout the room, with a pleasing effect at the front and clear, coherent sound right at the back.

* Superb speech intelligibility

Sound can be specifically targeted towards the audience, avoiding unwanted reflections from the ceiling or floor. For the listener, the result is clear and pleasant. Speech intelligibility is considerably improved.

* Perfect integration into room architecture and stage designs

The elegant designer speakers integrate extraordinarily well into their surroundings. They won't interfere with either stage designs or camera shots.

* Disturbance-free listening

Feedback is rarely an issue, even with complex microphone set-ups.

* Easier transportation and quicker set-up

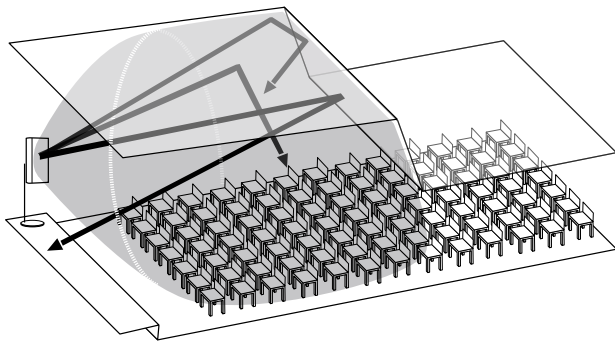
Linea LX speakers are equipped with state-of-the-art, lightweight neodymium loudspeaker technology. Conveniently positioned handles ensure quick and safe set-up. The speakers' compact dimensions reduce the amount of space needed for storage and transportation.

* No need for expensive rigging or curving.

Compared with modular line array systems, no expensive flying mechanisms, rigging or curving are necessary. All the line array technology is integrated into a single housing, enabling quick and easy installation.

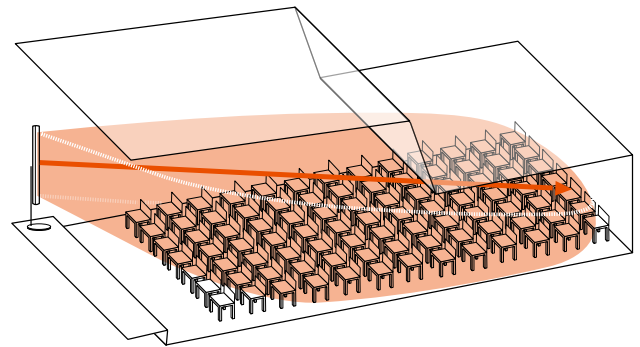
PERFECT DIRECTIONALITY. PERFECT SOUND.

An incredible listening experience, from the front row to the very back row.



PA systems with conventional speakers

In comparison with line array systems, conventional loudspeakers offer a less directional coverage, particularly in the vertical plane. Levels at the front are often too loud, while at the back, the sound may be too quiet or lacking in clarity due to insufficient reach.



Linea systems for sound

The cylindrical dispersion characteristics of Fohhn's Linea Live Mini Line Array Systems give a more targeted sound transmission to audience areas. The speakers also provide a more even room coverage, from the front row right to the very back. Potential reflections from the ceiling, floor or walls can be avoided, making the sound clearer and more pleasant for the audience, with dramatically improved speech intelligibility. The effect is also better for musicians or public speakers, with less sound from the room reflecting back onto the stage.

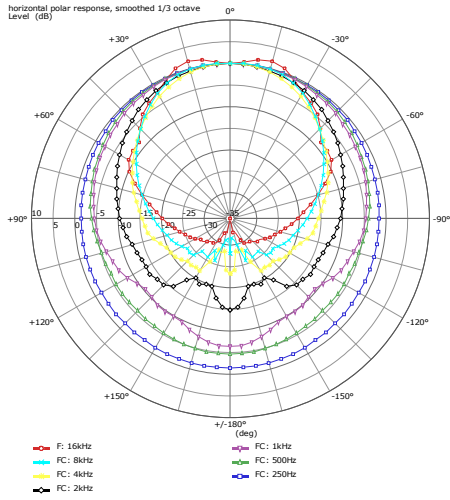


Fig. 1: Horizontal polar pattern

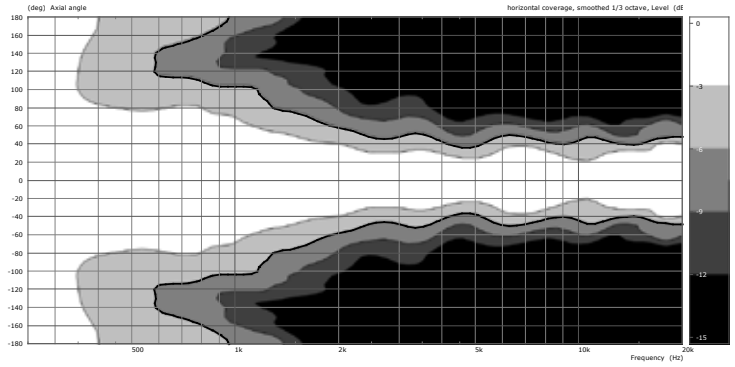


Fig. 2: Horizontal coverage

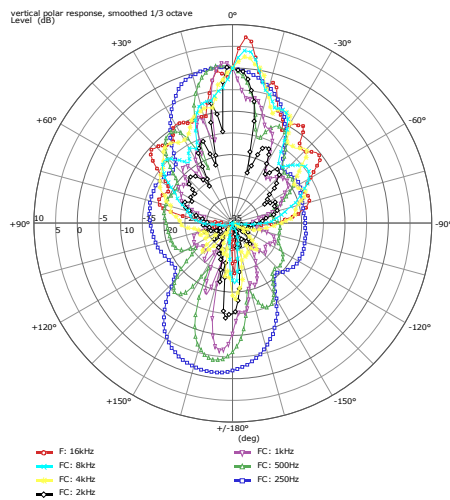


Fig. 3: Vertical polar pattern

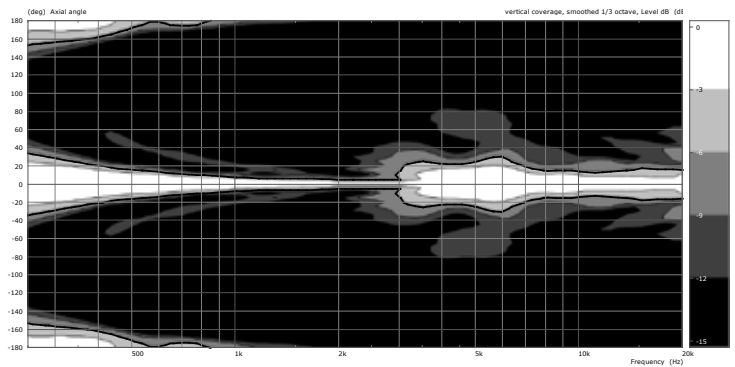


Fig. 4: Vertical coverage

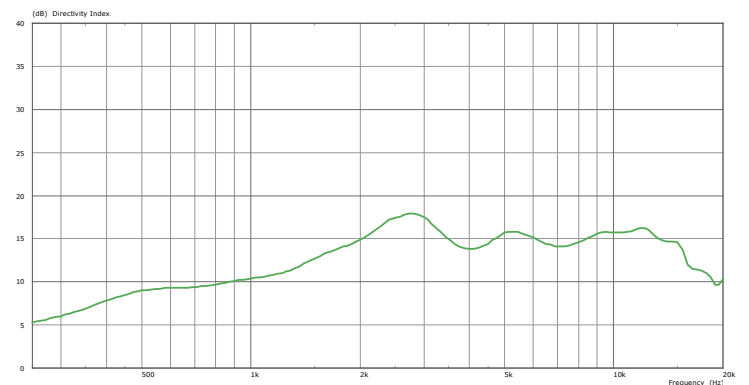


Fig. 5: Directivity index

Fig. 6: Frequency response

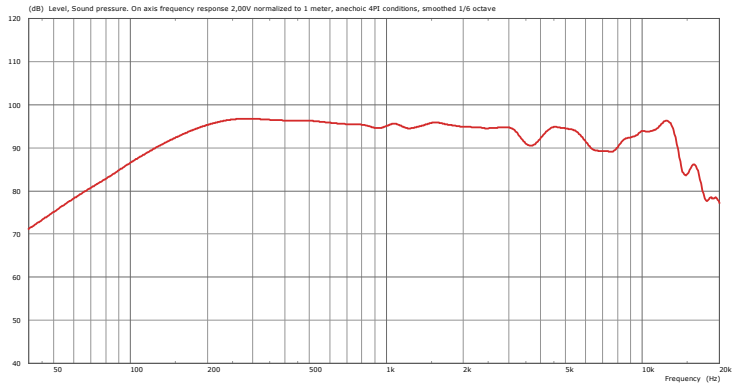


Fig. 7: Impedance

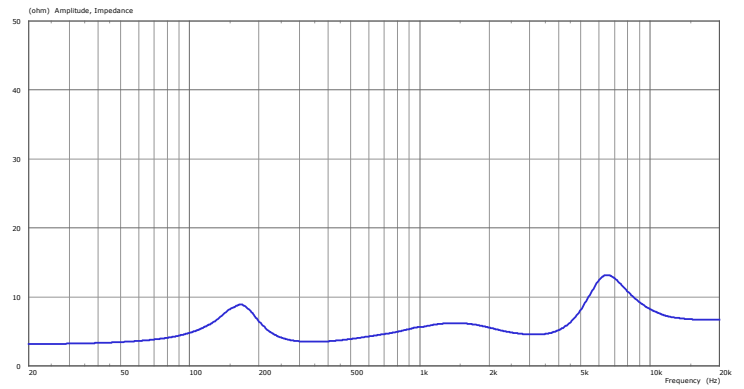
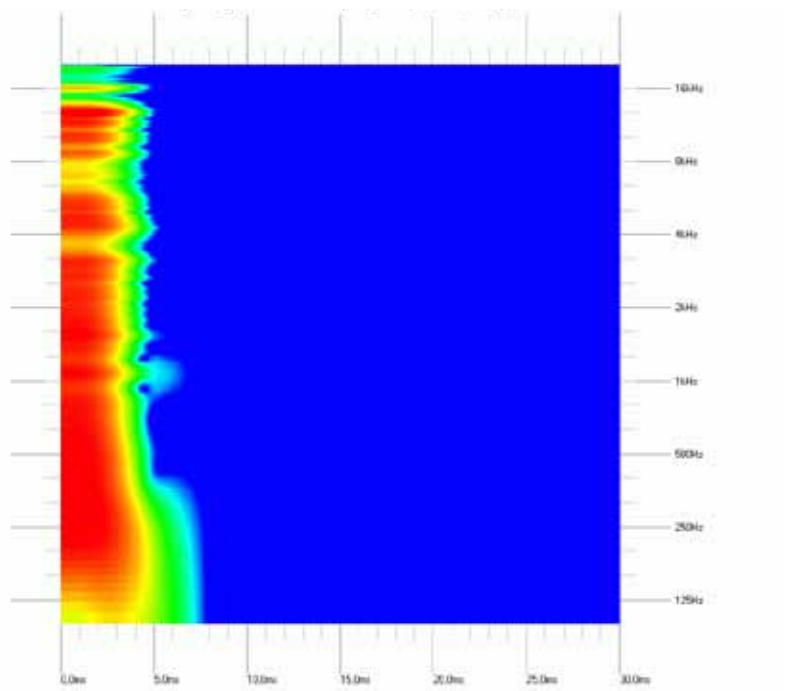


Fig. 8: Spectral decay



Controlling Linea-Series speakers

1. Fohhn system DSP amplifiers

Fohhn offers a range of specially adapted system DSP amplifiers for controlling Arc speaker systems, which guarantee maximum sound performance and operational reliability for your Fohhn products. As manufacturers of speaker, amplifier and DSP technology, we know our systems inside and out right down to the smallest detail and are therefore in a perfect position to provide our users with the best overall system.

Fohhn System DSP amplifier are offering following advantages:

Integrated high-performance DSP technology:

- quick set-up,
- minimal space requirements in electronics cabinet,
- minimal cable requirements,
- fewer cable faults,
- controller and amplifier can be controlled and monitored using the same software.

Dual DSP technology

The DSP amplifiers contain 2 separate DSP engines with enormous capacity and processing power for 5 digital audio devices (DSP-1) and Fohhn specific speaker databases (DSP-2).

Remote monitoring and control

Integrated temperature and operating time monitor, status indicator / protection, remote control capability / network compatibility using a laptop, wall installation modules or media control systems.

Fohhn® dual DSP technology

DSP-1: Integrated digital audio devices

Each amplifier channel has a:

- programmable 10 band parametric EQ,
- compressor/limiter/noise gate,
- delay,
- X-over function,
- top-quality pink noise and sweeptone generator

DSP-2: Speaker management

An integrated speaker database guarantees excellent sound quality and protection for all Fohhn speaker types. A sophisticated algorithm developed by Fohhn engineers and adapted to each speaker allows the individual monitoring and adjustment of bass, mid and high ranges.

1.1 Amplifier recommendations for the Linea-Series



D-2.1500

2 channel operation, 2x 1.500 W / 4 ohms
2x 900 W / 8 ohms

Fohhn Audio DSP, display, remote control

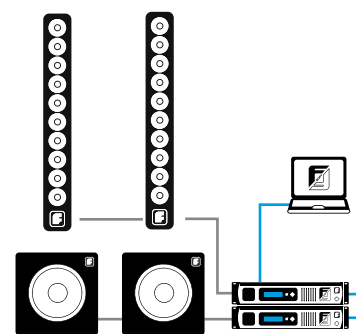
D-4.1200

4+2 channel operation, 4x 1.200 W / 4 ohms
4x 750 W / 8 ohms

2x DSP line out channels for controlling a conventional amplifier

Fohhn Audio DSP, display, remote control

	Arc-Tops										Linea		Arc-Subs										
	AT-05	AT-061	AT-07	AT-08	AT-09	AT-10	AT-201	AT-22w	AT-30	AT-35	AT-40	AT-50	AT-66	LX-100/150	LX-220	AS-10	ASP-10	AS-20	ASP-20	AS-30	ASP-30	AS-40	ASP-40
D-2.750	x	x	x	x	x	x	x	x	x					x		x	x	x	x				
D-4.750	x	x	x	x	x	x	x	x	x					x		x	x	x	x				
D-2.1500												x	x	x	x					x	x	x	x
D-4.1200												x	x	x	x					x	x	x	x



2x Sub passive / 2x Top passive
2x DSP amplifier

Controlling Linea-Series speakers

2. Standard amplifiers combined with Fohhn controllers

Standard amplifiers / 100V amplifiers / multichannel amplifiers combined with Fohhn FC-9 DSP system controllers

All of the speaker systems in the Fohhn Linea-Series can be operated in combination with standard amplifiers (e.g. Bittner amplifiers). Each Fohhn speaker model has a linear design, neutral sound adaptation function and is fitted with an integrated crossover with electronic tweeter protection.

We recommend integrating the FC-9 Fohhn DSP system controller for applications involving standard multichannel amplifiers, 100V amplifiers or monitored amplifiers according to EN 60849.

The FC-9 guarantees maximum sound quality, operational reliability and performance features that no other standard controller can offer in combination with our Fohhn speakers.

Sound quality. Reliability. Intelligent control.

- * Fohhn DSPs guarantee maximum sound performance
- * 5 premium audio tools such as Parametric EQ are integrated
- * Integral speaker and amplifier database for maximum operating reliability
- * Remote monitoring/operation, network-compatible
- * Automatic amplifier calibration function CAS
- * 8 input switching contacts for easy system integration
- * Perfect adaptation to all standard amplifiers

FC-9 DSP system controller



DIN EN 60849 (VDE 0828)

Bittner amplifiers



BITTNER
AUDIO

In addition to our special Fohhn® DSP amplifiers, we also offer the complete range of amplifiers manufactured by Bittner Audio for low-ohm or 100 volt applications. Bittner Audio offers solutions such as multichannel amplifiers with eight standard channels and important features for integration in electroacoustic emergency warning systems according to DIN EN 60849 (VDE 0828). Contact us for more information!

Advantages of the FC-9 controller:

Perfect adaptation to all standard amplifiers

Automatic amplifier calibration function and integrated amplifier database for perfect adaptation.

Dual DSP technology

The FC-9 contains 2 separate DSP engines with enormous capacity and processing power for Fohhn specific speaker databases and 5 digital audio devices.

Integrated speaker database

Guarantees excellent sound quality and protection for all Fohhn speaker types.

A sophisticated algorithm developed by Fohhn engineers and adapted to each speaker allows the individual monitoring and adjustment of bass, mid and high ranges.

Remote monitoring and control

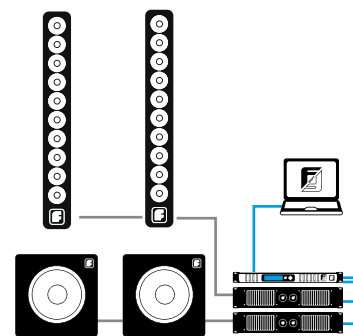
Remote control capability / network compatibility using a laptop, wall installation modules or media control systems.

8 input switching contacts

The FC-9 has 8 input contacts. The inputs can be utilized to switch between the different presets of the FC-9, as well as other Fohhn-Net devices.

4 inputs / 6 outputs (24 nodes)

A programmable 10-band parametric EQ, compressor/ limiter/noise gate, delay, X-over function, top-quality pink noise and sweptone generator are available at each output, allowing you to conveniently adapt the Fohhn system to the room acoustics or your own personal requirements.



2x Sub passive / 2x Top passive
2x standard amplifiers
1x DSP system controller FC-9

Remote control and network ability of Fohhn devices with integrated DSP

FR-10

remote control wall panel designed for the remote operation of Fohhn devices with integrated DSP.



Description

The FR-10 is a wall mount remote control module designed for the remote operation of Fohhn DSP amplifiers, DSP controllers and active Fohhn speakers systems. The FR-10 is extremely easy to operate because the controls are so well arranged. It is virtually impossible for the end customer to make operating errors because the only operating elements are the 8 labelled buttons.

Easy handling

Control up to 32 Fohhn devices individually with this stylish FR-10 wall panel. 8 programmable buttons can be configured to control the overall volume of a system, the volume in different zones or presets for different room effects, for example. The system also has a special function that confirms whether all commands have been executed successfully. The buttons indicate this by changing red or green shortly after they are pressed. For example, if a device is not switched on, the button changes red to indicate that a command could not be executed. This additional monitoring function ultimately contributes to the overall operating reliability of your system. The wall panel is easy to configure using a standard computer with intuitive Fohhn-Net Remote software installed.

Connections

Two terminal strips (paralleled). Alternative connection via standard 4-wire telephone cable.

Applications

The FR-10 is ideal for training rooms, hotels, churches, halls, restaurants or any venue where a simple, efficient system is required to control your audio equipment from a central location.

The FR-10 is also ideal for projects where complex media control systems are not viable or inappropriate, but the user wishes to control the speaker system centrally.

FR-20

19" remote control unit can be controlled via conventional external buttons or switches.



Description

The FR-20 can be controlled via conventional external buttons or switches (e.g. Jung, Vitra, etc.) or switching contacts (e.g. media control system). Buttons and switches may come in the form of a wall installation module or an individually manufactured control panel, for example.

Presets stored in the connected Fohhn DSP devices are activated simultaneously and settings for different scenarios such as speech, music, empty room, full room, etc are loaded when the buttons/switches are pressed. You can also adjust the volume quickly and easily in 1 dB increments using the FR-20. A maximum of 31 Fohhn devices connected to the network can be activated simultaneously at the press of a single button.

Integration in a media control system

The FR-20 allows the convenient integration of all DSP-controlled Fohhn devices into media control systems (e.g. AMX, Crestron) by means of 8 switching contacts or RS-485 interface.

Integration in a EIB bus technology

One building, one concept, one system.

Fohhn systems equipped with a FR-20 distribution switch comply with the „European installation bus technology“ standard, including all operating comforts.

Applications

The FR-20 is ideal for training rooms, hotels, churches, halls, restaurants, clubs, bars and many other venues.

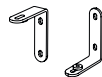
For simple, reliable remote operation of your audio system without having to install complex, expensive media control systems.



Accessories for LX-220

WAL-1

pair of L-brackets for Linea LX-150/150.



WLX-220

Wall bracket for LX-220/500/501



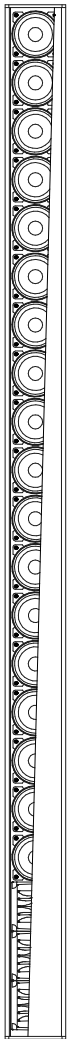
EB-06

Ring stud DIN 580, zinc, for safety M6 thread

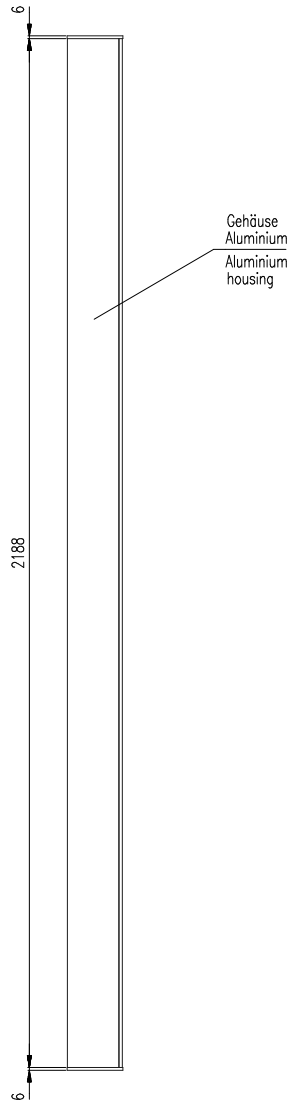


Wall mount

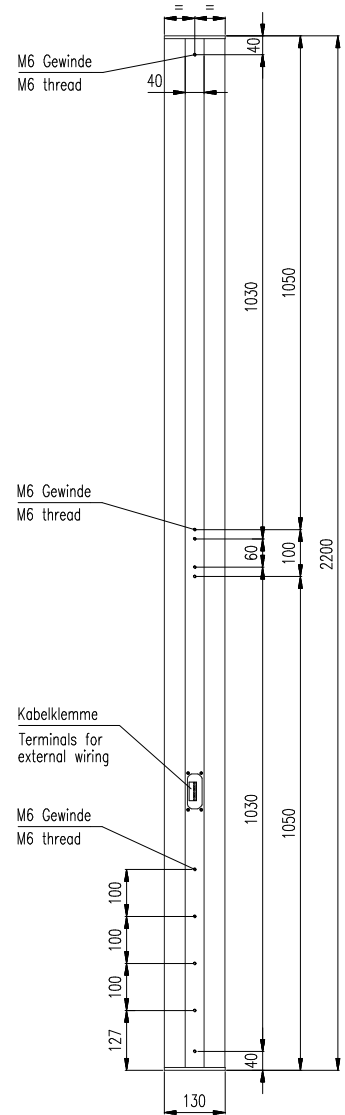
Side view



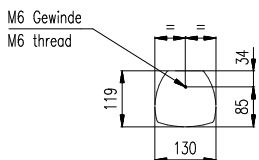
Side view



Rear view



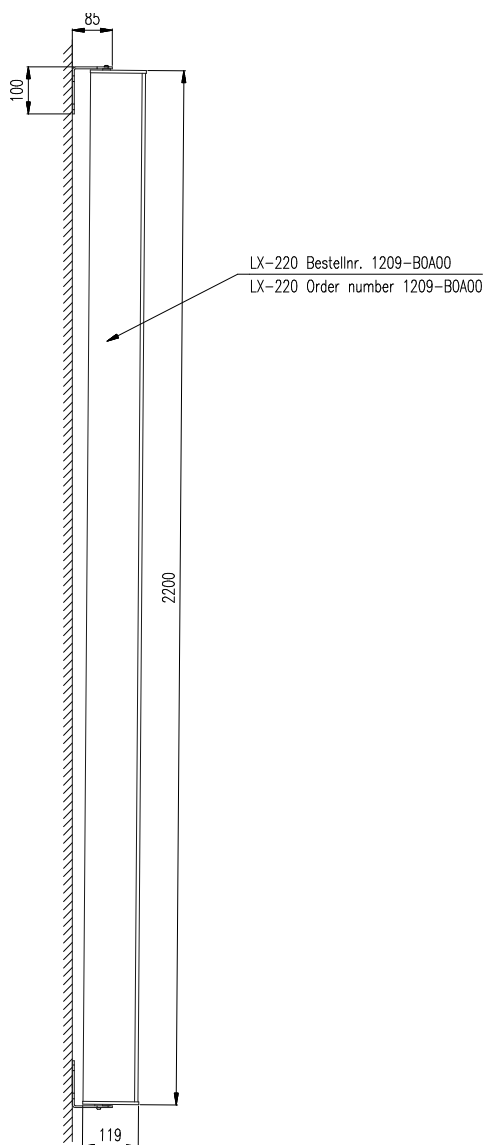
Top View



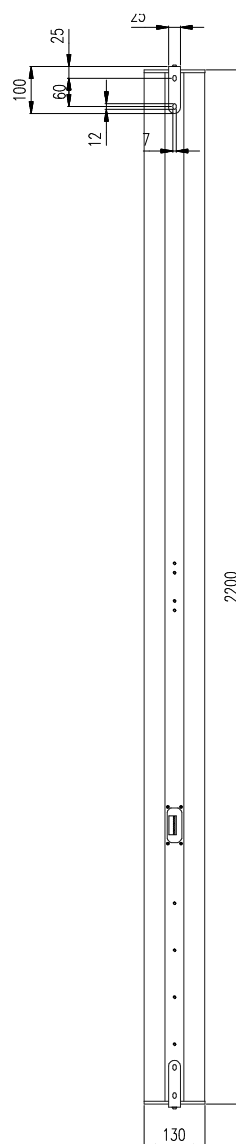
WAL-1

Wall mount

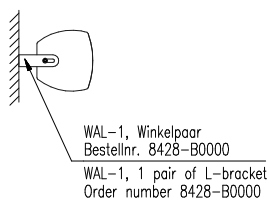
Side view



Rear view



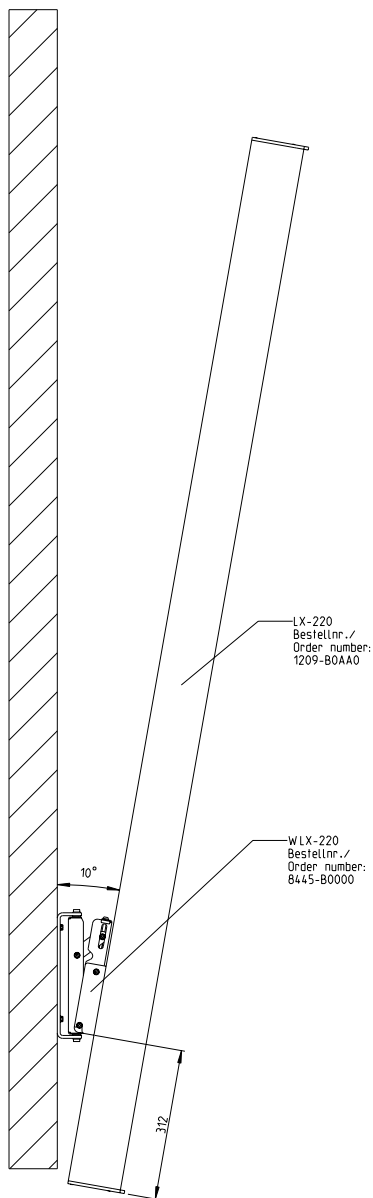
Top View



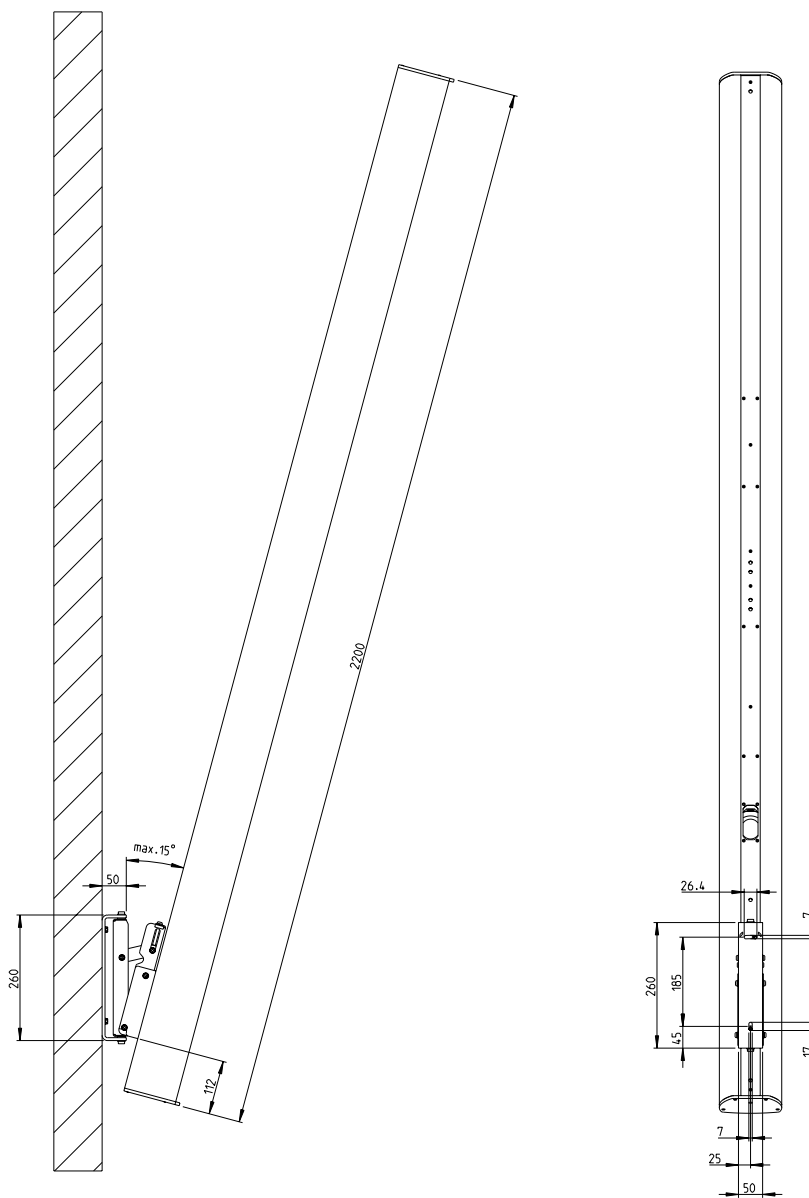
WLX-220

Wall mount

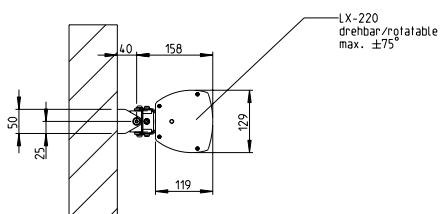
Side view



Rear view



Top View



Tender specifications

Highly resilient 4-way line source speaker system in aluminum enclosure

Highly resilient, passive 4-way line source speaker system in aluminum enclosure, equipped with 18 high quality coated 4" drivers and three 1" drivers on a special horn loaded Waveguide. By using neodym chassis and an aluminum enclosure the speaker only weighs 16 kgs. Perfectly suited for dynamic music transmissions in rooms with demanding acoustics, long reverberation times and challenging architecture. The speaker is temporary able to work under 3600 W and generates acoustic pressure of maximal 131 dB. In a frequency range of 65 Hz to 20 kHz, the speaker has a precise and minimal-phase dispersion of 130° x 15° (h x v). Weatherproof, light aluminum enclosure with rounded sides, black or white powder coating. Optional available in all RAL colours. For the protection of the speaker chassis and the electronics, the enclosure is equipped with a ball impact resistant, extremely sound-permeable front grille, which is made of powder-coated steel and equipped with a moisture- and dust repellent acoustic foam. The premium and complex crossover with an integrated electronic tweeter protection guarantees highest quality and operational reliability. 12 pieces M6 thread applications in ground, upper and rear side are integrated to the admission of system brackets. The loudspeaker system is optionally available with an integrated 100V-transformer up to 60 W. Connections: screw- and pluggable 8-pin Phoenix terminal strip. All contacts exist twice, to connect very easy and safe to the next speaker. Specific brackets to assemble the system on ceilings, walls, traverses and stands are optionally available. Simulation data CAAD for EASE are available.

electro-acoustical features

acoustic design components	weatherproof passive hybrid line source, 4-way 18 x 4" long excursion chassis, laminated, 3 x 1" compression drivers on horn loaded Waveguide with self-regulating IPC – high frequency protection [*], neodymium
power rating (nominal)	900 W
power rating (program)	1800 W
power rating (peak)	3600 W
sensitivity	96 dB
maximum SPL	131 dB
frequency range	65 Hz – 20 kHz
nominal dispersion (h x v)	130° x 15°
nominal impedance	8 ohms

features

enclosure	Aluminium design
protection grille	ball impact resistant metal, powder coating
suspension points	12x M6 thread
connectors	8-pin Phoenix terminal
standard colours	black or white powder coating
front design	metal grille in enclosure colour
dimensions (W x H x D)	130 x 2200 x 120 mm
weight	16 kg

optional features

integrated 100 V-transformer	60/30/15 W
optional colours	all RAL-colours
weather resistance	standard

CAAD simulation data

EASE




Make
Type

Fohhn Audio AG
LX-220

SOUNDS PERFECT. IS PERFECT.

Fohhn audio systems. The ultimate all-round audio experience.



 German quality
 engineered and made
 by Fohhn®

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