XPR15/24-48

EXPLOSION-PROOF AMPLIFIED LOUDSPEAKER AUTOMATICALLY CONTROLLED BY AMBIENT NOISE
ATEX Ex d IIC T6 II 2GD IP66

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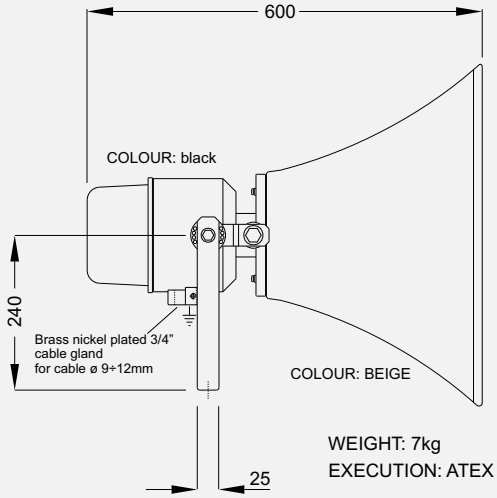
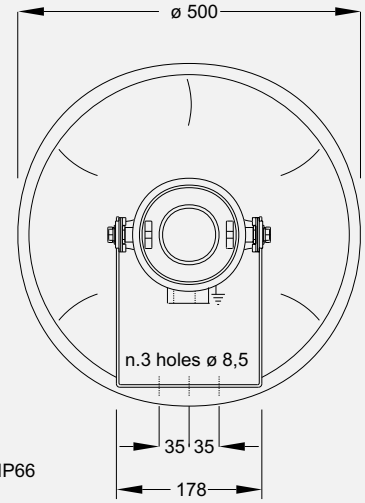
- **Maximum Power 25W**
- **Automatic variation of the output power up to a maximum power of 25W as a function of background noise.**
- **Protection - ATEX Ex d IIC T6 II 2GD IP66**

The explosion proof horn loudspeaker XPR15/24-48 made of die cast aluminium is certified in accordance with ATEX standard and has an IP rating of 65 according to the standard IEC529.
It contains internally a power amplifier and a noise detector that memorises the background noise level.
During the transmission of signals the acoustic transducer, that is the electromechanical unit, functions as a speaker, while in the absence of signals, functions as a microphone and transmits the environments noise signals to the detection and memorisation circuit.
Dip switches are arranged for adjusting the volume levels and are accessible by unscrewing the rear end.
At every dip switch setting there is a corresponding value of the output power in the absence of background noise (Pno) that varies from 5mW to 2.5W.
An increase in the background noise results in a parallel increase in the output power.
This takes place automatically, starting from the value Pno, on the basis of the level of background noise detected and memorised during the break between signals.
This exposition is illustrated in figure 1 and the values assume a case of background noise emission consisting of gaussian white noise.
The gradient of the curve may be changed by specifying the noise gain of the amplifier by the use of a dip switch with a variation of 7.5dB.
The amplifier is placed in an explosion proof housing which also has weatherproof protection (IP65) and is suitable for outdoor use.
The magnetodynamic unit permits an excellent frequency response (in the range 350Hz to 10.000Hz) and an operating power of 25W.
The horn is equipped with fixing brackets and a hindrance device that avoids changes in the chosen inclination in cases of impacts or vibrations.
The power amplifier, utilizing special components chosen to support high temperatures, is placed internally the loudspeaker at the back.
This circuit is patent protected.
The amplifier is equipped with protection against transients in both the power supply and the audio inputs.

The audio inputs are of a high impedance balanced differential type with galvanic separation having a transformer between the line and the actual amplifier.
Moreover all the electrical parts (inputs, outputs and power supply) are insulated from the external metallic parts. Unscrewing the rear end dip switches for volume regulation are accessible.
An active filter with a tuned band in function of the volume blocks high level values that would otherwise damage the mobile equipment due to the presence of low frequencies at high energy.
Instead at low values the band is broadened thus permitting an excellent sound quality reproduction, especially in a medium dimension ambient.
The amplifier is made of a circuit that helps to avoid transients on the speaker when it is switched on or off.
Furthermore there is a total thermal protection with an automatically timed reconnection circuit and a protection for the internal circuits utilising a blade type rapid fuse.





WEIGHT: 7kg
EXECUTION: ATEX Ex d IIC T6 II 2GD IP66

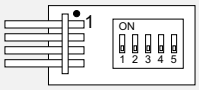
AMPLIFIER ELECTRICAL SPECIFICATIONS

Amplifier class .....D
Range of the rated power supply .....from 24 to 48Vdc
Operating limits .....from 24V-15% to 48V +20% (20,8 to 57,6Vdc)
Consumption .....quiescence, Vpower = 24V .....⩽55mA
quiescence, Vpower = 48V.....⩽30mA
at rated power, Vpower = 24V .....⩽1,4A
at rated power, Vpower = 48V .....⩽0,7A
Nominal sensitivity .....0dB (0,775Vrms) ± 0,2dB
Nominal input impedance .....⩾10kohm
Signal to noise ratio.....⩾80dB
Bandwidth .....at rated power, -1dB .....400Hz to ⩾10kHz
at rated power, -3dB .....300Hz to ⩾10kHz
Rated output Power, rms, continous (f = 300 to 10kHz) 25W
Maximum distortion at rated power and band
with Vpower = 24V .....⩽1,95%
with Vpower = 48V .....⩽1,4%
Climatic operating conditions in range of nominal voltages
(continous sinusoidal mode, Pmax).....- 40°C to + 60°C
Protection against differential mode impulses
in the power supply and signal inputs .....2kV - 1,2/50µs

ACOUSTIC TRANSDUCER SPECIFICATIONS

Operating Power 25W
Maximum Power.....40W
Impedance at 1kHz.....8ohm
Frequency response and amplitude .....(see figure 2)
Polar radiation diagrams.....(see figure 3)
Acoustic pressure at 1 m - maximum Power .....⩾112dBA
Dielectric rigidity between the
mobile coil and the external metallic parts.....1kVrms
International Protection rating IP66
Degree of Explosion proof protection ....ATEX Ex d IIC T6 II 2GD IP66

Dip-switch for regulation of power output



Regulation of the noise gain of the amplfier

SW1	SW2	relative gain
OFF	OFF	0 (default)
ON	OFF	+3dB
OFF	ON	+6dB
ON	ON	+7,5dB

Regulation of the minimum power in the absence of noise

SW3	SW4	SW5	output power
OFF	OFF	OFF	25W
ON	OFF	OFF	2,5W
OFF	ON	OFF	1,25W
ON	ON	OFF	630mW
OFF	OFF	ON	310mW
ON	OFF	ON	80mW
OFF	ON	ON	20mW
ON	ON	ON	5mW

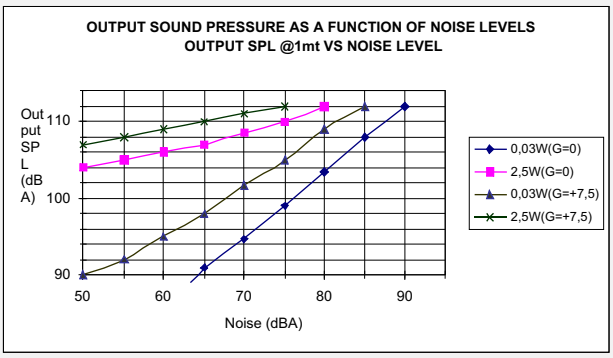
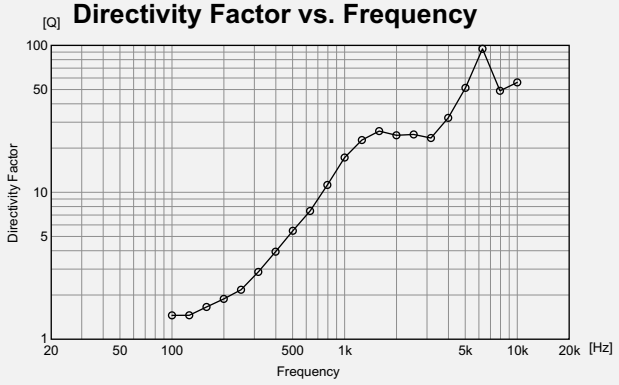


figure 1
ADAPTATION CURVES OF THE ACOUSTIC PRESSURE WITH VARIATION OF BACKGROUND NOISE
presentation of the step in curves for two levels of power in the absence of noise (0,03W e 2,5W) and with two adjustments in the noise gain of the amplifier (default 0dB or maximum +7,5dB)

Directivity Factor vs. Frequency



Frequency Response (@1m)

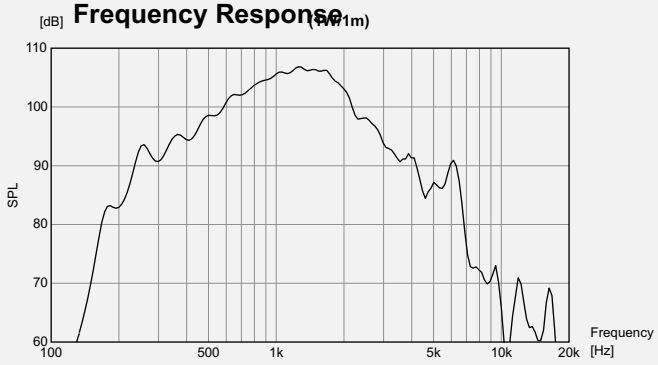


figure 2

Polar Response

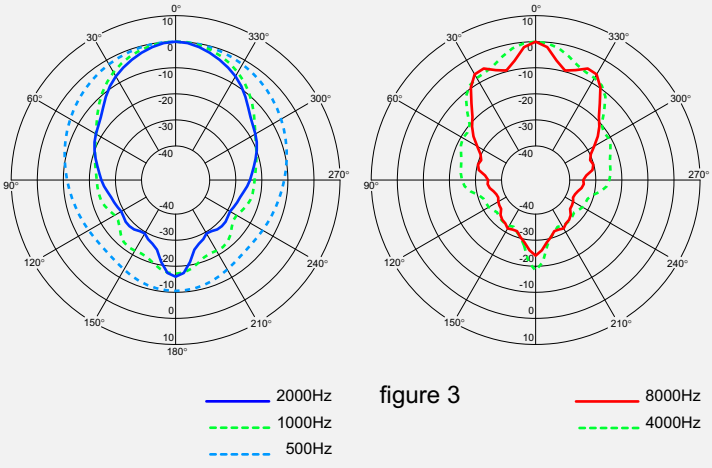
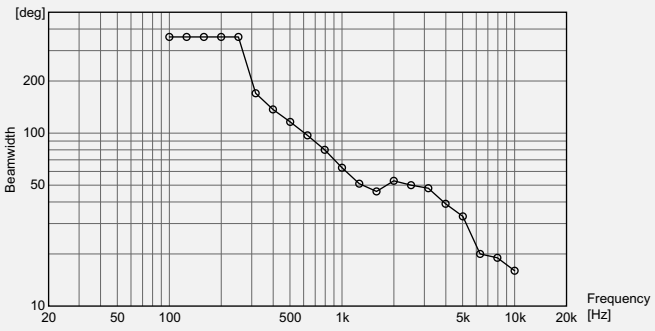


figure 3

Beamwidth vs. Frequency

(-6dB down point)



Description	Type	Code
Explosionproof amplified self-regulated loudspeaker	XPR15/24-48	7327431