

XA88 Audio Induction Loop Driver

The XA88 is a specialist Audio Induction Loop driver designed for use on rail and other transport vehicles. The unit is designed for the OEM and vehicle engineering customer, to be integrated into public address and passenger communication systems on board the vehicle. It is backed by Ampetronic's 5-year warranty and experienced specialist technical support.

The unit has two balanced transformer-isolated inputs (for connection to line-level sources or intercom/PA speaker systems), and provides superior sound quality with metal loss frequency response correction. The XA88 meets EMC and environmental standards for use on rail and automotive vehicles. With power supply options to suit many common rail and commercial vehicle power systems, and remote enable interfaces for more complex applications, it is the obvious choice for any quality on-board audio system that requires an Audio Induction Loop.

N.B. The XA88 rail and transport solution requires a detailed application review by Ampetronic to ensure compatibility with vehicle design for optimum operation.

• Features

- **Area coverage (no metal) >300m²**
- **Area coverage (metal vehicles) 25m²-100m²**
Depending upon metal & loop location
- **Low lifetime cost**
Excellent reliability
5 year warranty
- **Simple integration**
- **Power supply options**
Common transport supplies:
24VDC, 72VDC, 110VDC, others possible
- **2 transformer isolated inputs**
for direct intercom or PA line connection
or 0dBu line input
- **Metal loss correction**
Variable up to 4dB / octave
- **Unrivalled intelligibility**
- **Free remote technical support**

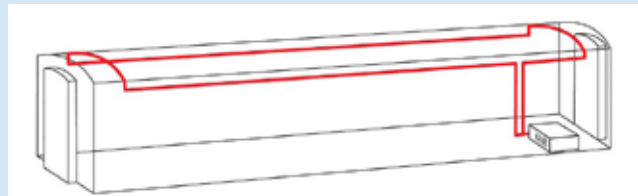
Applications include

- **Metro Systems**
- **National and Regional Railways**
- **Trams & Light Rail (LRVs)**
- **Buses & Coaches**



Typical Loop Installation

In a rail vehicle or bus, the floor, walls, and roof are all usually metal. To keep away from metal sheets near the plane of the loop (and thereby minimise loss of energy), it is most common to place the loop around the upper part of the wall, typically 1.8m to 2m above floor level. This is usually some 300mm below the roof height. The best location will depend on the exact vehicle design.



Metal Loss

Most transport vehicles have metal construction - the bodyshell is usually metal panels with frames and structural supports. Although the interior may use non-metal panels, an induction loop installed inside such a vehicle will experience significant loss of energy and changed frequency response.

The XA88 has sufficient loop drive capacity to overcome the loss of loop signal in most cases. The unit's metal loss compensation will correct the frequency response up to 4dB/octave slope.

System Testing

Each vehicle design has a different metal construction, and so the metal loss will be different. The only reliable way to determine the metal loss - which determines the loop current - is to measure the performance of a trial loop installation in the same or a very similar design of vehicle.

Ampetronic can provide site survey services to help you conduct a trial installation and effectively measure the proposed system's performance. We can also provide a package of project services, carrying out commissioning or troubleshooting as required. Measurement instruments are available to help you or your customer to regularly test the installed loop's performance.

XA88 Product Information

Power Options

XA88-24DC

Nominal voltage	24V DC
Voltage range	14.4 - 33.6V DC
Coupling	Direct - no power converter
Overcurrent Protection	Internal replaceable fuse, T 4A L
Power Consumption	61W (2.54 A) continuous audio 6W (0.25 A) quiescent 150W (6.25 A) short-term peak (at full 1kHz sine output)

XA88-72DC

Nominal voltage	72V DC
Voltage range	43 - 108V DC
Coupling	Isolated - uses power converter
Overcurrent Protection	Current foldback in power converter & non-replaceable 7A fuse in converter
Power Consumption	70W (0.97 A) continuous audio 10W (0.14 A) quiescent 150W (2.08 A) short-term peak (at full 1kHz sine output)

XA88-110DC

Nominal voltage:	110V DC
Voltage range:	65 - 150V DC
Coupling:	Isolated - uses power converter
Overcurrent Protection:	Current foldback in power converter & non-replaceable 5A fuse in converter
Power Consumption:	70W (0.64 A) continuous audio 10W (0.09 A) quiescent 150W (1.36 A) short-term peak (at full 1kHz sine output)

Input Details

Input 1	Low level	High Level
Input Impedance:	3.6k Ω	120k Ω
Sensitivity:	-16dBu (130mV rms)	+15dBu (4.2V rms)
Overload:	> +19dBu (7.3V rms)	> +49dBu (236V rms)

Input 2	Low level	High Level
Input Impedance:	3.6k Ω	36k Ω
Sensitivity:	-16dBu (130mV rms)	+4dBu (1.3V rms)
Overload:	> +19dBu (7.3V rms)	> +39dBu (73V rms)

Input 3 Optional - not normally fitted.
Details to customer requirement.

Connectors

The XA88 uses MIL-C-5015 connectors for proven reliability.

CON 1	Signal Inputs	10-pin	18-1 insert
CON 2	Enable & Status	6-pin	14S-6 insert
CON 3	Power in & Loop out	4-pin	14S-2 insert

Chassis connectors on the unit are pins in a male shell.

Standards Compliance

Rail:

The XA88 is compliant with rail standard BS EN 50155:2007 and associated standards including BS EN 50121-3-2 (EMC) and EN 61373:2010 (shock and vibration). In addition, the XA88 is compliant with EN 45545-2:2013 (Smoke and Fire behaviour) to HL3.

Automotive:

The 24V variant of the XA88 is compliant with automotive regulation EN/ECE R10 encompassing the requirements of EN 50498:2010.

Loop Performance

The XA88 will enable an Audio Frequency Induction Loop system that meets the requirements of EN 60118-4:2006 to be created, if the system is specified, installed and commissioned in an appropriate manner, including observing Ampetronic instructions.

Accessories

Mounting Bracket or Tray

A mounting can be supplied for the XA88 in your project, subject to agreement of a suitable design. Previous projects have used a rack tray or an asymmetric bracket arrangement to match the available mounting space.

Connectors

Mating MIL-C-5015 style connectors can be supplied as an optional part. Please contact us to discuss accessories if required.

INPUTS

Power Supply	Options for 24V, 72V or 110V DC (other voltages possible) - see details on left
Indication:	LED on front panel
Connector:	MIL-C-5015 (2 pins of CON3)
Safety Ground	M6 chassis stud (nut & star washer supplied)
Signal Inputs	Quantity: 2 (3 to special order - ask for details) Typical Source: Intercom / PA line - see details on left for levels
Format:	Balanced, transformer isolated 1500V
Level selection:	In connector, by alternate pin choice
Adjustment:	Front Panel control, per channel
Connector:	MIL-C-5015 (10 pins, CON1)
Enable Inputs	Quantity: one per input Format: Opto-isolated 1500V from internal circuits (enables have common external reference)
Level:	5-24V DC enables relevant input.
Input load:	3.4mA@5V, 16mA@24VDC
Connector:	MIL-C-5015 (4 pins of CON2)
Indication:	LED per channel on front panel

OUTPUTS

Loop Output	Class A/B BTL, includes configurable output transformer. Values shown at 1.67:1 ratio
Voltage:	7.1Vrms (11Vpk) at max. drive current
Current (max):	> 11Arms (15.5Apk) with 1kHz sine
Current (short term):	21Apk absolute max
Current Adjustment:	Front panel control
Current Indication:	LED on front panel
Connector:	MIL-C-5015 (2 pins of CON3)
Loop Impedance	Up to 0.49 Ω reactive at 1.6kHz, with transformer ratio 1.67:1
Monitor/Status	Isolated contact, closed when power present & no fault
Isolation:	1000V AC 50/60Hz
Contact rating:	1.25A 24V DC or 0.4A 125V AC
Connector:	MIL-C-5015 (2 pins of CON2)
Protection	Thermal: Heatsink 90 to 125°C: output reduces by up to 3dB Heatsink >125°C: output muted. Amp Fault LED Illuminated *
Output DC Offset:	Isolates output if $\geq \pm 0.7$ Amp - Fault LED Illuminated *
Output clipping:	If continuous, Loop Fault LED illuminated *
Status relay:	Contact opens when any item marked * is detected or power fails.

AUDIO SPECIFICATION

Freq. Response	100Hz to 5kHz ± 1.5 dB relative to 1kHz at -12dB re: max output, measured as loop current with no metal loss correction.
Compression	Response optimised for speech Dynamic range: >30dB input, ± 1 dB output over input range Control: By adjusting input level/gain Indication: LED on front panel Attack / Decay: 7ms / >1s
Metal Loss	0dB to 4dB / octave boost Adjusted on front panel control

PHYSICAL

Dimensions	Width 251mm, depth 320mm, height 89mm excluding connectors
Weight	5kg
Construction	Aluminium, powder coated. IP43 when mounted correctly, IP65 option available. <95% relative humidity, -40°C to +70°C (EN50155 TX) Installed unit should be mounted where the heat of normal operation can be dissipated by airflow through the rear heatsink.

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