Accuphase

DIGITAL VOICING EQUALIZER

DG-58

● Fully digital signal processing Voicing Equalizer ● High-speed 40-bit floating point DSP ● Separate digital filters for Voicing and Equalizer sections ● Wide-format color LCD panel allows direct drawing of response curve with stylus pen ● Freely programmable 30 pattern memory ● Real-time spectrum analyzer for display of music signal and microphone input ● Analog and digital inputs/outputs provided as standard

Effortlessly create your ideal listening environment — With this fourth-generation Digital Voicing Equalizer featuring leading-edge digital technology. High-definition, high-resolution IPS LCD panel allows the use of a stylus pen to directly draw any desired response curve. Intuitive operation and a full complement of sophisticated display functions make sound field compensation swift and easy while giving the user full control. A range of analog and digital inputs and outputs are provided as standard, and a USB port allows saving and loading data as well as saving screenshots of the display content.

In 1997, Accuphase introduced a product which revolutionized the concept of the graphic equalizer and made headlines in the audio world: the Digital Voicing Equalizer DG-28. Its superb functionality and amazing effectiveness garnered high praise among audiophiles both in Japan and overseas. This was followed by the DG-38 and DG-48, featuring further improvements in the automatic sound field measurement and compensation process. It was thanks to these products that many audiophiles came to realize the importance of proper compensation for the acoustic properties of the listening environment.

The DG-58 Digital Voicing Equalizer now raises the bar again. It is a 4th generation product that reflects the state of the art of advanced signal processing technology developed by Accuphase. It employs the latest high-speed DSP (Digital Signal Processor) chips, making it possible to fully handle all sources including SA-CD in the digital domain. Ease of operation has also been enhanced, with two “Simple Voicing” courses for automatic measurement and compensation, as well as a “Custom Voicing” course that gives users the power to realize a specific acoustic concept through extensive control over all aspects. A wide array of digital inputs and outputs including HS-LINK, along with analog options, provides connectivity to any kind of component. The incorporation of latest high-quality A/D and D/A converters ensures that analog signals also can develop their full potential in terms of performance and sound quality. Most operations are controlled using the large, high-definition wide-format color LCD panel. This makes using the supplied stylus pen a pure joy, enabling the user to create any desired response simply by drawing on the screen. In addition, there is an “EQ+ANA” button that functions as a Home button and allows operating the equalizer and analyzer together when observing the frequency spectrum of a music signal for example from a CD player or the signal from the microphone input in real time.

The DG-58 takes the concept of intelligent equalization to the next level, while at the same time remaining simple and intuitive to operate, thanks to its clean and uncluttered graphical interface. The champagne gold colored panel made from massive extruded and anodized aluminum, and the side panels of real wood with natural grain finish lend a beautiful, elegant appearance to this stunning and revolutionary product.

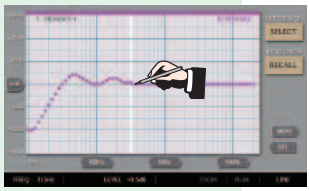
What is a “Voicing Equalizer”?

The DG-58, while being a full-fledged high-precision graphic equalizer in its own right, also incorporates a sophisticated system for automatic sound field compensation that clearly sets it apart from conventional products.

Regular graphic equalizers do not have the capability to make measurements, and the level setting for each frequency point must be adjusted manually by the user. By contrast, the DG-58 can automatically express (voice) the kind of response desired by the user. It is a revolutionary product that acts as an extension of the user, harnessing sophisticated measurement and compensation functions to achieve exactly the acoustic characteristics in the listening room environment according to the user's preferences. The somewhat unusual term “Voicing Equalizer” was chosen to symbolize these advanced capabilities. It encompasses the essence of audio, offering active control that leads into a new dimension of musical enjoyment. Get ready to experience a whole new world of sound.

DG-58 Features

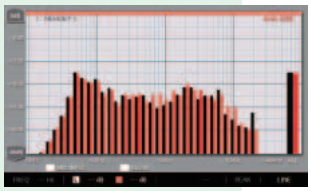
- **Voicing Equalizer with 40-bit floating point DSP and high-performance CPU/FPGA for fully digital signal processing.**
- **Two equalizing modules for Sound Field Compensation (VOICING) and Sound Field Creation (EQUALIZER).**
- **Large, wide-format 7-inch high-definition IPS LCD panel with fast refresh 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 used for pinpoint operation.
  - Functions can be controlled by tapping or dragging symbols displayed on screen.
- **Sound field measurement microphone AM-48 included.**
- **USB port allows saving and loading of setting data and saving screenshots on USB flash memory.** (USB port cannot be used for connection to a computer.)
- **30 memory slots to store entire patterns including target curve, pre/post-compensation curve, equalizer curve etc. Patterns can be given a name and called up or modified at any time.**
- **Full complement of analog inputs and outputs (Balanced/Line) and digital inputs and outputs (HS-LINK/ Coaxial/ Optical).**
- **D/A converter with eight high-performance 32-bit Hyperstream™ DAC chips (ES9018 from ESS Technology Inc.) driven in parallel for improved performance.**
- **Elegant side panels of real wood with natural grain finish**



〔 Example of target curve display 〕

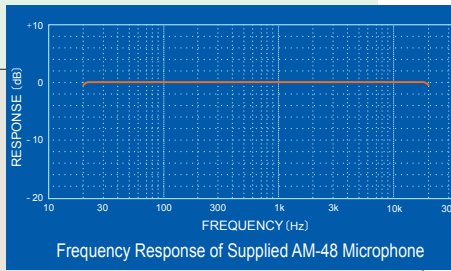
USB port

Hold down Home button for 2 seconds

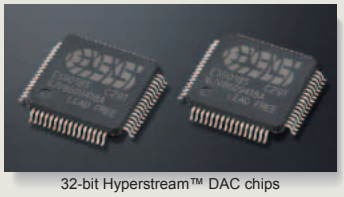


Current screen display is saved as screenshot image on USB flash memory.

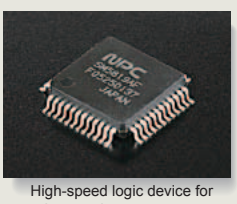
〔 Example for analyzer screen display. Screenshot images saved on USB can be viewed on a computer. Viewing on DG-58 is not supported. 〕



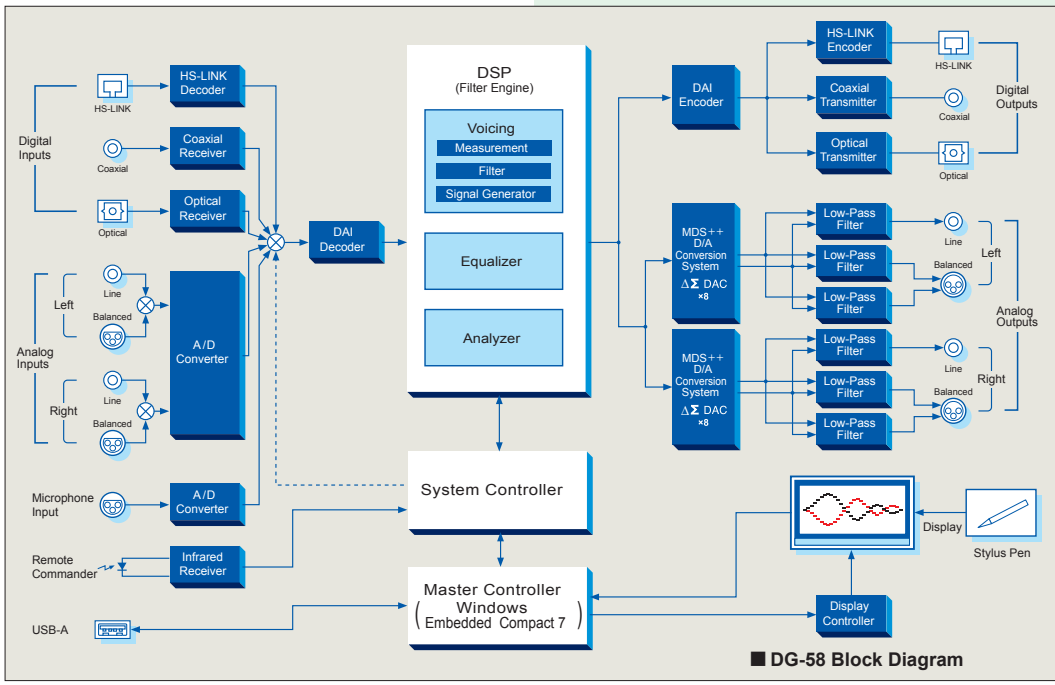
Frequency Response of Supplied AM-48 Microphone



32-bit Hyperstream™ DAC chips



High-speed logic device for DSD → PCM conversion



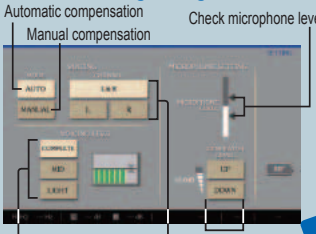
■ DG-58 Block Diagram

■**Supplied Remote Commander RC-310**
Controls memory save and recall, input switching, channel switching, VC/EQ selection, cursor activation and more.

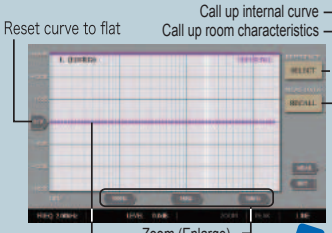
Main Functions and Screens

Voicing / Custom Voicing

SETTING
・**Detailed voicing settings**



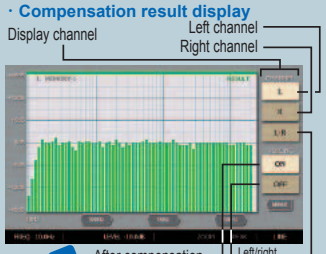
REFERENCE
・**Detailed target curve setting**



Compensation (measurement) start

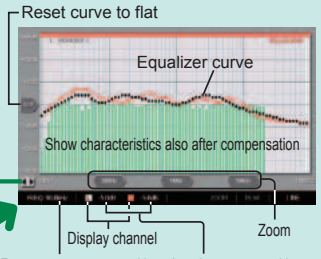
Compensation completed in 90 seconds

RESULT
・**Compensation result display**

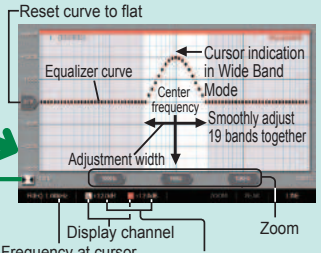


Equalizer/Analyzer

EQUALIZER (SINGLE BAND MODE)
・**Freely adjust equalizer settings while listening to music**



EQ/WIDE BAND MODE
・**Function to assist with equalizer curve input**



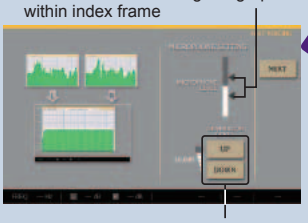
WIDE BAND MODE

SINGLE BAND MODE

Simple Voicing

FLAT
・**Adjust to flat response**

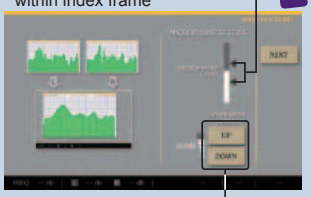
Use UP/DOWN to bring bar graph within index frame



Adjust microphone level with UP/DOWN

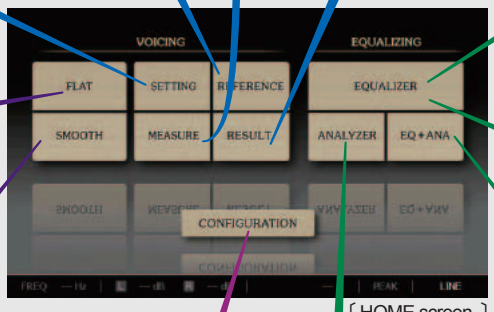
SMOOTH
・**Adjustment incorporating speaker and room characteristics**

Use UP/DOWN to bring bar graph within index frame



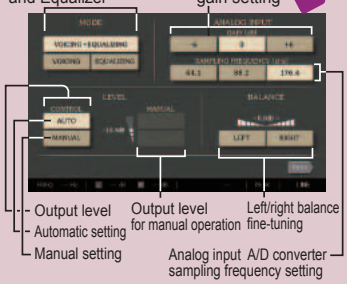
Adjust microphone level with UP/DOWN

Compensation completed in 90 seconds

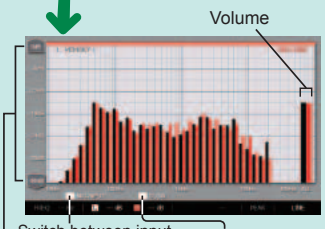


〔HOME screen〕

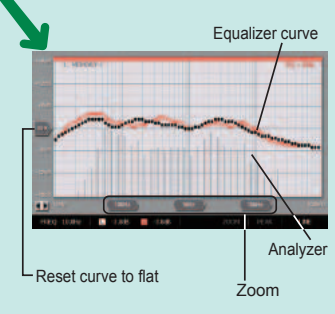
CONFIGURATION
・**Detailed environment settings matched to intended use**



ANALYZER
・**Display frequency spectrum in real time**



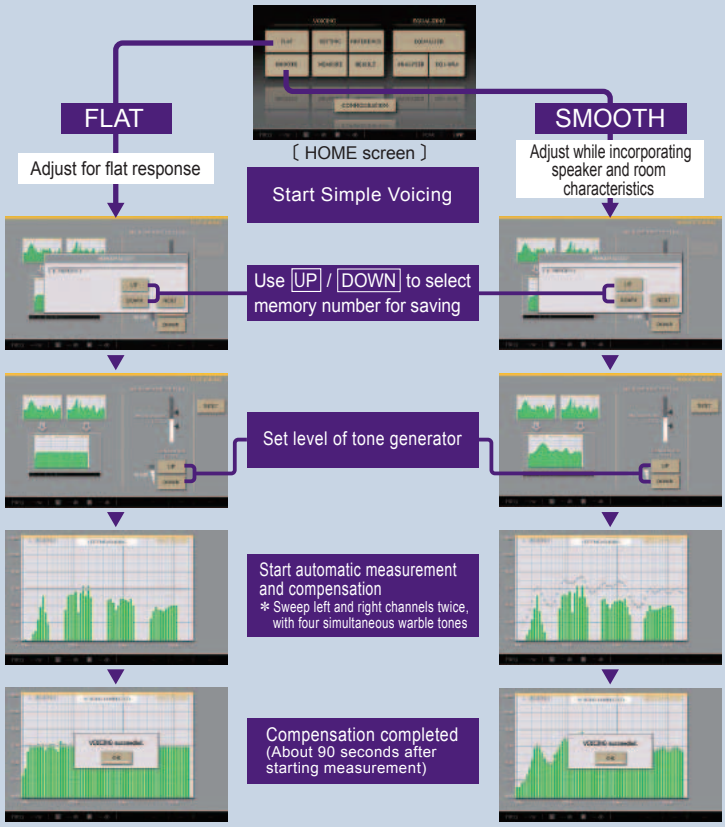
EQ+ANA
・**Display equalizer and analyzer together**



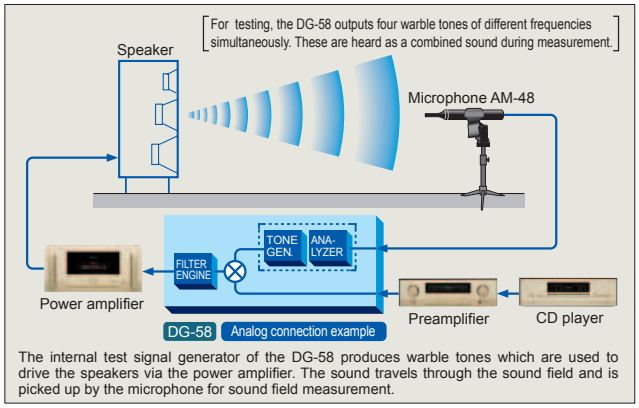
Further Evolved Measurement and Compensation Functions: VOICING

Using its built-in high-precision measurement facilities, the DG-58 accurately measures the sound field and determines adequate compensation to achieve the target response specified by the user. There is a choice of two operation modes: Simple Voicing for easy operation and Custom Voicing for comprehensive control over all aspects.

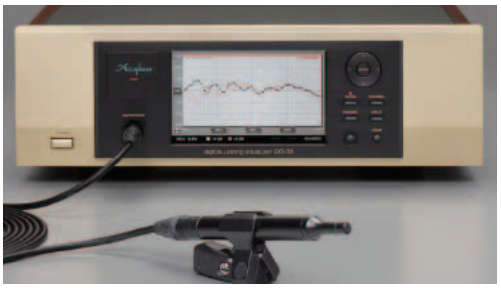
SIMPLE VOICING



* Compensation data are stored automatically in the selected memory after completion. The response curve before/after compensation can be checked on the RESULT screen.



The internal test signal generator of the DG-58 produces warble tones which are used to drive the speakers via the power amplifier. The sound travels through the sound field and is picked up by the microphone for sound field measurement.

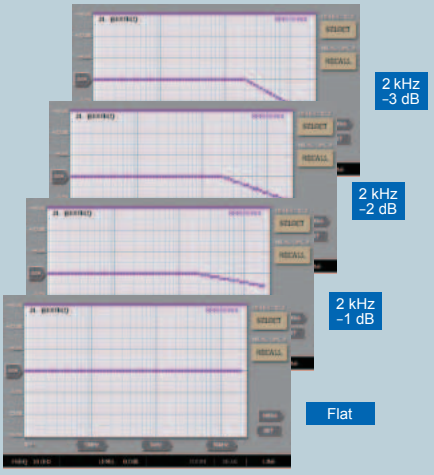


■ Supplied microphone AM-48
A dedicated sound field measurement microphone with controlled frequency response is supplied with the DG-58. The microphone is a 1/4-inch type back-electret condenser type with an ultra-thin and extremely small diaphragm, assuring linear response over a wide frequency range.

■ Setup screen for compensation mode and microphone parameters
The Voicing compensation mode (Auto/Manual) and compensation level and microphone level (measurement tone) are selected from this screen.

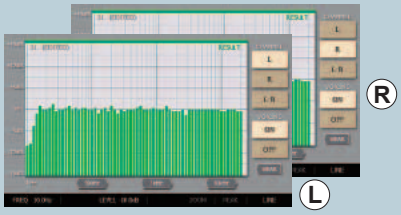
CUSTOM VOICING

Example 1 Compensation based on internal standard reference curves



The DG-58 comes with four preprogrammed reference curves: three curves with a high-end rolloff above 2 kHz (-1 dB, -2 dB, -3 dB per octave) and flat response.

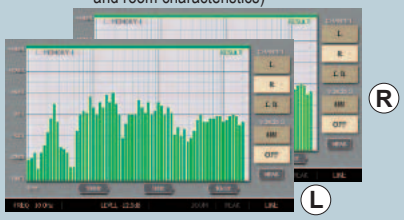
Example for compensation when flat response was selected



Compensation characteristics example for adjustment using the "Flat" target curve.
Peaks and dips caused by listening room acoustics and speaker characteristics are evened out, resulting in approximately flat response.

Example 2 Compensation with automatically created target curve

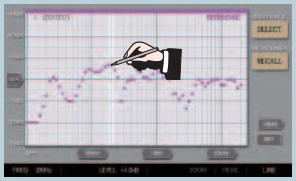
(Creating a curve that incorporates speaker and room characteristics)



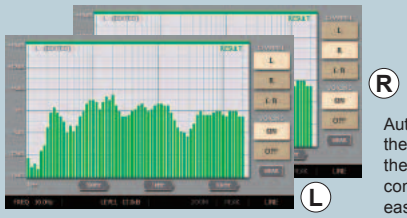
First, automatic measurement of characteristics before compensation is carried out.

- Speaker and room characteristics
  (Separate measurement for L, R or simultaneous L/R measurement is possible)
- Individual speaker characteristics
  Auto generation using raw characteristics as target

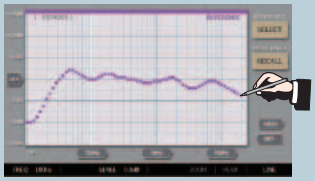
L + R (Auto generation of averaged curve)



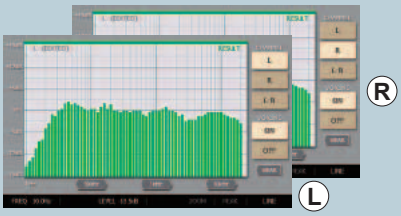
Based on the measured characteristics before compensation, a target curve is created automatically. The curve can be further modified on screen (for example to reduce extreme peaks and dips), creating a smooth result.



Example 3 Compensation with freely created curve



Using the stylus pen, any desired target curve can be created freely.



Auto compensation is performed based on the drawn target curve.

Auto compensation is performed based on the created target curve. By comparing the characteristics before and after compensation, the difference can be easily checked visually as well as aurally.

DG-58 Connection Examples

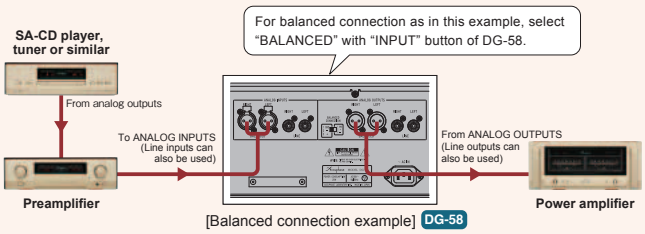
The DG-58 is a Voicing Equalizer with many functions, and therefore quite different from a conventional graphic equalizer. By incorporating it into an existing audio system, the entire reproduction chain including the speakers and the listening room can be measured and optimized to achieve the best possible playback quality.
Because the DG-58 is equipped with balanced and line (unbalanced) analog inputs/outputs as well as with digital inputs/outputs including HS-LINK, it can be connected to all types of other equipment, either digital or analog.

Analog connection examples

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

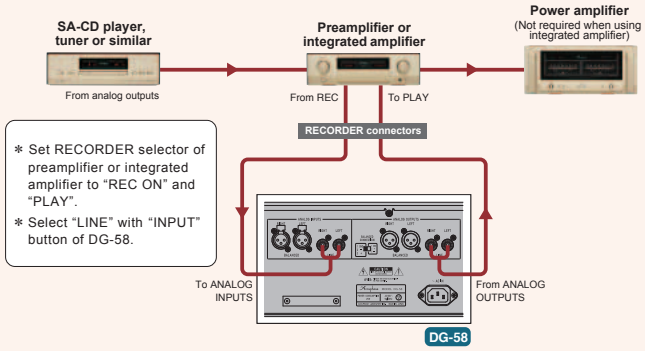
Connection between preamplifier and power amplifier

This is an example for a conventional analog connection, inserting the DG-58 between preamplifier and power amplifier.
The connection can be made with balanced or line (unbalanced) cables.



Connection in external component loop of preamplifier or integrated amplifier

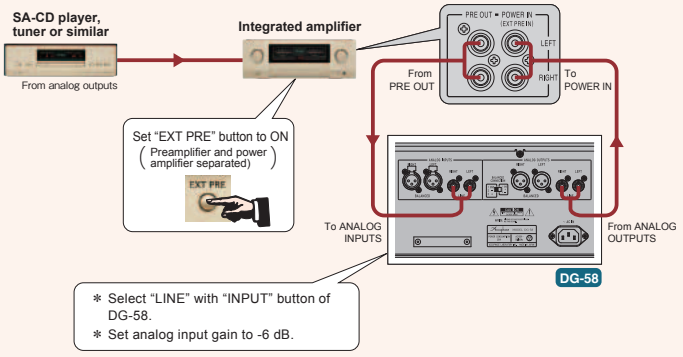
This is example for inserting the DG-58 in the RECORDER loop (using the PLAY/REC connectors) of a preamplifier or integrated amplifier.



Connection to integrated amplifier with separately accessible preamplifier and power amplifier sections

∗ With E-600, balanced connection is also possible.

This is an example for connecting the DG-58 to an integrated amplifier that allows separation of pre/power amplifier sections.

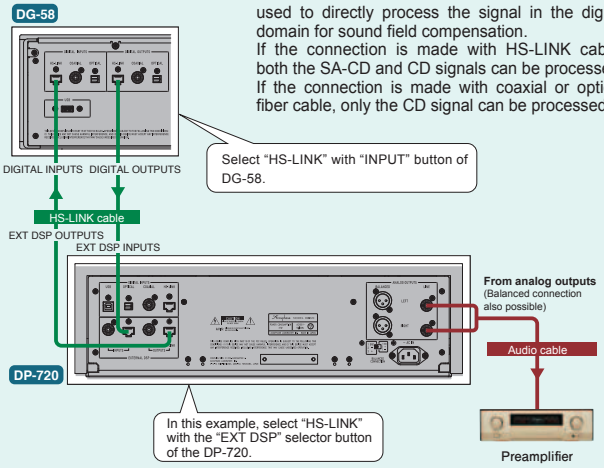


Digital connection examples

∗ The DP-510 or DP-410 and the DG-58 can be connected directly via a digital link (Coaxial, Optical).

Direct digital connection of DP-720 and DG-58

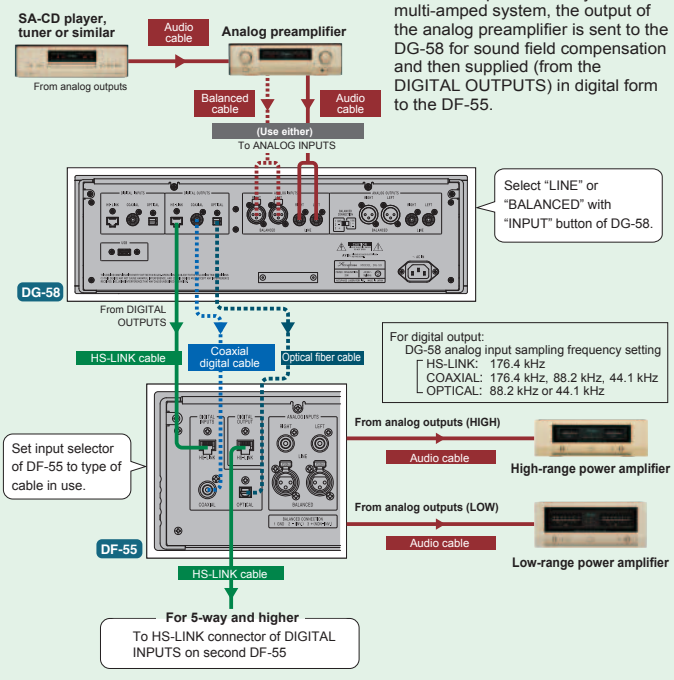
The EXT DSP connectors of the DP-720 can be used to directly process the signal in the digital domain for sound field compensation.
If the connection is made with HS-LINK cable, both the SA-CD and CD signals can be processed.
If the connection is made with coaxial or optical fiber cable, only the CD signal can be processed.



∗ The DP-900, DC-901, DP-600, and DC-550 can also be connected directly via digital HS-LINK to the DG-58.

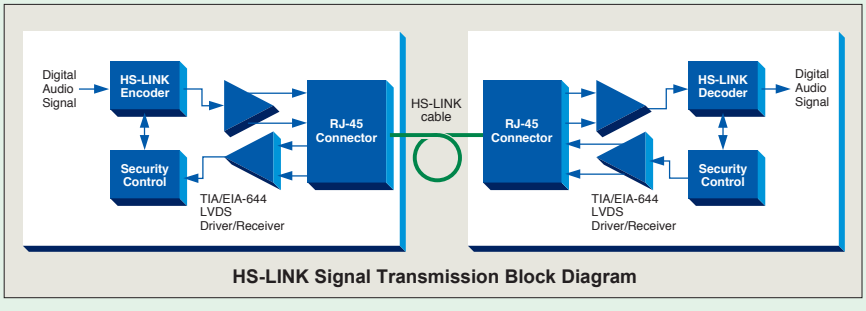
Connection example for multi-amped system with DG-58 and DF-55

In this example of a 2-way multi-amped system, the output of the analog preamplifier is sent to the DG-58 for sound field compensation and then supplied (from the DIGITAL OUTPUTS) in digital form to the DF-55.



Accuphase original digital interface HS-LINK: High Speed LINK

HS-LINK (High Speed 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 all audio data with utmost fidelity, including 2.8224 MHz/1 bit and 192 kHz/24 bit as well as conventional digital signals.

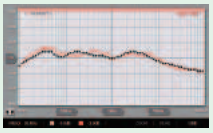


HS-LINK Signal Transmission Block Diagram

Other Features

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 drawing screen, and manual compensation screen among others. Zooming allows drawing the intended 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 actual 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.

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.

Use of the ZOOM function as shown here also facilitates level adjustments.

Draw an equalizer curve based on Voicing results

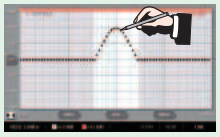
After Voicing, the user can go to the Equalizer screen and further modify the curve.

Individual speaker measurement

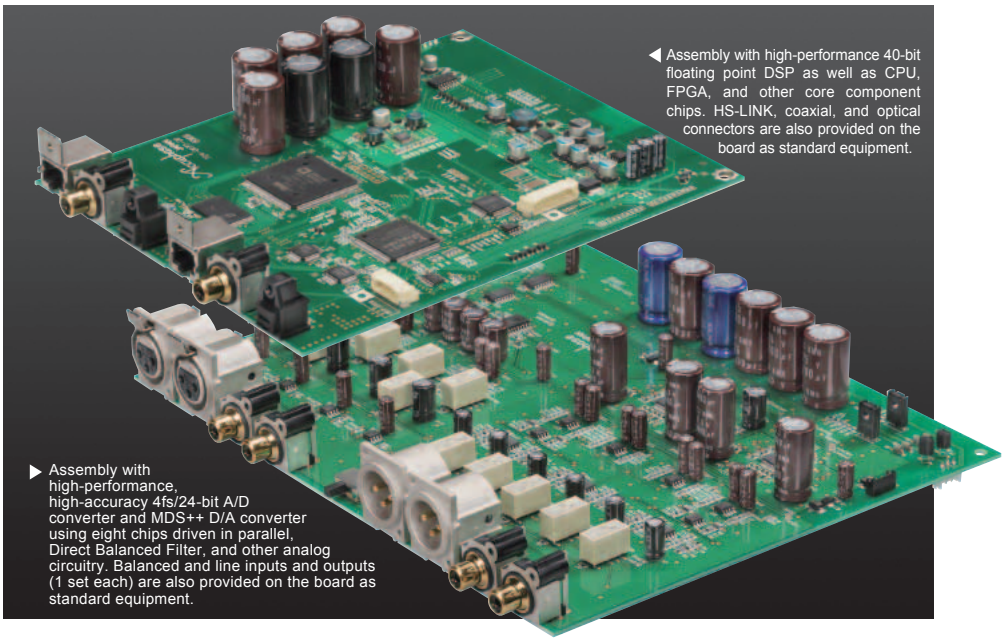
This function is helpful for example to achieve proper level matching for the different frequency bands in a multi-amped system.

Equalizer with Wide Band Mode

In this mode, the cursor is expanded, allowing linked adjustment of 19 bands together for smooth curve creation.



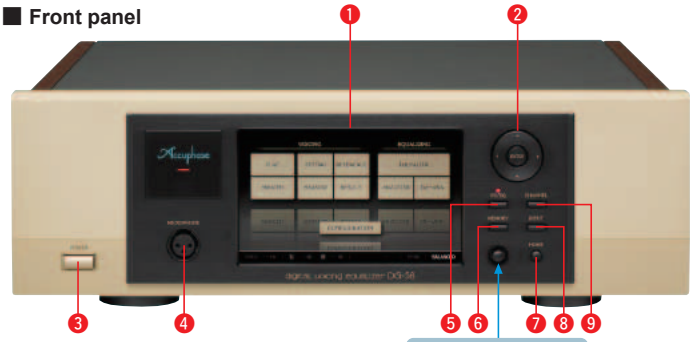
Simply moving one point with the pen shapes the entire cursor range into a smooth curve.



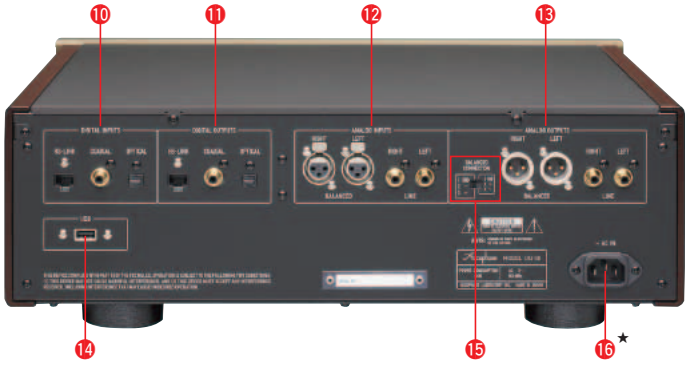
◀ Assembly with high-performance 40-bit floating point DSP as well as CPU, FPGA, and other core component chips. HS-LINK, coaxial, and optical connectors are also provided on the board as standard equipment.

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

■ Front panel



■ Rear panel



1. Display
2. Cursor/Enter buttons
3. Power switch
4. Microphone input jack
5. Voicing/Equalizer ON/OFF button
6. Memory button
7. Home button
8. Input selector button
9. Channel selector button
10. Digital inputs HS-LINK / COAXIAL / OPTICAL
11. Digital outputs HS-LINK / COAXIAL / OPTICAL
12. Analog inputs BALANCED / LINE
13. Analog outputs BALANCED / LINE
14. USB port for flash memory (USB stick)
15. BALANCED OUTPUTS phase selector
16. AC power connector ★

DG-58 Guaranteed Specifications

[Guaranteed specifications measured according to JEITA standard CP-2150]

- **Voicing** — 1/6 octave 67-band IIR filter
  Adjustment range: ±12 dB
- **Equalizer** — 1/6 octave 80-band IIR filter
  Adjustment range: ±12 dB
- **Measurement signal** — Warble tones
- **Frequency response curve input principle**
  Direct drawing with stylus pen and 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** — 0.5 - 50,000Hz +0 -3.0 dB
  (Sampling frequency: 2.8224 MHz or 192 kHz)
  4.0 - 20,000Hz +0 -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: 0.89 V
  GAIN 0 dB: 1.78 V
  GAIN - 6 dB: 3.55 V
- **A/D converter**
  Principle: Advanced multi-bit delta-sigma modulation
  Sampling frequency: 44.1 kHz, 88.2 kHz, 176.4 kHz
  Resolution: 24 bits
- **D/A converter**
  Principle: 8 MDS++
  Sampling frequency: 32 kHz - 192 kHz
  Resolution: 32 bits
- **Digital inputs**
  HS-LINK — Connector type: RJ-45; Suitable cable: Dedicated HS-LINK cable
  COAXIAL — Format: IEC 60958 compliant
  OPTICAL — Format: JEITA CP-1212 compliant
- **Sampling frequency** — 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz (16 to 24-bit 2-channel PCM) (OPTICAL to 96 kHz)
  [Only via HS-LINK] 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 compliant
  OPTICAL — Format: JEITA CP-1212 compliant
- **USB port** — USB 2.0/3.0 (up to 128 GB), for flash memory
  (Cannot be used for connection to a computer)
- **Operating system** — Microsoft® Embedded Compact 7®
- **Power requirements** — 120 V, 220 V, 230 V AC (voltage as indicated on rear panel), 50/60 Hz
- **Power consumption** — 24 W
- **Maximum dimensions** — Width 465 mm (18.31")
  Height 161 mm (6.34")
  Depth 396 mm (15.59")
- **Mass** — 14.3 kg (31.5 lbs) net
  22.0 kg (44.1 lbs) in shipping carton

* Microsoft and Embedded Compact 7 are registered trademarks of Microsoft Corporation in the U.S. and in other countries.

Remarks

★ *This product is available in versions for 120/220/230 V AC. Make sure that the voltage shown on the rear panel matches the AC line voltage in your area.*

★ *230 V version has an Eco Mode that switches power off after 120 minutes of inactivity.*

★ *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 (5 m)
- Audio cable with plugs (1 m)
- Remote Commander RC-310
- Microphone AM-48
- Microphone holder
- AC power cord
- Cleaning cloth

• Specifications and design subject to change without notice for improvements.

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