

## C Series DSP Perimeter and MultiLoop™ Drivers

The C Series hearing loop drivers from Ampetronic mark a substantial development in hearing loop technology for assistive listening. Compact, elegant, and sturdy, C Series units, the most versatile and powerful solutions available in their class, feature digital signal processing and networking functionality. Dante options are available with a dedicated input for network audio.

Seven class 'D' drivers (four dual output and three single output models) make up the C Series; offering a significant increase in energy efficiency over existing solutions in a similar price range.

The drivers feature a simple digital user interface, enabling accurate adjustment and providing clear indicators, system diagnostics and built-in test tones. C Series drivers are fully networkable with a Wi-Fi accessible standard browser based control panel, for remote set-up, monitoring and email alerts, and with Loopworks Measure LoopLink for easy test and commissioning.

The range goes from 5 to 14 Amps RMS current and 20 to 48 Volts RMS per output with the C14-2 providing the most powerful loop driver on the market. This makes them suitable for a wide range of applications and room sizes. Installation can be performed with total confidence; unique, multi-stage filtering ensures compatibility with other systems and global EMC regulations. The C Series also boasts dual slope Metal Loss Control that caters for a wide range of metal loss frequency characteristics (network versions only).



### Features

- Simple digital interface enabling accurate adjustment
- Single or dual output options. Dual outputs featuring accurate and stable 90° phase shift
- Highly energy efficient Class-D amplifiers with low heat dissipation providing low running and maintenance costs
- Networking with browser interface for remote reporting, adjustment, active status monitoring and remote fault reporting via email, SNMP or Telnet
- Built-in test tones
- Compatible with the Loopworks Measure LoopLink app for direct and automated driver control
- AGC and dual slope configurable MLC (including HF boost option for un-even loss scenarios)
- Up to 3,200m<sup>2</sup> area coverage
- Compact 1U rack mount unit with internal transformer for simple rack installation
- Optimised for speech frequencies with unmatched intelligibility and capable of high quality musical reproduction
- Dante option with AES67
- 100V line input
- Industry standard Phoenix connectors
- Data compliant with IEC 62489-1 Standard

### Applications include

- Lecture Theatres and Conference facilities
- Stadia, Sports Halls, Cinemas and Theatres
- Courtrooms, Airports and Railway Stations

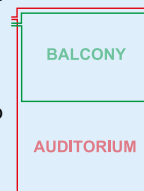
### MultiLoop™ System Design Configurations

MultiLoop Drivers can be used for different types of loop layout. You will need a MultiLoop system design for the loop layout which you can obtain from Ampetronic, or produce your own using Loopworks™ Design.

#### Perimeter MultiLoops

Two channels drive single area loops either side by side or overlaid.

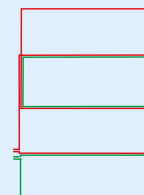
Suitable for applications where there is no metal in the buildings construction, or in areas of moderate metal up to a maximum loop width of 5 meters.



#### Simple (non-overlap) MultiLoops™

A simplified layout which uses less cable than a Loss Control or Low Spill MultiLoop™, however, this is at the expense of evenness of coverage.

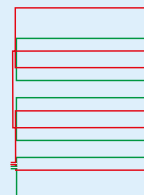
Particularly useful where a concrete floor is being slotted for the loop cable.



#### Loss Control MultiLoops™

Multiple loop segments in two patterns each driven by one output channel.

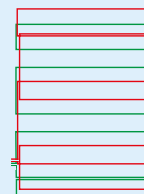
Best for optimal evenness of coverage across any area. Suitable for large areas and buildings with metal construction.



#### Low Spill MultiLoops™

Suitable for applications where loops are close together or where confidentiality is an issue. Low Spill MultiLoops™ require careful and precise design.

Similar in design to a Loss Control MultiLoop™ but with a more complex pattern that requires more cable.



# C Series Product Information and Specifications

## INPUTS

<b>Input 1 and 2</b>	3 way 3.5mm euroblock screw terminal input (supplied) with a balanced microphone and line level operation, selectable via rear panel switch. Switchable 250Hz low cut filter. Priority input option (network models only). Input impedance 8700Ohms.
<b>Microphone / Line</b>	Microphone specification; 200 - 600Ω, sensitivity -67dBu. Selectable 24V phantom power on microphone only. Line sensitivity -42dBu. Max line level 17Bu. Max mic level -8dBu.
<b>100V Line (Input 2 only)</b>	2 way 5mm euroblock screw terminal (supplied). Input impedance 121kOhms. Sensitivity +7dBu.
<b>Dante (Optional - Input 3)</b>	RJ45 Ethernet input (100MB/s), AES67 compliant. 2x channels mono summed. Supports 44.1 kHz or 48 kHz sample rates.
<b>Network (Optional C5/C7)</b>	RJ45 Ethernet, control and monitoring. Hosted web server, Telnet & SNMP.

## OUTPUTS

<b>Loop Connectors</b>	4 way 5mm euroblock screw terminal (supplied) for each output, for twisted pair or star-quad configured feed cables
<b>DC Output*</b>	2 way 3.5mm euroblock screw terminal (supplied). Re-settable, fuse protected 12V 0.1A. Controllable to reflect amplifier status (network models only)
<b>Status Relay (C10 and C14)</b>	2 way 3.5mm euroblock screw terminal (supplied). Normally closed isolated relay contacts, open in fault conditions. Rated load 0.5A at 125VAC, 2A at 30VDC.
<b>Line Output</b>	3 way 3.5mm euroblock screw terminal (supplied) post AGC balanced output
<b>USB*</b>	Firmware updates or power for wireless router (200mA max).

\*Note powering an external device via DC out or USB may reduce power headroom available for the loop. DC Output and USB power should not be used simultaneously.

## AUDIO SYSTEM

<b>Frequency Response</b>	80Hz to 6.5kHz
<b>Distortion</b>	THD+N <0.3% 1kHz sine at full current
<b>Automatic Gain Control</b>	The AGC is optimised for speech. Dynamic range >36dB
<b>Metal Loss Correction</b>	Corrects system frequency response issues due to metal structures in a building. Gain constant at 1kHz, adjustable gain slope from 0 to 4dB per octave in 0.25dB increments. Custom dual slope MLC allows different slopes and knee frequency to be set via the menu (network models only). This does not compensate for signal loss from metal structures which can be significant.
<b>Phase Shift</b>	User selectable (network models only) at 0° or 90° between outputs

## ADDITIONAL FUNCTIONS

<b>Status</b>	Tri-colour LED: Solid Green = normal operation Flashing Green = sleep mode Flashing Amber = standby Flashing Red = error Fast Flashing Amber = firmware update
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## PHYSICAL

<b>Size</b>	Full width 1U 19" rack mount. Width 430mm Depth 190mm Height 44mm Depth inc. knob 190mm (C5/C7) 305mm (C10/C14)
<b>Mounting Options</b>	Freestanding 1U 19" rack mount (brackets fitted as standard) Wall mounted, brackets available separately
<b>Environment</b>	IP20 rated; 20 to 90% relative humidity; 0 to 35°C
<b>Cooling</b>	C5/C7 Passive. C10/14 variable speed fan, front inlet rear exhaust.

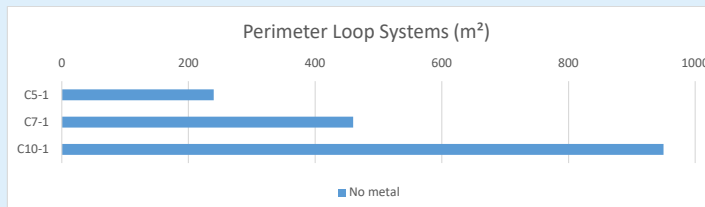
Model	Current	Voltage	Power Consumption	Weight
Suffix N for network Suffix D for network + Dante	Sine up to 60s continuous Pink noise continuous	At maximum output current per channel	230V / 120V nominal 45-65Hz	
<b>C5-1</b>	5A <sub>RMS</sub> (7.1 Apk) 1kHz sine	20V <sub>RMS</sub> (28.3Vpk)	35W	2.5kg
<b>C5-2</b>	2.4A <sub>RMS</sub> pink		55W	2.8kg
<b>C7-1</b>	7A <sub>RMS</sub> (9.9 Apk) 1kHz sine		55W	2.8kg
<b>C7-2</b>	3.3A <sub>RMS</sub> pink		95W	3.1kg
<b>C10-1</b>	10A <sub>RMS</sub> (14.1 Apk) 1kHz sine	33.9V <sub>RMS</sub> (48Vpk)	70W (mains voltage switchable)	4.2kg
<b>C10-2</b>	4.7A <sub>RMS</sub> pink		120W (mains voltage switchable)	5.2kg
<b>C14-2</b>	14A <sub>RMS</sub> (19.8 Apk) 1kHz sine 6.6A <sub>RMS</sub> pink	48.1V <sub>RMS</sub> (68Vpk)	180W (mains voltage switchable)	6.7kg

## Standards compliance

These products are designed to form part of a system that can meet all requirements of the international loop performance standard IEC60118-4, and the relevant parts of IEC TR 63079. To fully meet requirements of these standards, correct design, installation, commissioning and maintenance are required.

All data has been compiled in accordance with IEC62489-1, the international reporting standard for audio frequency induction loop equipment. Specifications should only be compared if compliant to this standard. Drivers are marked with UKCA, CE mark & Regulatory Compliance Mark (RCM) to comply with RED to all relevant safety and EMC standards plus MET Labs safety approved & demonstrated to comply with FCC part 15 for sale in North America.

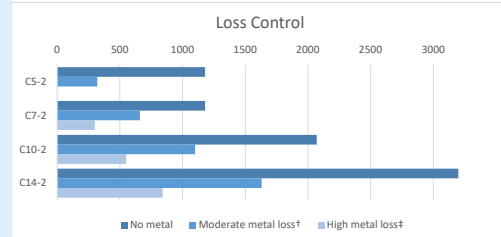
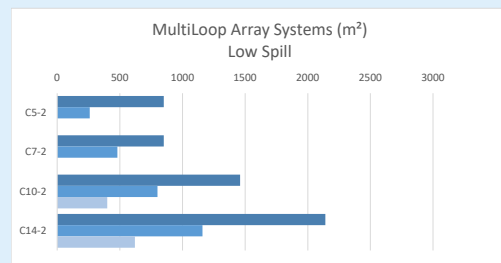
## Indicative C Series Max Area Coverage Scenarios



Note: Dual channel drivers can be used to power two perimeter loops each up to this size, with the same input audio signal provided to both. Perimeter loops can be used in small rooms with moderate metal loss, but if possible should be tested on site to confirm performance. Moderate metal loss e.g. Concrete with moderate metal reinforcement (~-5dB). High metal loss e.g. Metal system floor (~-9dB).

All calculations based on square rooms, perimeter coverage will be greater in long, narrow areas. Perimeter loop systems modelled as single-turn loops using 2.5mm<sup>2</sup> single wire, installed at height where required (essential in larger rooms). Multiloop systems modelled as floor-level installations using 3.0mm<sup>2</sup> Flat Copper Tape, with a suitable gap to wall.

These figures are a guideline only and should not be used to specify a system. For an accurate simulation of a system requirements register for Loopworks Design or contact Ampetronic or your local distributor for advice.



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