HOLOPLOT

HOLOPLOT X2

Modul 30

Data Sheet / Version 1.0.5 en

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HOLOPLOT X2

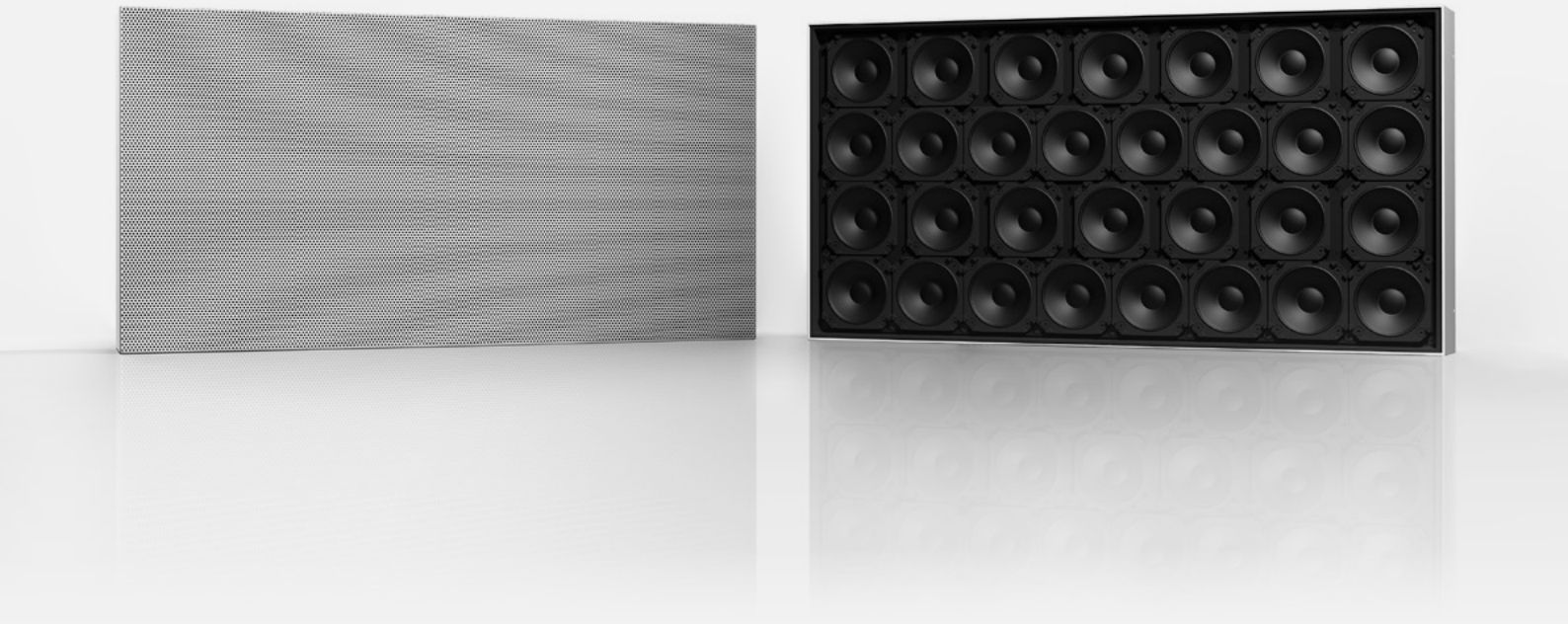
HOLOPLOT X2 is a product series optimized to provide **best speech** reinforcement while also supporting **multi-content** formats in a form factor designed for **unobtrusive architectural integration** - ideal for use in houses of worship, auditoria, corporate events, and as public address & voice alarm systems in train stations and airports.

- Uses 3D Audio-Beamforming to provide **optimal coverage and speech intelligibility (STI)** - even in the most challenging acoustic spaces.
- Scalable and configurable to the application demands thanks to modular hardware and flexible software.
- Compact, lightweight, and available in custom colors.
- Can be discreetly placed behind acoustically transparent screens or wall panels - HOLOPLOT optimization algorithms are able to compensate for the resulting transmission loss.
- Fully weatherized for long-term, reliable outdoor use in harsh environments.
- Supports Audio-over-IP (AES67, RAVENNA, or Dante®) and analog audio inputs.
- Ready for integration in Voice Alarm and Evacuation Systems (DIN VDE 0833-4 / DIN EN 50849 / VDE 0828-1), allowing for deployment in safety-critical applications such as train stations and airports.
- Efficient to install and easy to service by a single person.
- Fully integrates into HOLOPLOT software and IoT landscape.

X2 Modul 30 (MD30)

The X2 Modul 30 is a compact, lightweight, and versatile loudspeaker module with 30x 2.5″ full-range cone drivers in a matrix arrangement, enabling ultimate control over sound in three dimensions.

- Each driver is individually signal processed and amplified through a powerful onboard DSP and integrated electronics.
- Up to 12 simultaneous beams — each with its own audio input channel, equalization, level, shape, and position.
- Can be arrayed horizontally and vertically to create differently sized HOLOPLOT Matrix Arrays. Deployments of MD30 are possible in both landscape and portrait orientation.
- Equipped with redundant PoE++ ports (802.3bt Type 4) - receiving power, audio, and control signal from just one ethernet cable.
- Smart frame system for wall-mounting with integrated cable guides for a clean and efficient installation process and finish.



X2 Modul 30 Data Sheet

CONFIGURATION: SINGLE-LAYER MATRIX ARRANGEMENT	
Full-range drivers	30x 2.5-inch cone driver

MAXIMUM SPL [1]	
at 1 m	130 dB

FREQUENCY RANGE	
Standard (max. SPL [1]: 130 dB)	140 - 18,000 Hz (-3 dB)
	110 - 20,000 Hz (-10 dB)
Low frequency extension mode (max. SPL [1]: 125 dB)	100 - 18,000 Hz (-3 dB)
	80 - 20,000 Hz (-10 dB)

BEAMFORMING CAPABILITIES: [2] HOLOPLOT 3D AUDIO-BEAMFORMING AND WAVE FIELD SYNTHESIS	
Number of 3D sound fields/beams	A single X2 MD30 array can simultaneously reproduce **up to 4 optimized 3D Audio-Beamforming sound fields,** targeting different areas and reproducing the same or different content for each area. The HOLOPLOT Optimization Algorithms ensure uniform coverage and spectral consistency within a zone, while preventing sound from hitting reflective surfaces in the respective architectural surrounding and reducing unwanted sound spill into adjacent areas.
	A X2 MD30 array can in addition reproduce up to **8 parametric beams** simultaneously. Opening and steering angles are user-adjustable (0.1° steps) in both horizontal and vertical plane.
	In total, **up to 12 simultaneous beams** per X2 Matrix Array - each beam **with its own audio input channel**, equalization, level, shape, and position.

[1] Max. SPL capabilities are dependent on beam configuration (incl. the cut-off frequency) and array size, and should be assessed using HOLOPLOT Plan; peak level referred back to 1 m under free field conditions using bandpass filtered pink noise signal with a 12 dB crest factor according to IEC 60268 and an optimized parallel beam configuration

[2] Beamforming capabilities are dependent on the array size and should be assessed using HOLOPLOT Plan

AMPLIFICATION

Type	Digital amplifier
Number of Channels	30 (one per loudspeaker driver)

PROCESSING

Type	High-performance Field Programmable Gate Array (FPGA) computing the HOLOPLOT proprietary digital signal processing algorithms for 3D Audio-Beamforming and Wave Field Synthesis Dual-core ARM® Cortex™-A53 running HOLOPLOT OS, a Linux-based, distributed audio operating system
DSP Channels	30 (one per amplifier channel/loudspeaker driver)

PROTECTION CIRCUITS

	The MD30 is equipped with power-related protection circuits to prevent damage to the loudspeaker module or the power distribution system: • Short circuit protection • Overload protection • Thermal protection (against excessive internal temperatures)

STATUS AND ERROR INDICATION

	• On-device front LEDs for status indication (operating modes and error states) • Detailed monitoring of device state and component health via network • Remote monitoring possible via HOLOPLOT Connected Services • Pilot tone based monitoring of essential device parameters

POWER CONSUMPTION FOR 1 MD30[4]

Standby	5W (Green Power Standby Mode)
Idle	18 W
Max. Power	IEEE standard 802.3bt Type 4
	1x PoE++: 90 W 2x PoE++: 180 W

CONNECTIVITY

Ethernet for Audio / Control / Power	2x Cat 6A (RJ45) - primary & secondary [3]
	Power: PoE++ (802.3bt Type 4)
	Audio-over-IP: AES67, RAVENNA (optional: Dante®)
	Control: HOLOPLOT Control Network, OCA/AES70
Analog Audio	2x 3-pin Phoenix Connector - input & through primary
	2x 3-pin Phoenix Connector - input & through secondary
	Input impedance: >20 kOhm balanced differential
Fault Relay	2x 3-pin Phoenix Connector - input & through - dry contact offering both open or short to indicate fault/lack of power

PHYSICAL CHARACTERISTICS

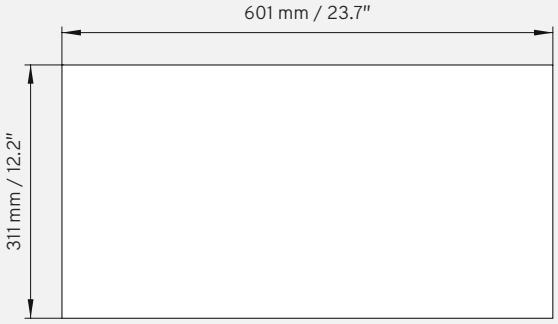
Dimensions (w x h x d)	601 mm x 311 mm x 140 mm / 23.7″ x 12.2″ x 5.5″
Weight	Module: 15.6 kg / 34.4 lbs Wall-mount frame and grille: 7.3 kg / 16.1 lbs
Color	Standard: Black (RAL 9005) or White (RAL 9003)
	Optional: Custom colors (RAL classics, NCS, and Pantone)
Mounting	• Module frame has mounting points for direct wall-mounting. • Module frame is used for arraying and includes a system for cable management within an array.
Other	• Resistant to shock and vibration

ENVIRONMENTAL CONDITIONS

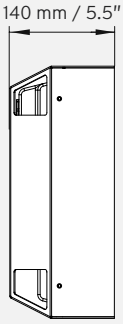
	Ingress Protection	Temperature (Ambient)	Humidity
Transport / Storage	n.a.	-40°C to +70 °C / -40 °F to +158 °F	to 95% at +70° C
Operating	up to IP55 (EN 60529)	-25 °C to +60 °C / -13 °C to +140 °F (no direct sun exposure)	to 95% at +60° C (non-condensing)

[3] The use of the secondary port is optional, providing redundant communication and power, and also increasing the continuous power capacity

MECHANICAL DETAILS
MD30 in wall-mount frame



FRONT



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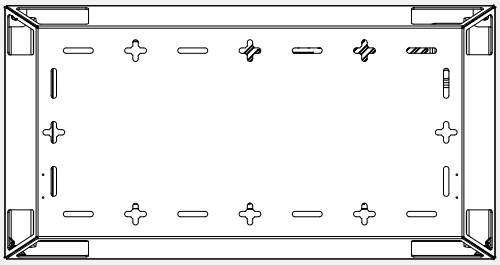
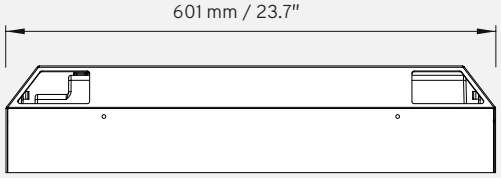


BACK



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