



BGD200 AND BGD400 SERIES

TWO AND FOUR CHANNEL BARGRAPH METER DISPLAYS

OPERATING AND MAINTENANCE MANUAL



BGD200 Series



BGD200-P Series



BGD400 Series

© Copyright 2011, ATI Audio Inc.

DESCRIPTION

ATI BGD200 and BGD400 Series bargraph audio displays are an effective and economical means of displaying multiple audio signal levels. They can give you that warm comfortable feeling that there really is audio going out with your video, audio is feeding the switcher, and there definitely are outputs going to downstream equipment.

Along with providing a nice touch of color for your studio, the BGD200-VU and BGD400-VU provide a good visual match to the ballistics of a standard ASA VU meter in bright, three color, ten segment displays. The BGD200-PPM and BGD400-PPM closely match the peak-following characteristics of a standard PPM meter in a more conservative red and green color scheme. The BGD200 is a horizontal two-channel display and the BGD400 is a four-channel unit with vertically oriented displays. Models ending in “-P” are equipped with headphone jacks and phase indicators.

Two sections of a quad bi-fet IC, National LF347N, form a selectable gain, instrumentation amplifier input stage. The instrumentation amplifier provides precisely equal loading to each side of a balanced line with good common mode hum rejection yet will easily bridge a high impedance IHF level audio line (typically found with RCA connectors) from HI input to GND without the necessity of also grounding the LO input terminal. Three position jumper plugs for each channel (JX02) select input stage gain for nominal 0 VU or 0 dB displays at -10, +4 or +8dBu input (0dBu reference is .775Vrms). Trimpots accessible through the front panel allow precise level adjustment.

The remaining two sections of the LF347N in each channel are used for the active full wave signal rectifier and time constant networks. The VU network has a slightly underdamped two-pole response, which reaches 99% of final reading in 300ms and overshoots by not more than 1.5%, closely matching ANSI specification C165. The PPM network matches the integration and return time specifications of DIN45406 by indicating a response 1dB down from steady state for a 10ms tone burst and 4dB down for a 3ms burst with an equivalent return time of 1.5s to -20dB.

The LED bargraphs are driven in a power conserving series mode by an LM3916 (VU) or LM3915 (PPM) display driver IC. The VU display indicates from -20 to +3VU in ten steps. The PPM display indicates levels from -15 to +12dB in 3dB increments around 0dB.

Swings of the external 24VDC supply are limited by zener regulator stage Q1 to protect the display driver ICs. Several BGDs can share a single external WA100-1 or -2 external power supply up to the limit of its rated current capacity. A BGD200 draws 70mA and a BGD400 draws 130mA. An accessory DC power jumper cable P/N 20602-1 loops power between units sharing a common power supply.

Up to three BGDs will mount side-by-side in only one 1-3/4” rack space using an available rack mount shelf. They may also be neatly stacked or mounted side-by-side on your desk with accessory desk mounting kits.

INSTALLATION

UNPACKING

Inspect the equipment. If there is any visible damage to the unit or to the box it came in, contact the factory but do not return anything to ATI without prior authorization and shipping instructions. It may be necessary to have the shipping company inspect the unit and the box at your location.

Count the pieces! Don't throw out the boxes and packing material until you are sure you have everything you ordered. The BGD200 and BGD400 come with an instruction book but do not come with any cables. The units are supplied as standard with a WA100-1 120VAC external power supply. A 230VAC power supply is available as an extra-cost option.

Mating audio connector plugs are included with the units. If you throw them out with the packing material, replacements are available from ATI stock. Plugs are a .20-inch spacing industry standard part (Phoenix Contact P/N MSTB 2,5/3-ST-5.08 or several equivalents) and are available from many sources. Rack and desk mounting hardware may be packed in with the unit even though ordered separately. The power supply may either be included with the unit or shipped in its own box.

MOUNTING

BGDs may be rack mounted one, two, or three across in a standard EIA 19" rack in only 1RU (1-3/4") of vertical space. Rack mount kit P/N 21075-501 mounts three units in one rack.

Single desk mounting kits consist of a pair of angled base plates that mount under the lower front and rear cover screws of a single unit to raise and to tilt it for easy viewing. In addition, one or more sets of vertical stacking plates, mounting to the upper front and rear cover screws of the bottom unit, allow multiple units to be stacked. Several units can be desk mounted side-by-side and even stacked side-by-side using horizontal joiner kits together with mounting base and stacker kits. P/N 20617-501 is the angled base kit. P/N 20617-502 is the base plus one stacker kit (two high). P/N 20617-503 is the base plus two stackers (three high).

WIRING

AUDIO CONNECTIONS

Balanced inputs are wired per the rear panel markings with pin 1 as HI and pin 2 as LOW. Pin 3 of all input connectors is permanently grounded and is the cable shield connection. Unbalanced (single wire and shield) inputs should be connected to the HI and GND terminals. The audio connectors are two-piece types that are attached by inserting the stripped wire ends into the plug and tightening the clamping screws. The plug is inserted into the receptacle, which is mounted permanently to the circuit board.

DC CONNECTIONS

24VDC power to the BGD is supplied by an external power supply. The power supply's DC output plugs into either mating receptacle on the rear of the unit. Plug polarity is positive on the outside sleeve. The other DC receptacle is used to jumper power to another unit sharing a single supply with available DC power cable loop-thru P/N 20602-1.

CALIBRATION

As shipped, BGD meters are set for nominal inputs at 0VU or 0dB of +4dBu. Internal jumper plugs (JX04) for each channel allow nominal settings of -10, +4 or +8dBu to be selected. To change the jumper plug position, remove the top cover by removing four 6-32 screws, move the jumper plug so that pins 1 and 2 are shorted together for +4dBu in, pins 2 and 3 are shorted for +8dBu inputs or remove the jumper plug so that no pins are shorted for -10dBu input (leave the plug mounted by one pin so that it doesn't get lost or rattle around). Put the top back on; if you lose the screws we have replacements.

PERFORMANCE SPECIFICATIONS

Input Impedance:	Balanced bridging 20Kohm minimum
Input Level:	0dB internal selectable @ -10, +4 or +8dBu (normal setup@+4dBu). Note: Front panel trimmers allow for precise calibration at 0 VU.
Frequency Response:	20Hz to 20kHz
Indicator:	10 Bright LEDs per channel. VU—three colors; -20, -10, -7, -5, -3, -1, 0VU, +1, +2, +3 PPM—two colors; -15, -12, -9, -6, -3, 0dB, +3, +6, +9, +12
Meter Response:	VU ballistics per ANSI C165; PPM ballistics per DIN 45406
Power:	24 VDC Nominal (range 22V min to 30V max) from external DC Wall Adapter or Table Top Power Supply. Connector sleeve is positive, size 2.1mm. BGD200 draws 70mA, BGD400 draws 140mA.
Dimensions:	1.72" (4.45cm) H x 5.75" (14.6cm) W x 6.0" (15.2cm) D Net weight 1.5 lbs. (0.7kg); Shipping Weight 3 lbs. (1.4kg)
Mounting:	Free standing or rack mountable; one, two or three units in 1-3/4" (4.4cm) rack space
Connectors:	Two piece quick release screw plug connector per input

MODELS AVAILABLE:

BGD200-VU	2-Channel Bargraph Meter Display with VU Response
BGD200-VU-P	2-Channel Bargraph Meter Display with VU Response, Phase Indicator and ¼-inch Headphone Jack
BGD200PPM	2-Channel Bargraph Meter Display with PPM Response
BGD200-PPM-P	2-Channel Bargraph Meter Display with PPM Response, Phase Indicator and ¼-inch Headphone Jack
BGD400-VU	4-Channel Bargraph Meter Display with VU Response
BGD400-PPM	4-Channel Bargraph Meter Display with PPM Response

POWER SUPPLY & DC LOOP-THRU CABLE

All units operate from an external 24VDC power supply, as follows:

WA100-1:	Wall mount power supply (UL), 24VDC @ .4 amp, 120 VAC/60 Hz, for use with multiple units (supplied as standard)
WA100-2:	Wall mount power supply for international use, interchangeable AC connectors, 24VDC at .4A out, 90-264VAC, 47-63Hz, 16VA input, optional at extra cost
20602-1:	DC power cable to loop through the DC power between BGDs, 13 inches (33cm) long with 2.1mm DC plugs on each end
Desk Mount Kits:	20617-501 Angled Desk Mount Base 20617-502 Angled Desk Mount Base and one Stacker (2 units high) 20617-503 Angled Desk Mount Base and two Stackers (3 units high) 20617-504 Stacker only (2 units high) 20617-505 Horizontal Joiner for two BGD units, side-by-side
Rack Mounting:	21075-501 Mounts three units in a single 1RU rack 21097-501 1/3 RU filler panel for 21075-501

One Year Limited Warranty

ATI warrants this product to be free from defects in materials and workmanship to its original owner for a period of one year from date of purchase. ATI will repair or replace such product or part thereof, which upon inspection by ATI, is found to be defective in materials or workmanship.

The Proper Return Authorization Number must be obtained from ATI in advance of return. Contact ATI at 856-626-3480 or email sales@atiaudio.com to receive the number and instructions for return of your unit.

A written statement providing the name, address, daytime telephone number and email address of the original owner, together with receipt from the original purchase, and a brief description of any claimed defects, must accompany all returns. Parts or product for which replacement is made shall become the property of ATI.

The customer shall be responsible for costs of transportation and insurance to the factory of ATI, and shall be required to prepay such costs.

ATI shall use reasonable efforts to repair or replace any product covered by this limited warranty within thirty days of receipt. In the event repair or replacement shall require more than thirty days, ATI shall notify the customer accordingly. ATI reserves the right to replace any product that has been discontinued from its product line with a new product of comparable value and function.

This warranty shall be void in the event a covered product has been damaged, or failure is caused by or attributable to acts of God, abuse, accident, misuse, improper or abnormal usage, failure to follow instructions, improper installation or maintenance, alteration, or lightning, power fluctuations and other incidental or environmental conditions. Further, product malfunction or deterioration due to normal wear is not covered by this warranty.

ATI DISCLAIMS ANY WARRANTIES, EXPRESS OR IMPLIED, WHETHER OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR USE, EXCEPT AS EXPRESSLY SET FORTH HEREIN. THE SOLE OBLIGATION OF ATI UNDER THIS LIMITED WARRANTY SHALL BE TO REPAIR OR REPLACE THE COVERED PRODUCT, IN ACCORDANCE WITH THE TERMS SET FORTH HEREIN. ATI EXPRESSLY DISCLAIMS ANY LOST PROFITS, GENERAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM BREACH OF ANY WARRANTY, OR ARISING OUT OF THE USE OR INABILITY TO USE ANY ATI PRODUCT.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitation on how long an implied warranty lasts, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights that vary from state to state.

ATI reserves the right to modify or discontinue, without prior notice to you, any model or style product.

If warranty problems arise, or if you need assistance in using your product contact us.