

BROADCAST
tools INC.
PROBLEM SOLVED

Installation and Operation Manual



DAC-1 G2

Professional quality 24-bit stereo AES digital-to-analog audio converter.

Manual update: 7/31/2026

If you need a firmware upgrade, contact Broadcast Tools®

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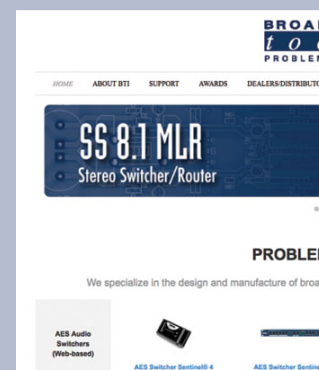
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INTRODUCTION

Thank you for your purchase of a Broadcast Tools® DAC-1 G2 professional quality 24-bit stereo digital-to-analog audio converter (referred to as the DAC-1 G2 throughout this manual). We're confident that this product will give you many years of dependable service. This manual is intended to give you all the information needed to install and operate the Broadcast Tools®

SAFETY INFORMATION

Only qualified technical personnel should install the DAC-1 G2. Any attempt to install this device by a person who is not technically qualified could result in hazardous conditions for the installer or other personnel or damage to the DAC-1 G2 or other equipment. Please ensure that proper safety precautions have been taken before installing this device. If you are unfamiliar with this type of equipment, please contact a properly qualified engineer to handle the installation and setup of the DAC-1 G2. Broadcast Tools, Inc., is unable to support NON-Broadcast Tools software, hardware or NON-Broadcast Tools computer/hardware/software problems. If you experience these problems, please research your hardware/software instruction manuals or contact the manufacturers technical support department.

WHO TO CONTACT FOR HELP

If you have any questions regarding your product or you need assistance, please contact your distributor from whom you purchased this equipment. If you would like more information about BROADCAST TOOLS® products, you may reach us at:

Broadcast Tools, Inc.

131 State Street
Sedro-Woolley, WA 98284-1503 USA
Voice: 360.854.9559
Fax: 866.783.1742

Internet Home Page: www.broadcasttools.com
E-mail: support@broadcasttools.com

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BROADCAST TOOLS® BRAND PRODUCTS!

Broadcast Tools is a Veteran Owned Business



Designed , Manufactured, and Supported in Washington State, USA.



CAUTION!

Broadcast Tools® Products, as with any electronic device, can fail without warning. Do not use this product in applications where a life threatening condition could result due to failure.

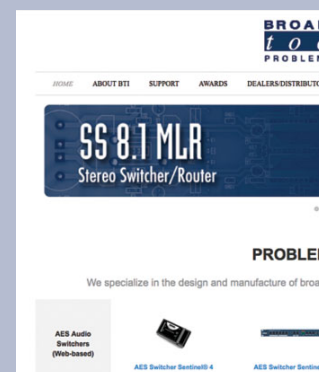


NOTE:

This manual should be read thoroughly before installation and operation.

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Product Overview

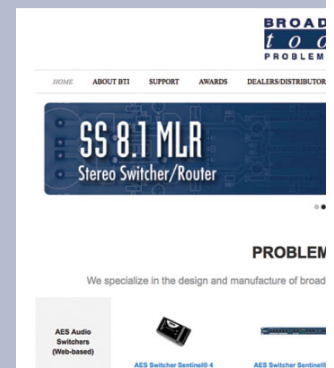
The DAC-1 G2 is a professional quality 24-bit stereo digital-to-analog audio converter. It supports XLR3, BNC, RJ45, and terminal block AES3 digital audio inputs. The digital input signal is converted to analog audio with a 24-bit digital to analog converter and output at balanced professional levels on RJ45 and pluggable screw terminal block connectors. Sample rates of 32kHz, 44.1kHz or 48kHz are automatically selected based on the detected source sample rate. The DAC-1 G2 is equipped with an SPST normally open alarm relay that closes when no AES signal is present, or AES error is detected.

Features/Benefits

- AES input on XLR3, BNC, RJ45, and terminal block connectors.
- Balanced analog stereo output on RJ45 and terminal block connectors.
- Front panel analog output level trimmers.
- Front panel ¼" headphone jack and level control.
- Front panel sample rate and digital error indicators.
- SPST Alarm Relay Output.
- Fully RFI proofed.
- Surge protected universal switching +/-15VDC desktop power supply with IEC AC inlet and domestic power cord included.
- Up to three units may be mounted on the optional RA-1 rack shelf. Desktop and wall mounting is also possible.

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Inspection

Please examine your DAC-1 G2 carefully for any damage that may have been sustained during shipping. If any damage is present, please notify the shipper immediately and retain the packaging for inspection by the shipper. The package should contain the DAC-1 G2, and a +/-15 VDC desktop power supply with IEC AC input, US IEC cable included. Manuals may be downloaded from our web site.

Surge Protection

The DAC-1 G2 has built-in resistance to voltage changes; we recommend that you use a power surge protector or line conditioner on the incoming AC line. Lightning strikes and/or other high voltage surges may damage your DAC-1 G2 and connected equipment if it is not properly protected. For lightning protection devices, check out www.polyphaser.com and www.itwlinx.com.

Chassis Ground (Chs GND): The #6-32 sized chassis ground screw should be tied to the station (house) or system ground.

UPS Standby Power System

We recommend that you connect your DAC-1 G2 to a UPS standby power system. A UPS, like the BE600M1 from APC helps to minimize the risk to the DAC-1 G2 and provides power during a power outage.

Power Input (PWR +/- 15 VDC)

Connect the supplied PS-1515/IEC +/-15 VDC desktop power supply's 3-pin AMP-style locking power connector to the jack labeled "PWR +/- VDC" and the power supplies IEC power cable into an AC outlet. A domestic US IEC power cable is included with the power supply. The power supply will accept input voltages from 95 to 235 VAC, 50-60 Hz.

NOTE: Never use any type of power supply other than the specified/supplied power supply.

AES/EBU Digital Audio Input Connections

Connect your AES source to one of the following input connections: the AES Input XLR connector, the AES Input BNC connector, or the AES-/AES+ terminal block pins. The default input impedance 110 ohms for use with balanced AES3. This may be changed to 75 ohms or no termination (open) using the front panel options dipswitch.

(J4 Top)

AES-	AES+	GND	K1CM	K1NO
OL-	OL+	GND	OR-	OR+

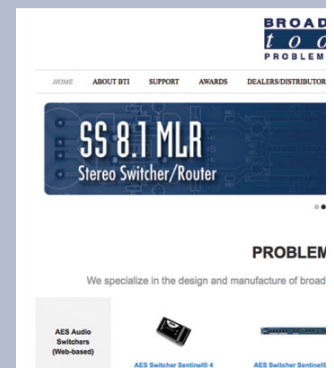
(J4 Bottom)

Analog Audio Output Connections

The DAC-1 G2 provides a balanced analog stereo output on male XLR connectors. The left and right output level is adjustable via front panel trimmers labeled "LT OP Adjust" and "RT OP Adjust". From the factory the analog audio output level is set so that -20 dBfs AES input = +4 dBu output.

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INSTALLATION

AES Error Relay Output (K1)

The DAC-1 G2 has a built-in AES error detector that monitors the incoming AES/EBU signal and triggers the K1 normally open SPST relay output when signal is lost or an error is detected.

AES Input XLR Connector Pinout

The input and output XLR connector pinouts conform to 3-pin XLR wiring standards: Pin 1 = Shield/Ground. Pin 2 = Positive. Pin 3 = Negative.

For AES/EBU signals please use AES/EBU qualified cable.

RJ45 Audio Pinout

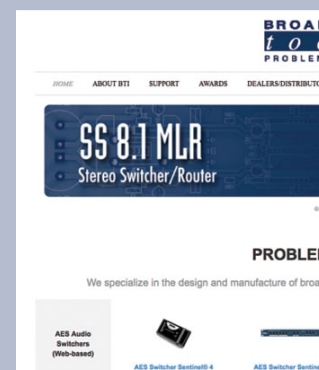
The input and output RJ45 audio jacks.

Please use shielded twisted pair Cat5e or Cat6 cables and connectors (STP).

Function:	Wire Pair:	RJ45 Pins:
Left+/AES+	White/Orange	1
Left-/AES-	Orange/White	2
Right+	White/Green	3
Right -	Green/White	6
n/c	White/Blue	5
DC GND*	Blue/White	4
n/c	White/Brown	7
n/c	Brown/White	8
GND	Shield	Shield

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LED Indicators

“PWR” LED: Lit when power is applied. (Green)

“Alarm” LED: Lit when the alarm relay output (K1) is active/ (Red)

“48k, 44.1k, and 32k” LEDs: Indicate current AES input sample rate. 48khz, 44.1khz, or 32khz.

“Error” LED: Lit when an AES error is detected. (Red)

Front Panel Controls/Connections

“OPTIONS”: Four position configuration dipswitch, see the “Options Dipswitch” section of this manual for setup information.

“ALM Disable”: Recessed Alarm disable toggle switch. When toggled on alarms will be disabled and the “ALM Disable” LED will be lit.

“LT Out”: Left analog output level adjustment trimmer (single turn.)

“RT Out”: Right analog output level adjustment trimmer (single turn.)

“HdPh LVL”: Headphone output level control, adjacent to ¼” stereo headphone jack.

Options dip-switch configuration (AES Input Termination)

AES input termination is set using the front panel options dip-switches.

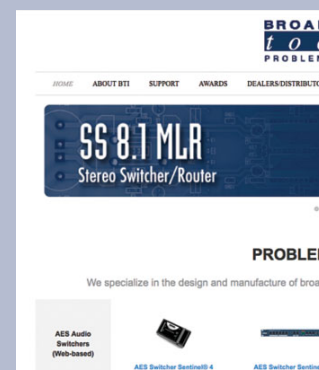
AES Input Termination	SW1-1	SW1-2
110 ohm*	On (Down)*	Off (Up)*
75 ohm	Off (Up)	On (Down)
Open	Off (Up)	Off (Up)

Note: * Denotes factory setting.

Note: For wiring information, refer to the grids in this section of the manual, the silk-screen text on the rear panel of the product or the fractional schematic in the appendix.

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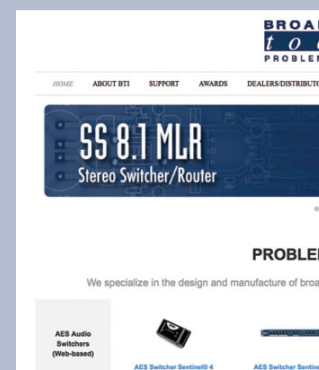
INSTALLATION

Specifications

Digital Inputs:	AES/EBU: XLR-F, RJ45 Audio In, BNC, terminal block.
Sample Rate:	Automatic detection, 32kHz, 44.1kHz, 48kHz.
D/A resolution:	16, 24, and 32 bits supported.
Analog Output:	0dBFS produces +24dBm (600 ohm load) balanced floating via XLR-M, RJ45 Audio Out, and terminal block.
Distortion:	SNR 115 dB A WTD, THD+N: <.003% reference – 1dBFS (20Hz – 20kHz, fs >= 48kHz)
Frequency Response:	+/- .30dB (20Hz – 20kHz, fs >= 48kHz)
Power:	Surge protected PS-1515/IEC universal switching +/-15VDC desktop power supply with locking connector and IEC AC inlet included. CE. (Includes domestic IEC AC power cord).
Operating Environment:	32°F/0°C-122°F/50°C; 0%-95% non-condensing relative humidity; 10,000ft/3048m.
Dimensions:	5.66" x 7.125" x 1.58", aluminum extrusion chassis with (4) #6-32 screw thread mounting holes for optional RA-1 rack shelf.
Options:	RA-1 Rack Shelf. 1 RU. Accommodates up to 3 units, filler panels supplied.

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The term “Buyer” as used in this document refers to and includes both (but only) (a) any person or entity who acquires such an item for the purpose of resale to others (i.e., a dealer or distributor of an item), and (b) the first person or entity who acquires such an item for such person’s or entity’s own use.

Broadcast Tools warrants to each Buyer of any item manufactured by Broadcast Tools that the item will be free from defects in materials and workmanship at the time it is shipped by Broadcast Tools if the item is properly installed, used and maintained.

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If Broadcast Tools is notified, in writing, of a failure of any item manufactured by Broadcast Tools to conform to the foregoing Limited Warranty within one (1) year following the date of the Buyer’s acquisition of the item, and if the item is returned to Broadcast Tools in accordance with Broadcast Tools’ instructions for confirmation by inspection of the defect (which at Broadcast Tools’ election may include, without limitation, a requirement that the Buyer first obtain a Return Authorization number from Broadcast Tools, that the Buyer furnish proof of purchase in the form of an invoice and/or receipt, and that the Buyer prepay all freight charges associated with any return of the item to Broadcast Tools using such freight service as Broadcast Tools reasonably may specify), Broadcast Tools will repair or replace the defective item, or will refund the purchase price paid by the Buyer for the item. Broadcast Tools shall have the exclusive right to choose between these alternative remedies.

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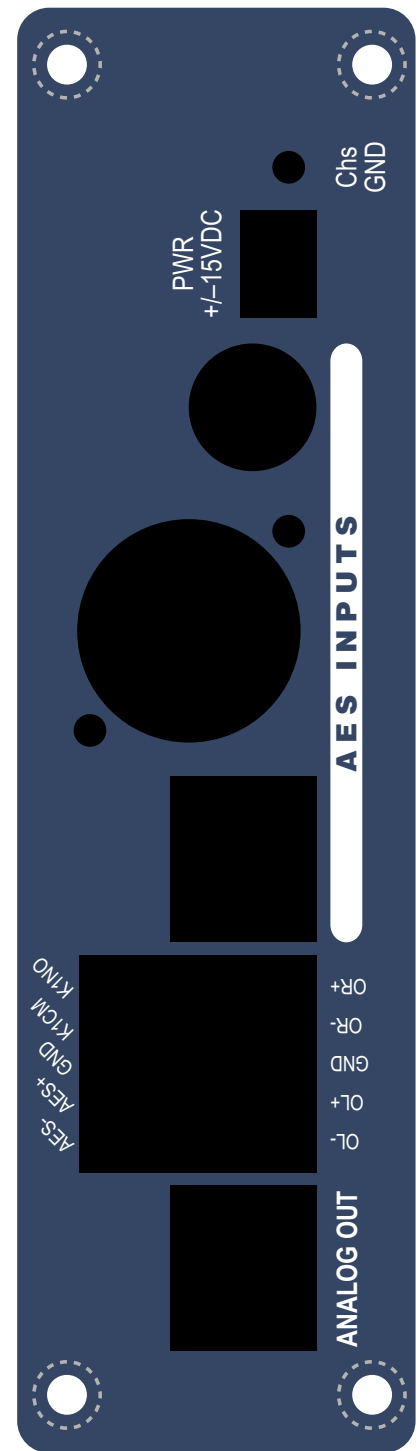
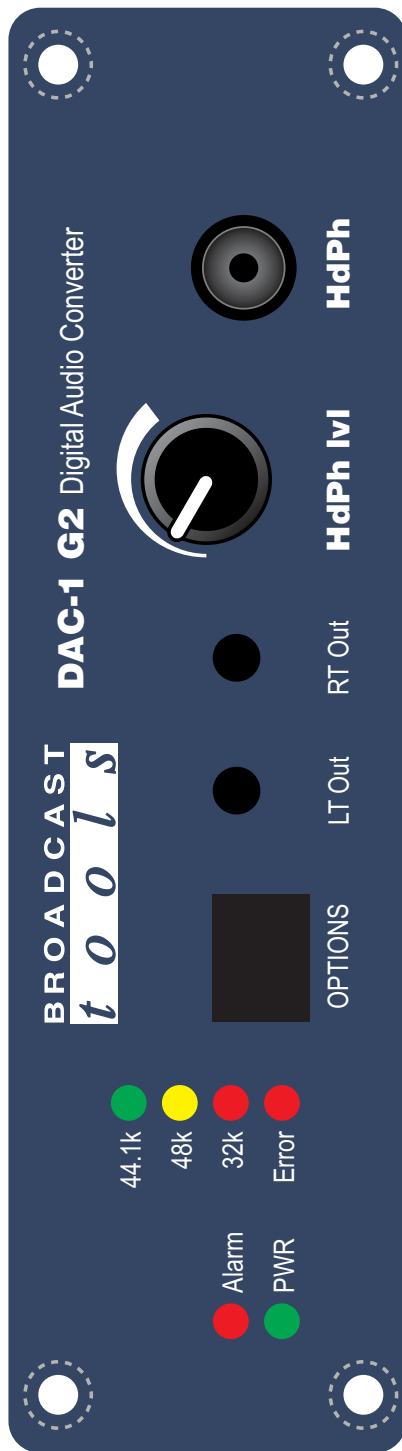
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Broadcast Tools, Inc.

131 State Street
Sedro-Woolley, WA 98284 • USA

360.854.9559 **voice** • 866.783.1742 **fax**
support@broadcasttools.com **e-mail**
www.broadcasttools.com **website**



The diagram is a detailed schematic of the DAC-1 G2 circuit board, showing various components and their connections. The top section of the diagram is labeled "DAC-1 G2" and includes the following components and labels:

- Right Output Level Adjust:** A potentiometer (R58) for adjusting the right output level.
- Left Output Level Adjust:** A potentiometer (R30) for adjusting the left output level.
- Config Options Dip-Switches:** A set of dip-switches (SW1) for configuring the DAC.
- Connectors:** J8, J1, J2, J3, J4, J5, J6, J7, J9, J10, J11, J12, J13, J14, J15, J16, J17, J18, J19, J20, J21, J22, J23, J24, J25, J26, J27, J28, J29, J30, J31, J32, J33, J34, J35, J36, J37, J38, J39, J40, J41, J42, J43, J44, J45, J46, J47, J48, J49, J50, J51, J52, J53, J54, J55, J56, J57, J58, J59, J60, J61, J62, J63, J64, J65, J66, J67, J68, J69, J70, J71, J72, J73, J74, J75, J76, J77, J78, J79, J80, J81, J82, J83, J84, J85, J86, J87, J88, J89, J90, J91, J92, J93, J94, J95, J96, J97, J98, J99, J100.
- Resistors:** R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40, R41, R42, R43, R44, R45, R46, R47, R48, R49, R50, R51, R52, R53, R54, R55, R56, R57, R58, R59, R60, R61, R62, R63, R64, R65, R66, R67, R68, R69, R70, R71, R72, R73, R74, R75, R76, R77, R78, R79, R80, R81, R82, R83, R84, R85, R86, R87, R88, R89, R90, R91, R92, R93, R94, R95, R96, R97, R98, R99, R100.
- Capacitors:** C1, C2, C3, C4, C5, C6, C7, C8, C9, C10, C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39, C40, C41, C42, C43, C44, C45, C46, C47, C48, C49, C50, C51, C52, C53, C54, C55, C56, C57, C58, C59, C60, C61, C62, C63, C64, C65, C66, C67, C68, C69, C70, C71, C72, C73, C74, C75, C76, C77, C78, C79, C80, C81, C82, C83, C84, C85, C86, C87, C88, C89, C90, C91, C92, C93, C94, C95, C96, C97, C98, C99, C100.
- Integrated Circuits:** U1, U2, U3, U4, U5, U6, U7, U8, U9, U10, U11, U12, U13, U14, U15, U16, U17, U18, U19, U20, U21, U22, U23, U24, U25, U26, U27, U28, U29, U30, U31, U32, U33, U34, U35, U36, U37, U38, U39, U40, U41, U42, U43, U44, U45, U46, U47, U48, U49, U50, U51, U52, U53, U54, U55, U56, U57, U58, U59, U60, U61, U62, U63, U64, U65, U66, U67, U68, U69, U70, U71, U72, U73, U74, U75, U76, U77, U78, U79, U80, U81, U82, U83, U84, U85, U86, U87, U88, U89, U90, U91, U92, U93, U94, U95, U96, U97, U98, U99, U100.
- Other Components:** D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D12, D13, D14, D15, D16, D17, D18, D19, D20, D21, D22, D23, D24, D25, D26, D27, D28, D29, D30, D31, D32, D33, D34, D35, D36, D37, D38, D39, D40, D41, D42, D43, D44, D45, D46, D47, D48, D49, D50, D51, D52, D53, D54, D55, D56, D57, D58, D59, D60, D61, D62, D63, D64, D65, D66, D67, D68, D69, D70, D71, D72, D73, D74, D75, D76, D77, D78, D79, D80, D81, D82, D83, D84, D85, D86, D87, D88, D89, D90, D91, D92, D93, D94, D95, D96, D97, D98, D99, D100.

The bottom section of the diagram is labeled "AES/EBU Inputs" and includes the following components and labels:

- Analog Stereo Output:** A set of connectors (J1, J2, J3, J4, J5, J6, J7, J8, J9, J10, J11, J12, J13, J14, J15, J16, J17, J18, J19, J20, J21, J22, J23, J24, J25, J26, J27, J28, J29, J30, J31, J32, J33, J34, J35, J36, J37, J38, J39, J40, J41, J42, J43, J44, J45, J46, J47, J48, J49, J50, J51, J52, J53, J54, J55, J56, J57, J58, J59, J60, J61, J62, J63, J64, J65, J66, J67, J68, J69, J70, J71, J72, J73, J74, J75, J76, J77, J78, J79, J80, J81, J82, J83, J84, J85, J86, J87, J88, J89, J90, J91, J92, J93, J94, J95, J96, J97, J98, J99, J100) for the analog stereo output.
- AES/EBU Inputs:** A set of connectors (J1, J2, J3, J4, J5, J6, J7, J8, J9, J10, J11, J12, J13, J14, J15, J16, J17, J18, J19, J20, J21, J22, J23, J24, J25, J26, J27, J28, J29, J30, J31, J32, J33, J34, J35, J36, J37, J38, J39, J40, J41, J42, J43, J44, J45, J46, J47, J48, J49, J50, J51, J52, J53, J54, J55, J56, J57, J58, J59, J60, J61, J62, J63, J64, J65, J66, J67, J68, J69, J70, J71, J72, J73, J74, J75, J76, J77, J78, J79, J80, J81, J82, J83, J84, J85, J86, J87, J88, J89, J90, J91, J92, J93, J94, J95, J96, J97, J98, J99, J100) for the AES/EBU inputs.
- Power +/-15VDC:** A set of connectors (J1, J2, J3, J4, J5, J6, J7, J8, J9, J10, J11, J12, J13, J14, J15, J16, J17, J18, J19, J20, J21, J22, J23, J24, J25, J26, J27, J28, J29, J30, J31, J32, J33, J34, J35, J36, J37, J38, J39, J40, J41, J42, J43, J44, J45, J46, J47, J48, J49, J50, J51, J52, J53, J54, J55, J56, J57, J58, J59, J60, J61, J62, J63, J64, J65, J66, J67, J68, J69, J70, J71, J72, J73, J74, J75, J76, J77, J78, J79, J80, J81, J82, J83, J84, J85, J86, J87, J88, J89, J90, J91, J92, J93, J94, J95, J96, J97, J98, J99, J100) for the power supply.
- Chs Gnd:** A set of connectors (J1, J2, J3, J4, J5, J6, J7, J8, J9, J10, J11, J12, J13, J14, J15, J16, J17, J18, J19, J20, J21, J22, J23, J24, J25, J26, J27, J28, J29, J30, J31, J32, J33, J34, J35, J36, J37, J38, J39, J40, J41, J42, J43, J44, J45, J46, J47, J48, J49, J50, J51, J52, J53, J54, J55, J56, J57, J58, J59, J60, J61, J62, J63, J64, J65, J66, J67, J68, J69, J70, J71, J72, J73, J74, J75, J76, J77, J78, J79, J80, J81, J82, J83, J84, J85, J86, J87, J88, J89, J90, J91, J92, J93, J94, J95, J96, J97, J98, J99, J100) for the channel ground.