

# AMP 200N1

## LOW FREQUENCY SIGNAL SOURCE DC (0HZ) TO 250KHZ, 800W



### FOR TESTS ACCORDING TO ...

- > Chrysler CS-11809 (2009)
- > Chrysler CS-11979
- > Chrysler DC-11224 Rev.A
- > DaimlerChrysler DC-10614
- > DaimlerChrysler DC-10615
- > DaimlerChrysler DC-11224
- > Fiat 9.90110
- > Ford EMC-CS-2009.1
- > Ford ES-XW7T-1A278-AC
- > GLloyd VI-7-2
- > GMW 3097 (2006)
- > GMW 3172
- > ISO 11452-10
- > ISO 11452-8
- > EMC-CS-2010JLR V1.1 (2011-01)
- > MAN 3285
- > MBN 10284-2
- > Nissan 28400 NDS 02
- > PSA B21 7110 Rev.C, Ad. 2010-05
- > Renault 36.00.808/--G
- > Renault 36.00.808/--H
- > ...

### AMP 200N1 - LOW-FREQUENCY SIGNAL SOURCE FOR SUPPLY SIMULATION AND MAGNETIC FIELD TESTING


The AMP 200N1 has been designed as a low-frequency signal source to generate sinusoidal signals used to simulate ripple noise and ground shift noise as required by a variety of standards in the avionics, military and automotive industry.

The AMP 200N1 is controlled by either the NetWave (for testing avionics, military and nautic standard requirements, e.g German Lloyd VI-7-2) the AutoWave for automotive testing such as e.g. Ford EMC-CS-2009.1. Additionally, the AMP 200N1 can be used to generate magnetic fields by means of a radiation loop or small Helmholtz coils as per various standards.

### HIGHLIGHTS

- > **Built-in DDS to generate sinusoidal signals up to 250kHz**
- > **Built-in LF amplifier, 800W**
- > **Output voltage max. 140V p-p, 50V rms**
- > **Output current max. 16A rms**
- > **Supports German Lloyd VI-7-2**
- > **Supports magnetic field tests**
- > **Short-circuit protected**

### APPLICATION AREAS

-  AUTOMOTIVE
-  MILITARY
-  AVIONICS

**TECHNICAL DETAILS**

**TECHNICAL DATA**

AMPLIFIER OUTPUT CHARACTERISTICS	
Frequency range	DC - 250kHz
Signal power	800W (nominal)
Output voltage	50Vrms, 140V(p-p), max. 200kHz 45Vrms, 200kHz - 250kHz
Output current	Max. 16Arms (voltage low-range 25V) Max. 8Arms (voltage high-range 50V)
Total Harmonic Distortion (THD)	< 0.1%
Protection	- Short circuit - Overtemperature

SIGNAL GENERATOR OUTPUT CHARACTERISTIC (BUILT-IN)	
Frequency range	DC, 10Hz - 250kHz (sinusoidal)
Output voltage	+/-10V
DC offset	0-10V, programmable, to control external DC amplifier

**STANDARD TESTS SUPPORTED WITH THE NETWAVE-SERIES**

STANDARD TESTS AS PER MIL STD 461 E/F/G	
CS 101	Voltage ripple AC/DC, 30Hz - 150kHz
CS 109	Structure current, 60Hz - 100kHz
RS 101	H-Field (Army, Navy), 30Hz - 100kHz
Level control	Closed Loop / Calculation method
Frequency steps	As specified by the test plan

STANDARD TESTS AS PER RCTA DO-160 E/F/G (SECT. 18)	
Cat. R/K	AC (5V - 170V), 700Hz - 32kHz
Cat. R/B/Z	DC (14V/28V/270V), 10Hz - 150kHz
Level control	Closed Loop
Frequency steps	As specified by the test plan

STANDARD TESTS AS PER ABD0100.1.2 G, CONDUCTED IMMUNITY	
Cat. R/K	AC (5V - 110V), 700Hz - 32kHz
Cat. R/B/Z	DC (14V/28V/270V), 10Hz - 150kHz
Level control	Closed Loop
Frequency steps	As specified by the test plan

STANDARD TESTS AS PER ABD0100.1.8 E, CHAPT. 16, RIPPLE VOLTAGE	
Level control	Closed Loop
Frequency range	10Hz - 150kHz
Frequency steps	As specified by the test plan
Test levels	0.004Vpp - 4.0Vpp

STANDARD TESTS AS PER ABD0100.1.8.1, RIPPLE VOLTAGE	
Level control	Closed Loop
Frequency range	10Hz - 150kHz
Frequency steps	As specified by the test plan
Test levels	0.6Vpp - 4.0Vpp

STANDARD TESTS AS PER ABD0100.1.8.1, VOLTAGE DISTORTION	
Tests AC	SVF 107/303, SCF 107, SVFH 107
Tests DC	LDC 103
Level control	Closed loop
Frequency range	10Hz - 150kHz

STANDARD TESTS AS PER MIL-STD-704 A/B/C/D/E/F	
Tests AC	SAC 106, SVF 106, SXF 106
Tests DC	LDC 103/104, HDC 103/104
Level control	Substitution method
Frequency range	10Hz - 150kHz

STANDARD TESTS AS PER GERMAN LLOYD VI-7-2, CONDUCTED IMMUNITY	
Test AC	Table 3.30 (up to 230V), 100Hz - 10kHz
Test DC	Table 3.29, 50Hz - 10kHz
Level control	Closed Loop / Calculation method
Frequency steps	As specified by the test plan

## TECHNICAL DETAILS

## STANDARD TESTS WITH AUTOWAVE

## SAE J1113-2 - CONDUCTED IMMUNITY

Level control	Closed Loop / Substitution method
Frequency range	15Hz - 80kHz (250kHz)
Frequency steps	As specified by the test plan
Test levels	0.15Vpp / 0.5Vpp / 1.0Vpp / 3.0Vpp
Injected current	Limited to max. 1A during test

## SAE J1113-22 - RADIATED MAGNETIC FIELD

Level control	Substitution method
Frequency range	15Hz - 30kHz
Frequency steps	As specified by the test plan
Test levels	10uT - 100uT

## ISO 11452-10 - CONDUCTED IMMUNITY

Level control	Closed Loop / Substitution method
Frequency range	15Hz - 250kHz
Frequency steps	As specified by the test plan
Test levels	0.15Vpp / 0.5Vpp / 1.0Vpp / 3.0Vpp
Source impedance	less than 0.5ohm

## ISO 11452-8 - MAGNETIC FIELD

Level control	Calculation method; verified by Loop sensor
Frequency range	15 Hz - 150 kHz
Frequency steps	As specified by the test plan
Test levels	0.3A/m - 1,000A/m

## STANDARD TESTS AS PER FORD EMC-CS-2009.1

RI 140	Magnetic field Immunity, 50Hz - 100kHz
RI 150	Coupled Immunity, 1kHz - 100kHz
CI 210	Immunity to Continuous Power Line Disturbances, 50Hz - 100kHz
CI 250	Immunity to Ground Voltage Offset Continuous, 2kHz - 100kHz Immunity to Ground Voltage Offset Transient, Sequence 1 - 4
Level control	Closed Loop / Calculation method
Frequency steps	As specified by the test plan

## MORE STANDARD TESTS...

## ADDITIONAL AUTOMOTIVE STANDARDS

Chrysler LLC	DC-10615 (Rev. E, 2007-12) DC-11224 (Rev. A, Add., 2008-04) CS-11809 (2009-05) CS-11979 (Change A, 2010-04)
DaimlerChrysler	DC-10614 (Rev. A, 2004-01) DC-10615 (Rev. B, 2004-08) DC-10615 (Rev. C, 2006-04) DC-10615 (Rev. D, 2007-05) DC-11224 (Rev. A, 2007-05)
FIAT	9.90110 (Rev. 11, 2003-07) 9.90110 (Rev. 12, 2006-02) 9.90110 (Rev. 13, 2007-03) 9.90111 (Rev. 1, 2010-05)
Ford	ES-XW7T-1A278-AC (2003-10)
General Motors	GMW 3097 (Rev. 4, 2004-02) GMW 3097 (Rev. 5, 2006-07)
IVECO	16-2119 (2008-11) 16-2119 (2010-05)
Jaguar/LandRover	EMC-CS-2010JLR (2010-06) EMC-CS-2010JLR V.1.1 (2011-01)
Mitsubishi	ES-X82114 (Rev. C, 2007-04) ES-X82114 (Rev. D, 2009-03) ES-X82115 (Rev. C, 2007-04) ES-X82115 (Rev. D, 2009-03)
Mercedes-Benz	MBN 10 284-2 (2008-03)
Nissan	28 401 NDS02 [2] (2003-10) 28 401 NDS02 [3] (2006-03) 28 401 NDS02 [4] (2008-08)
PSA	B21 7110 (Rev. A, 2004-07) B21 7110 (Rev. B, 2005-05) B21 7110 (Rev. C, 2008-03) B21 7110 (Add. Rev. C, 2010-05)
Renault	36.00.808/--G (2004-02) 36.00.808/--H (2007-06) 36.00.808/--J (2008-04) 36.00.808/--K (2009-03) 36.00.808/--L (2010-12)
Tata Motors	TST/TS/WI/257 (2008-07)
Volkswagen	VW TL 825 66 (2006-02) VW TL 825 66 (2011-05)
Volvo	STD 515-0003 (Rev. 3, 2008-03) STD 515-0003 (Rev. 4, 2009-10)

## TECHNICAL DETAILS

### GENERAL DATA

#### INTERFACE

Serial interface	Framebus to AutoWave or NetWave
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#### GENERAL DATA

Dimensions	19", 6HU (500mm x 449mm x 286mm)
Weight	Approx. 36kg
Supply voltage	115V or 230V +10/-15%, 50/60Hz
Input power	Max. 1,000W
Fuses	2 x 6.3AT (115V) or 2 x 3.15AT (230V)
Cooling	Active cooling, air ventilation
Temperature	10°C - 40°C
Rel. humidity	Max. 85%, non-condensing

#### MEASUREMENTS (OPTIONAL)

MU-AMP 200N	Optional built-in measuring unit; Frequency-selective instrument for voltage, current and magnetic field
Frequency range	10Hz - 250kHz
Accuracy	Better than 5%
Current measurement	External with current clamp: Range 100mV/A: 1mA - 30A rms Range 10mV/A: 10mA - 300A rms
Voltage measurement	17mV - 70V rms

#### ACCESSORIES

Radiating Loop	120mm radiation loop for magnetic field testing as per Ford EMC-CS-2009.1, RI 140
Loop Sensor	To measure the magnetic field strength
CN 200N1	Transformer assembly with built-in 0.5ohm/250W resistive load as per Ford EMC-CS-2009.1, German Lloyd VI-7-2 and other standards

# COMPETENCE WHEREVER YOU ARE



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Information about scope of delivery, visual design and technical data correspond with the state of development at time of release. Technical data subject to change without further notice.