

Accuphase

DIGITAL VOICING EQUALIZER

DG-48

- Fully digital signal processing Voicing Equalizer
- High-speed 40-bit floating point DSP devices
- Separate digital filters for Voicing and Equalizer sections
- Wide-format color LCD panel allows direct writing of response curve with stylus pen
- Freely programmable 20 pattern memory
- Real-time spectrum analyzer for music signal and microphone input
- Analog and digital inputs/outputs provided as standard





Create your ideal listening environment with a stroke of the pen – High-speed DSP chips and super advanced digital technology in this third-generation Digital Voicing Equalizer make your dream a reality. Offering both sound field compensation (Voicing) and sound field creation (Equalizer) functions, the DG-48 lets you use a stylus pen to directly draw the desired response curve on its large, wide-format color display panel. Even complex operations can be accomplished quickly and easily. The standard configuration includes both analog and digital inputs and outputs.

The DG-48 is a third-generation Digital Voicing Equalizer featuring extremely sophisticated digital signal processing technology developed by Accuphase. In 1997, Accuphase introduced the first such component, the DG-28, which revolutionized the concept of the graphic equalizer and made headlines in the audio world. This was followed by the DG-38, a further refined product that offered automatic sound field measurement and compensation. It was celebrated as an essential addition to a truly high-quality audio system and made serious music lovers realize again the importance of the sound field. When wishing to reproduce superb program

sources with optimum fidelity, the characteristics of the entire reproduction chain, including the speakers as well as the listening room itself, have to be taken into consideration, and the capability for providing adequate compensation is essential. The DG-48 meets this requirement with a two-fold approach, by enabling both sound field compensation (Voicing) and sound field creation (Equalizer). This is accomplished using the latest 40-bit floating point high-speed DSP technology, making it possible to handle all sources including SA- CD entirely in the digital domain. But power does not have to mean complexity when using the product. The newly added Simple Voicing course makes

automatic sound field measurement and adjustment a breeze, while the Custom Voicing Course provides the user with extensive control over every aspect. A full complement of balanced and unbalanced analog inputs and outputs as well as digital inputs and outputs including HS-Link connectors ensure that the DG-48 will fit perfectly into any system configuration.

The high-precision wide-format color display on the front panel makes using the supplied stylus pen a pure joy, enabling the user to create any desired response simply by drawing on the screen. Commanding this much power and flexibility has never been so easy.

What is a "Voicing Equalizer"?

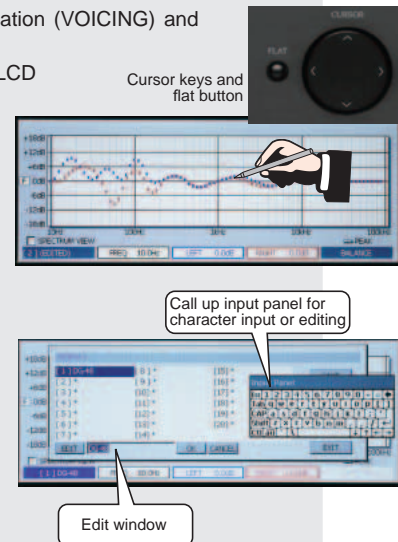
This somewhat unusual term was chosen to symbolize the advanced capabilities of the DG-48. While this product is a full-fledged high-precision graphic equalizer in its own right, it also incorporates a sophisticated system for automatic sound field compensation.

It divides the audible frequency range into distinct bands (voices), and lets the user choose a target response curve that is then expressed (voiced) by the unit through a process of precise measurement and adjustment steps. The result is full control over frequency response characteristics at the listening position.

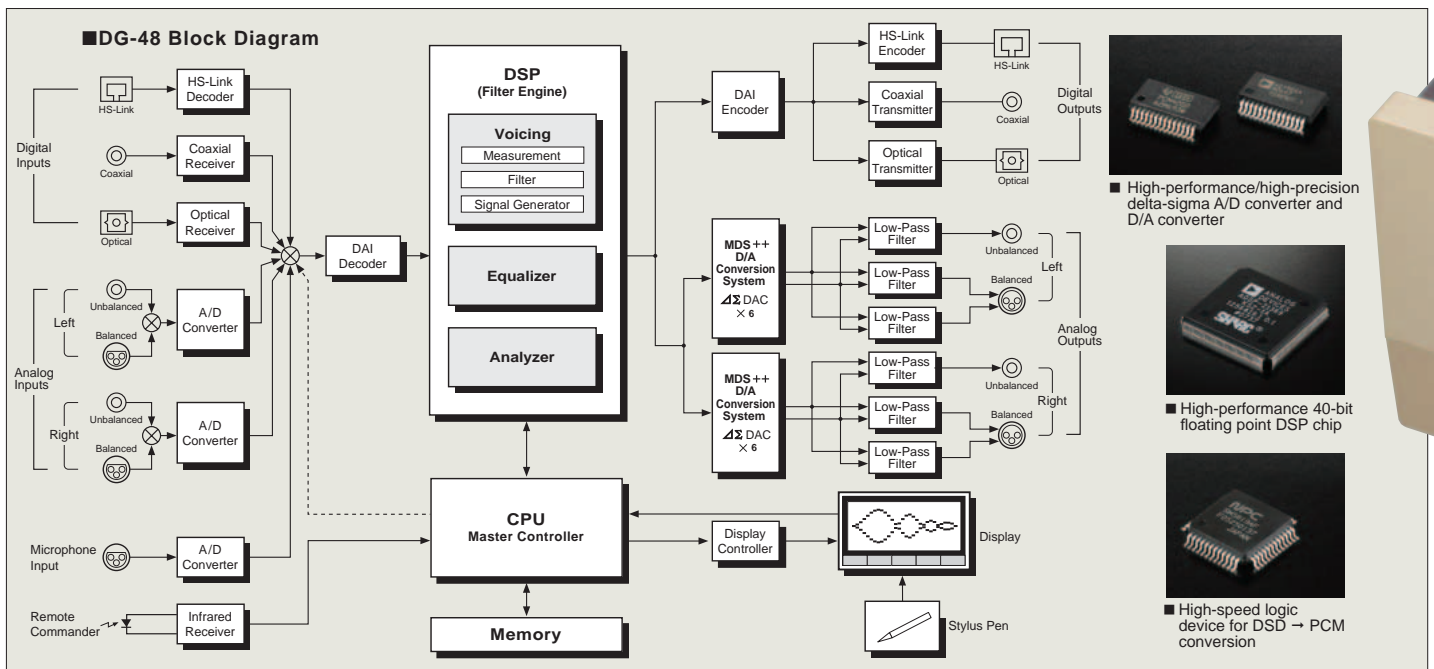
Through creative use of the capabilities offered by the DG-48, the scope of sound reproduction in the home environment can be significantly enhanced. Get ready to experience a new dimension of music enjoyment.

DG-48 Features

- Fully digital Voicing Equalizer with 40-bit floating point DSP and high-performance CPU/FPGA for digital signal processing
- Two equalizing modules for Sound Field Compensation (VOICING) and Sound Field Creation (EQUALIZER)
- Large, wide format (6.2 inches) high-resolution TFT LCD panel with fast refresh rate and excellent color reproduction characteristics
- Glass touch panel and supplied stylus pen
 - Allows direct drawing of response curve on screen
 - Cursor keypad can be called up for pinpoint operation
 - Control functions by tapping or dragging symbols displayed on screen
- Sound field measurement microphone AM-48 included
- 20 memory slots to store entire patterns including target curve, pre/post-compensation curve, equalizer curve etc. Data sets can be given a name and called up or modified at any time.
- Balanced and unbalanced analog inputs/outputs
Digital inputs/outputs (HS-Link/Coaxial/Optical)
- Side panels with elegant persimmons wood finish



■ DG-48 Block Diagram



■ High-performance/high-precision delta-sigma A/D converter and D/A converter



■ High-performance 40-bit floating point DSP chip



■ High-speed logic device for DSD → PCM conversion

Sound Field Compensation (Voicing)



Because the DG-48 incorporates both measurement and adjustment functions, accurate sound field compensation can be carried out easily.

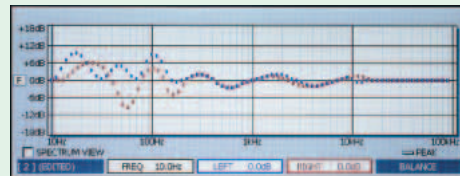
■ SIMPLE VOICING

Simply set up the microphone and activate a button on screen to complete the procedure.

■ CUSTOM VOICING

Gives the user detailed control over compensation mode and level, microphone setting, target curve, and other parameters, for even more accurate sound field compensation.

Sound Field Creation (Equalizer)



Directly draw the desired response curve on the screen, using the stylus pen or the cursor keys.

Call up saved data from previous Voicing operations and use these as a starting point for drawing a further modified curve, to create any desired sound field.

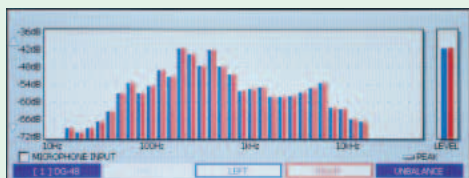
Use the unit only as an equalizer without the Voicing function, to shape the sound according to your preferences.

The DG-48 has four main operation modes: "Voicing", "Equalizer", "Analyzer", and "Configuration".

Four buttons on the front panel are used to select the respective mode.

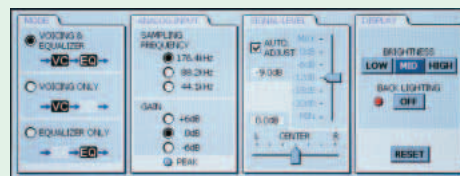


Frequency Analysis (Spectrum Analyzer)



After selecting either L&R or L/R, the content of the input signal can be displayed on a frequency spectrum screen with 1/3 octave spacing, in 35 bands, in real time. It is also possible to check total peak levels, compare the Voicing and Equalizer On/Off conditions, and display the frequency spectrum of the microphone input.

Configuration



This screen lets you make environment and function settings, such as selecting the Voicing/Equalizer modes, controlling the sampling frequency and gain for the analog inputs, setting output levels and left/right balance, adjusting screen brightness, turning the display on and off, etc.



■ Supplied Remote Commander RC-300 Controls memory save and recall, input switching, channel switching, VC/EQ selection, cursor activation and more.

Connections Between DG-48 and Other Components

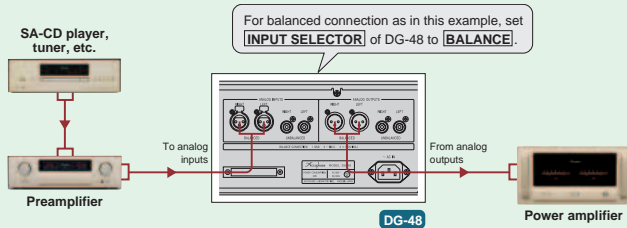
The DG-48 is a Voicing Equalizer with many functions, and therefore quite different from a conventional graphic equalizer. By incorporating it into an existing audio system, the entire reproduction chain including the speakers and the listening room can be measured and optimized to achieve the best possible playback quality. Because the DG-48 is equipped with balanced and unbalanced analog inputs/outputs and with digital inputs/outputs including HS-Link, it can be connected to all types of other equipment, either digital or analog, without requiring any option boards.

Analog connection examples

* For analog connection to other components, use shielded audio cables.

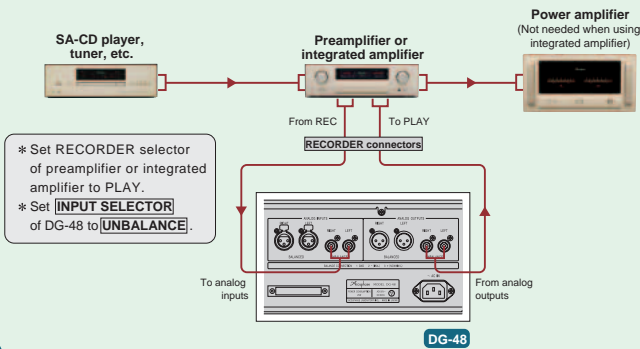
Connection of DG-48 between preamplifier and power amplifier

This is an example for a conventional analog connection, inserting the DG-48 between preamplifier and power amplifier. The connection can be made with balanced or unbalanced cables.



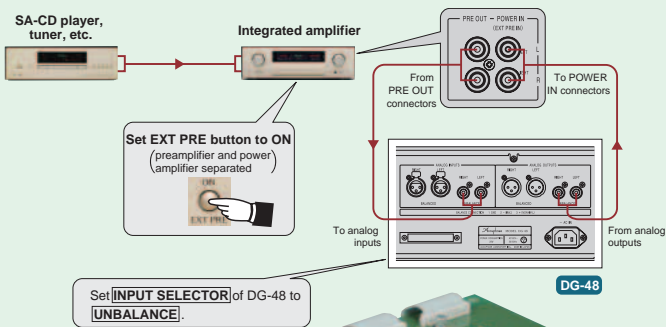
Connection of DG-48 in external component loop of preamplifier or integrated amplifier

This is an example for inserting the DG-48 in the RECORDER loop (using the PLAY/REC connectors) of a preamplifier or integrated amplifier.



Connection of DG-48 to integrated amplifier with separately accessible preamplifier and power amplifier sections

This is an example for connecting the DG-48 to an integrated amplifier that allows separation of pre/power amplifier sections.

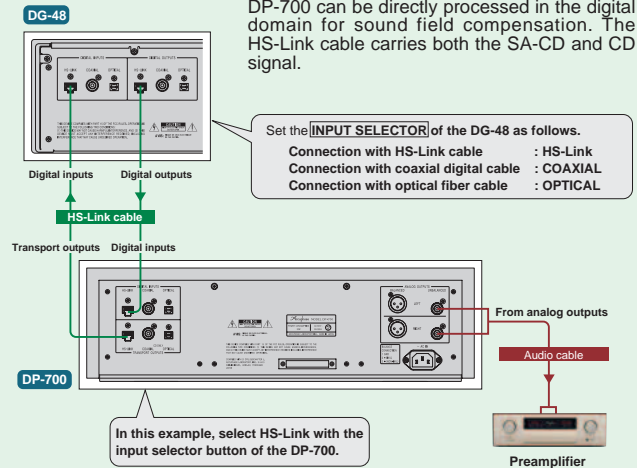


Digital connection examples

* When using the DP-800 and DC-801, connect the DG-48 directly to the DC-801 with a digital link.
* The DP-500 and DG-48 can also be connected directly via a digital link.

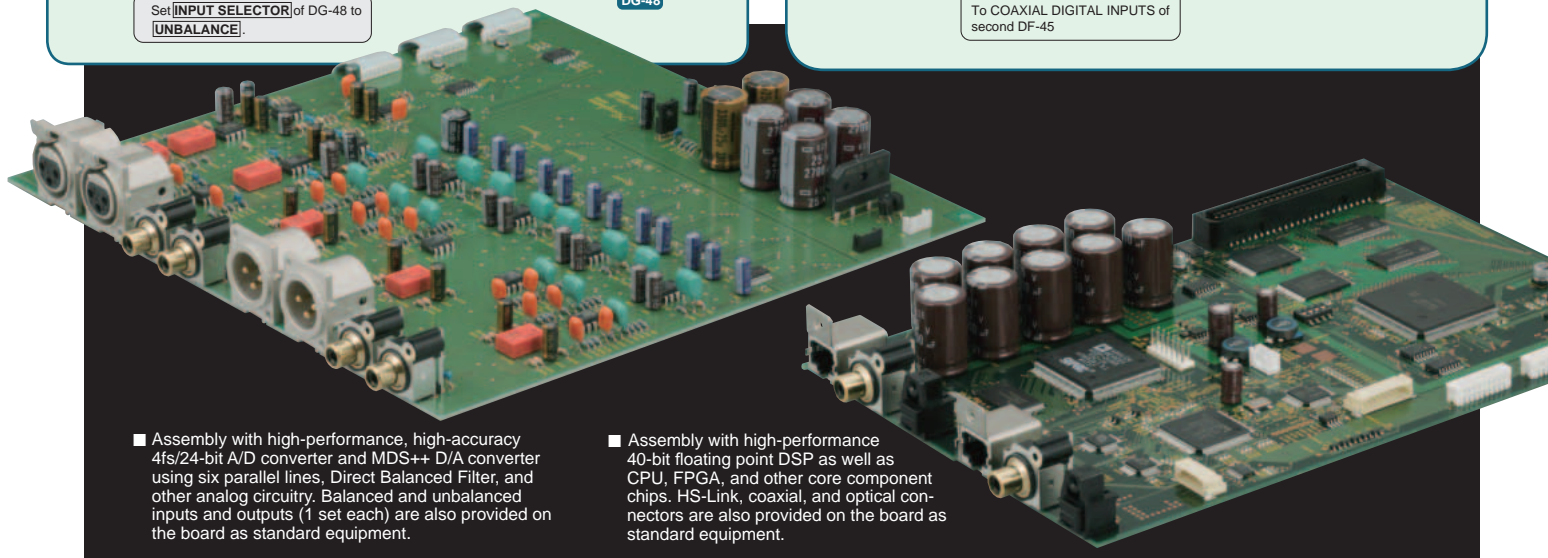
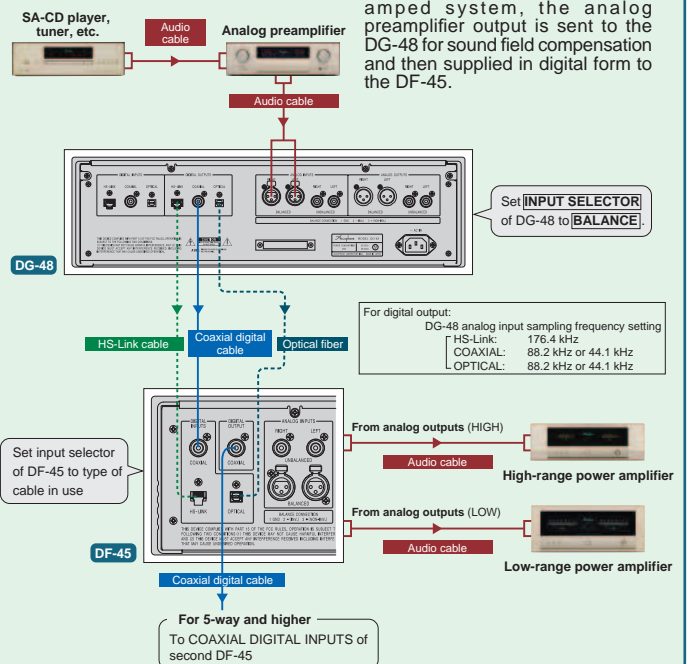
Direct digital connection of DP-700 and DG-48

The signal of the SA-CD/CD transport of the DP-700 can be directly processed in the digital domain for sound field compensation. The HS-Link cable carries both the SA-CD and CD signal.



Connection example for multi-amped system with DG-48 and DF-45

In this example of a 2-way multi-amped system, the analog preamplifier output is sent to the DG-48 for sound field compensation and then supplied in digital form to the DF-45.

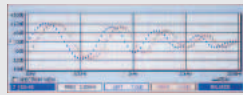


■ Assembly with high-performance, high-accuracy 4fs/24-bit A/D converter and MDS++ D/A converter using six parallel lines, Direct Balanced Filter, and other analog circuitry. Balanced and unbalanced inputs and outputs (1 set each) are also provided on the board as standard equipment.

■ Assembly with high-performance 40-bit floating point DSP as well as CPU, FPGA, and other core component chips. HS-Link, coaxial, and optical connectors are also provided on the board as standard equipment.

ZOOM function

Pressing the **ZOOM** button allows the user to zoom the horizontal (frequency) axis by a factor of two for easier viewing. This function is available on the equalizer screen, target curve writing screen, and manual compensation screen among others. Zooming allows drawing the desired frequency curve with further enhanced precision.



↓ ZOOM:ON



After Voicing, results can be checked on screen and by ear

The unit can display the response curve before and after compensation separately for each channel. It is also possible to compare the sound while playing music, by switching Voicing/Equalizer on and off.

Editing a sound field compensation curve

After checking the sound and the curve display, the user can return to the Voicing screen and make further adjustments at will.

Draw an equalizer curve based on Voicing results

After Voicing, the user can go to the Equalizer screen and further modify the curve.

Manual compensation

If automatic compensation leaves slight irregularities in the response curve, manual compensation in specific bands may bring the result even closer to flat response.

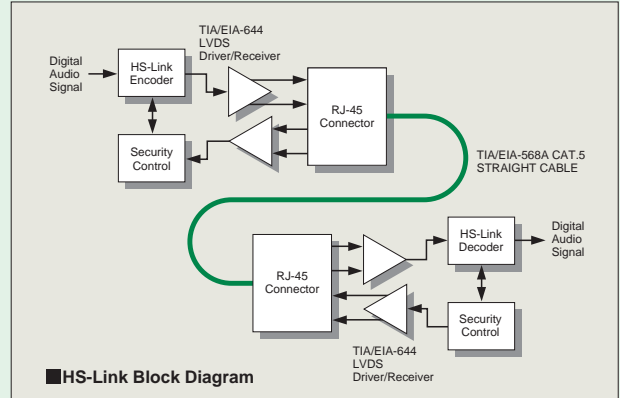


Individual speaker measurement

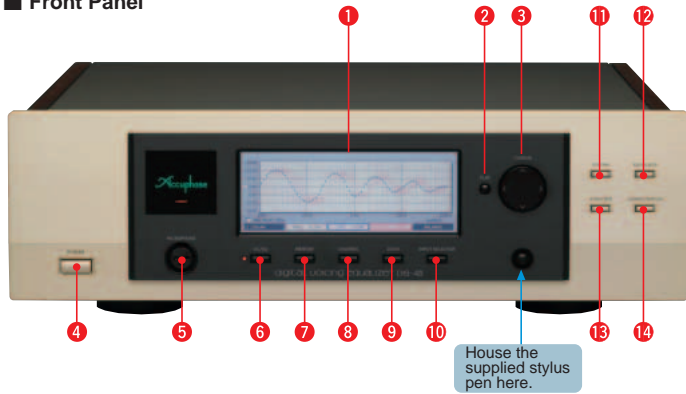
This function is helpful, for example, to achieve proper level matching for the different frequency bands in a multi-amped system.

Accuphase original digital interface HS-Link: High Speed Link

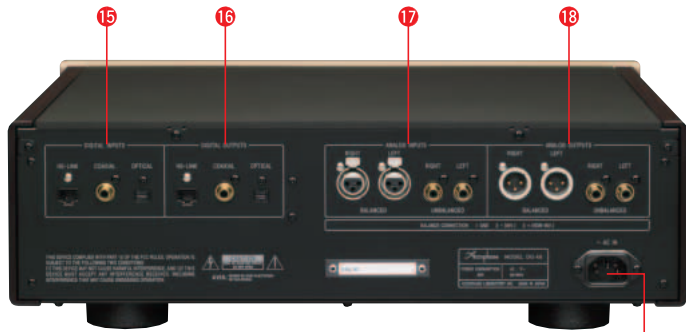
HS-Link is an ultra high-quality digital audio interface developed by Accuphase. It supports send/receive verification for copyright protection. The LVDS (Low Voltage Differential Signaling) principle allows a single dedicated HS-Link cable to transmit signals using advanced formats such as 2.8224 MHz/1-bit or 192 kHz/24-bit. Conventional digital formats are also supported. Because digital audio data are transmitted with utmost fidelity, the sound quality achieved by HS-Link is simply outstanding.



Front Panel



Rear Panel



- | | |
|--|-------------------------|
| 1 Display | 13 Analyzer button |
| 2 Flat button | 14 Configuration button |
| 3 Cursor keys | 15 Digital inputs |
| 4 Power switch | HS-Link COAXIAL OPTICAL |
| 5 Microphone input jack | 16 Digital outputs |
| 6 VC/EQ selector button | HS-Link COAXIAL OPTICAL |
| 7 Memory selector button | 17 Analog inputs |
| 8 Channel selector button | BALANCED UNBALANCED |
| 9 Zoom selector button | 18 Analog outputs |
| 10 Input selector button | BALANCED UNBALANCED |
| 11 Voicing (sound field compensation) button | 19 AC power connector★ |
| 12 Equalizer button | |

★ Microsoft and Windows are registered trademarks of Microsoft Corporation in the U.S. and in other countries.

Remarks

- ★ This product is available in versions for 120/230 V AC. Make sure that the voltage shown on the rear panel matches the AC line voltage in your area.
- ★ The shape of the AC inlet and plug of the supplied power cord depends on the voltage rating and destination country.

Supplied Accessories

- Stylus pen
- Microphone cable
- Audio cable with plugs (1 m)
- Remote Commander RC-300
- Microphone AM-48
- Microphone holder
- AC power cord
- Cleaning cloth

DG-88 Guaranteed Specifications

[Guaranteed specifications and standard compliance are measured according to JEITA CPR-2101.]

- **Voicing** 1/6 octave 67-band IIR filter
Adjustment range ± 12 dB
- **Equalizer** 1/6 octave 80-band hybrid IIR filter
Adjustment range ± 12 dB
- **Measurement signal** Warble tones
- **Frequency Response Curve Input Principle** Direct drawing with stylus pen or input with cursor keypad
- **Spectrum Analyzer** 1/3 octave, 35-band real-time type
Display level: ± 18 dBFS to -90 dBFS (5 ranges, switchable)
- **Reproduction Frequency Response** 0.5 - 50,000 Hz ± 0.3 dB
(For sampling frequency 2.8224 MHz or 192 kHz)
4.0 - 20,000 Hz ± 0.3 dB
- **THD + Noise** (from analog inputs to analog outputs, 20 - 20,000 Hz)
0.001%
- **Gain** $+12$ to -90 dB, variable
- **Analog input maximum level**
 - GAIN $+6$ dB: 0.88 V
 - GAIN 0 dB: 1.75 V
 - GAIN -6 dB: 3.50 V
- **A/D Converter**
 - Principle: 1-bit delta-sigma modulation
 - Sampling frequency: 44.1 kHz, 88.2 kHz, 176.4 kHz
 - Resolution: 24 bits
- **D/A Converter**
 - Principle: MDS++
 - Sampling frequency: 32 kHz - 192 kHz
 - Resolution: 24 bits
- **Digital Inputs**
 - HS-Link Connector type: RJ-45
 - Suitable cable: Dedicated HS-Link cable
 - COAXIAL Format: IEC 60958
 - OPTICAL Format: JEITA CP-1201 compliant
 - Sampling frequency: 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz
(16 to 24-bit 2-channel PCM)
 - [With HS-Link only]
176.4 kHz, 192 kHz (24-bit 2-channel PCM)
2.8224 MHz (1-bit 2-channel DSD)
- **Digital Outputs**
 - HS-Link Connector type: RJ-45
 - Suitable cable: Dedicated HS-Link cable
 - COAXIAL Format: IEC 60958
 - OPTICAL Format: JEITA CP-1201 compliant
- **Operating System** Microsoft® Windows® CE operating system
- **Power Requirements** AC 120 V/230 V, 50/60 Hz
(Voltage as indicated on rear panel)
- **Power Consumption** 25 watts
- **Maximum Dimensions** Width: 465 mm (18-5/16")
Height: 151 mm (5-15/16")
Depth: 396 mm (15-9/16")
- **Mass** 13.8 kg (30.4 lbs) net
20.0 kg (44.1 lbs) in shipping carton



ACCUPHASE LABORATORY, INC.