

Accuphase

SUPER AUDIO CD TRANSPORT

DP-100

PRECISION DIGITAL PROCESSOR

DC-101

● SACD/CD Transport With Dedicated Digital Output ● Digital Processor Supports New Generation Formats ● Compatible With New Digital Interface: HS-Link ● MDS Type D/A Converter Assures Unsurpassed Precision





Accuphase Opens Up Another Dimension in Pure Audio

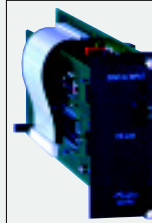
Separate Type SACD Player

for a Superb New Medium: Super Audio CD.

DP-100 Application Examples

To connect the DP-100 to other equipment for wide frequency range/wide dynamic range reproduction of a SACD source, an HS-Link interface is required. Using HS-Link, the DP-100 can also be connected to other current Accuphase components besides the DC-101, such as the Digital Preamplifier DC-330 and the DP-85, DP-77, or DP-75V. By installing other option boards, combination with components such as the Digital Voicing Equalizer DG-28/DG-38 and the Channel Divider DF-35 also becomes possible. This opens up a variety of ways to enjoy high quality music media.

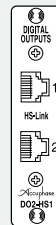
* The HS-Link cable is supplied with the DP-100.



HS-Link Input Board DI2-HS1

This board serves for input of the digital signal corresponding to the HS-Link interface.

- Installed as standard equipment in the DC-101.
- Serves for connecting the DP-100 to the DC-330, DP-75V, etc.
- Requires a dedicated HS-Link cable, such as the HDL-15 from Accuphase.
- Uses two slots.

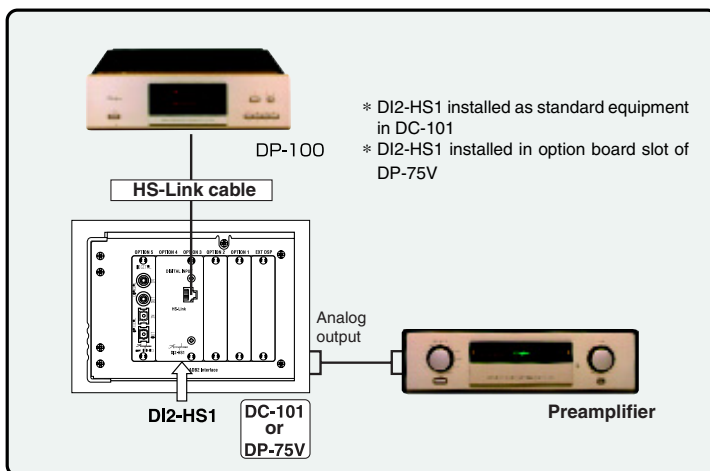


HS-Link Output Board DO2-HS1

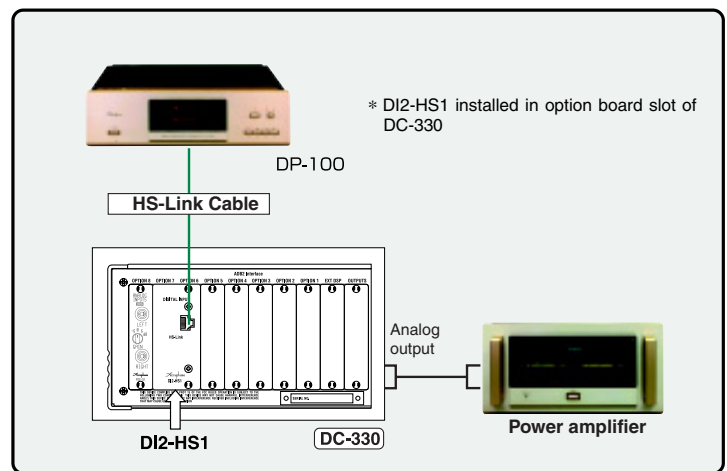
This board serves for output of the digital signal corresponding to the HS-Link interface.

- By installing this board in the DC-330, the signal from the DP-100 can be sent on to the DF-35 in digital form.
- Requires a dedicated HS-Link cable.

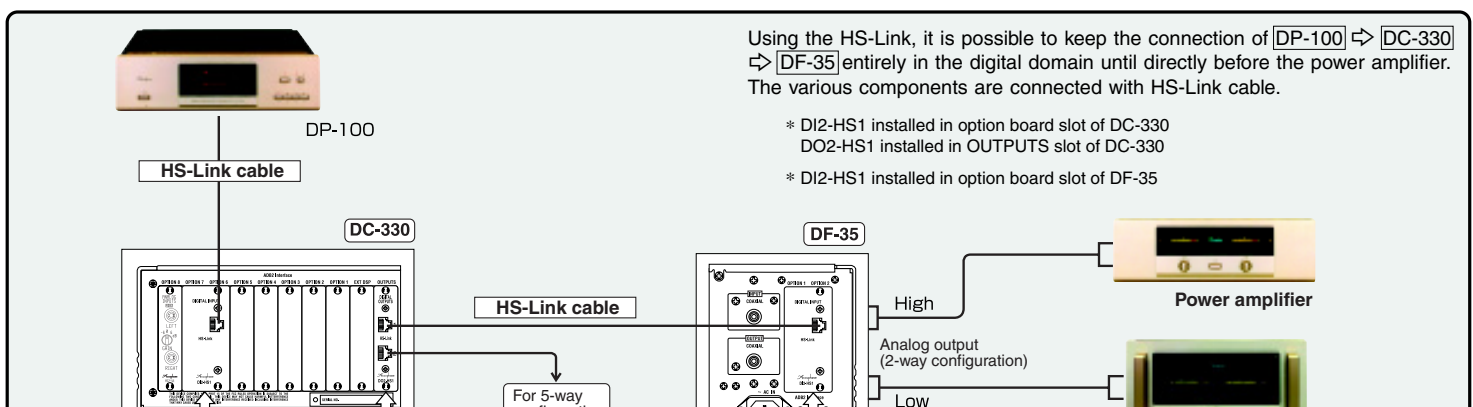
Connection of DP-100 to DC-101 or DP-75V



Connection of DP-100 to DC-330



Digital Connection of DP-100 to DC-330 and DF-35

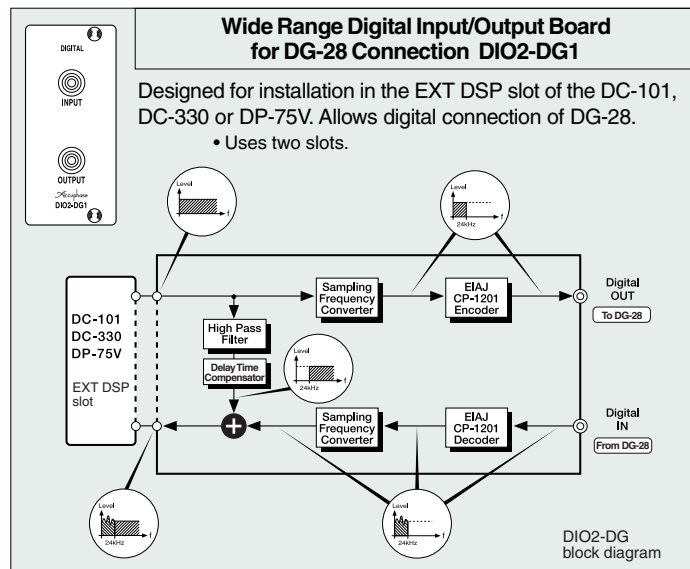


Combination Example of DP-100 With DG-28

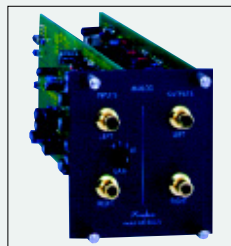
*For information on combination with the DG-38, see the catalog and documentation for that model.

The DG-28 can handle 48-kHz/24-bit signals and perform equalization up to a threshold of 24 kHz. For high sampling frequency signals exceeding 48 kHz such as from SACD, a "Wide Range Digital Input/Output Board for DG-28 Connection" is required.

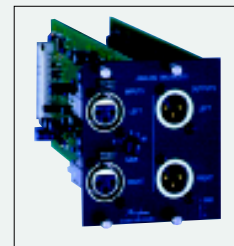
Only the signal components in the audible range up to 24 kHz are sent to the DG-28 for equalization. The signal components above 24 kHz are routed directly to the output using a high-pass filter. The equalized signal from the DG-28 is mixed to the bypassed components and then returned in digital form.



Wide Range Analog Input/Output Board for DG-28



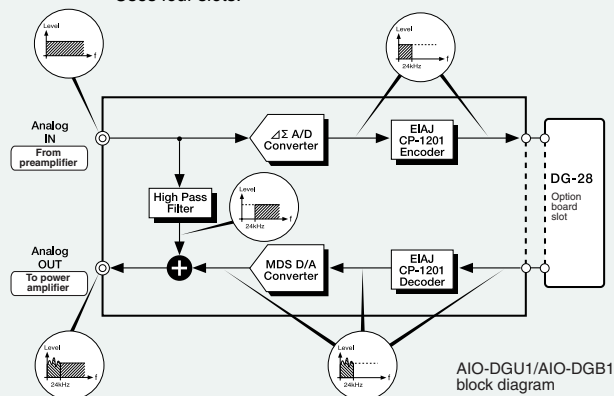
Unbalanced connection:
AIO-DGU1



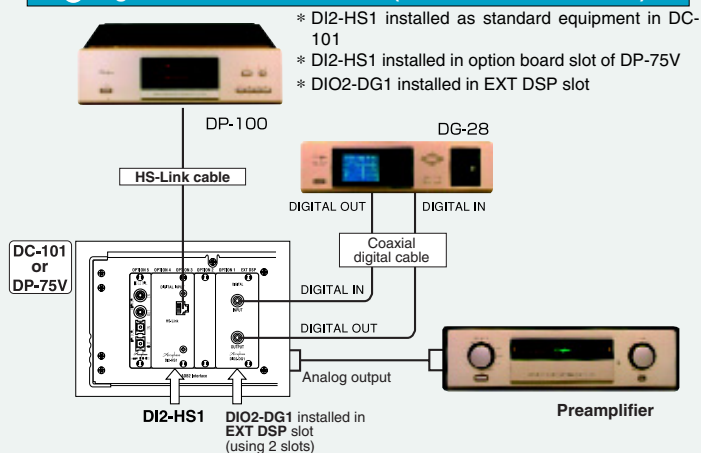
Balanced connection:
AIO-DGB1

Allows connection of DG-28 between analog preamplifier and power amplifier.

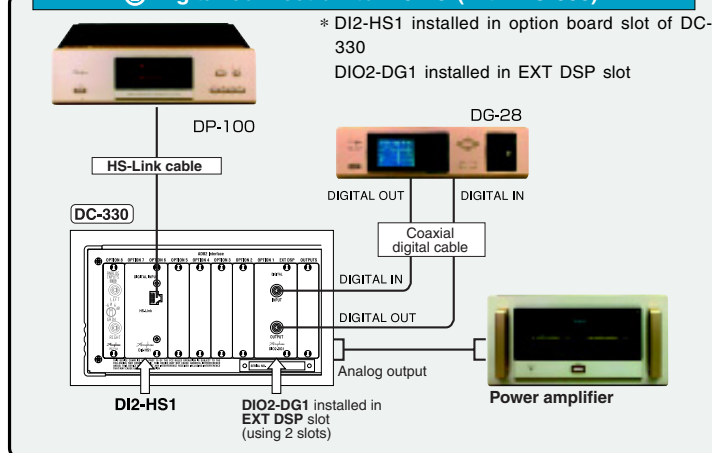
- Installed in option board slots of DG-28.
- Uses four slots.



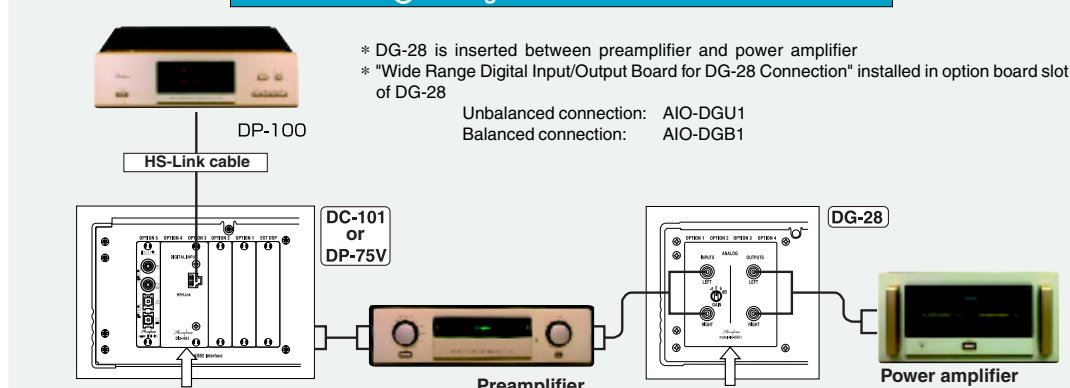
① Digital connection to DG-28 (with DC-101 or DP-75V)



② Digital connection to DG-28 (with DC-330)



③ Analog connection to DG-28



④ Analog connection to DG-28 and DF-35

* Analog Input Board installed in option board slot of DF-35



Unbalanced connection:



Balanced connection:

Precision Digital Processor

DC-101

The DC-101 is a digital processor incorporating latest digital technology to handle new generation formats such as SACD (2.8224 MHz/1 bit) or DVD-Audio (192 kHz/24 bit). From the data supplied by these high-quality sources, the DC-101 extracts a music signal of the utmost purity. The crucial step of turning the digital information into analog form is handled by an MDS (Multiple Delta Sigma) converter. This principle was first developed for the DC-330 and affords absolutely outstanding conversion precision. To assure flexibility and allow future expansion, all inputs to the DC-101 are handled by option boards. An HS-Link input board and a regular digital input/output board are provided as standard equipment.

- Two sets each of balanced and unbalanced analog outputs, low dielectric constant and low loss Teflon boards, MDS D/A converter board (left & right), DAI board assembly.

- Assembly with DAI encoder/decoder, Ultra Jitter-Free PLL Circuit, and other circuits

Versatile processor features HS-Link input as standard equipment, for SACD reproduction without compromise. Compatible with latest generation of super high quality sources such as SACD and DVD-Audio. Revolutionary MDS (Multiple Delta Sigma) converter with 24-bit resolution assures superior precision. Ultra jitter-free PLL circuit topology.

MDS (Multiple Delta Sigma) converter reduces distortion to theoretical limits and assures outstanding S/N ratio

MDS (Multiple Delta Sigma) is a revolutionary design which employs several delta sigma type converters in a parallel configuration, resulting in drastically improved accuracy. The delta sigma principle combines oversampling with noise-shaping (a kind of digital feedback) which projects the amplitude information of the digital signal onto a time axis for precise conversion. Figure 1 shows several delta sigma converters which are

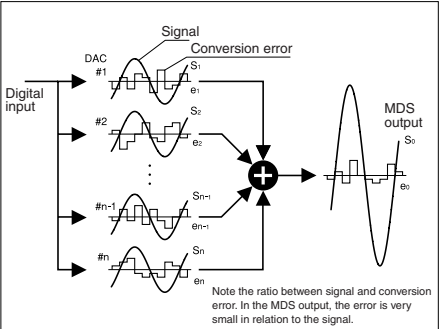
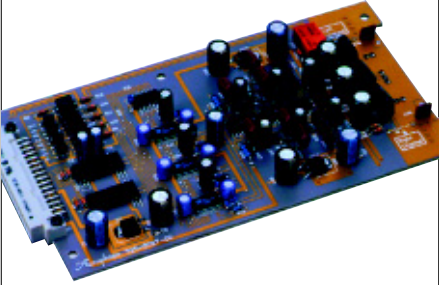


Fig. 1 Principle of MDS type D/A converter



form. In the DC-101, six delta sigma converters are operated in parallel, resulting in a performance improvement by a factor of 2.45 ($\approx \sqrt{6}$).

Ultra Jitter-Free PLL Circuit

For the purpose of synchronizing operation of the D/A converter with the digital audio interface (DAI), a phase-locked loop (PLL) circuit is used which generates a master clock to be used as system reference.

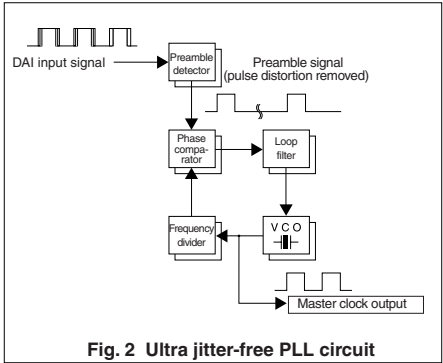


Fig. 2 Ultra jitter-free PLL circuit

As shown in the diagram, the Ultra Jitter-Free PLL Circuit of the DC-101 consists of a preamble detector and a voltage-controlled oscillator (VCO) using a quartz crystal element. The master clock produced by this PLL circuit is totally free from the effects of pulse distortion and jitter.



D/A converter with printed circuit boards made from Teflon (glass fluorocarbon resin) with low dielectric constant and low loss

The D/A converter boards use a substrate of glass fluorocarbon resin which has a stable, low dielectric constant as well as superior heat resistance and high-frequency characteristics. Using this material for the audio circuitry assures signal transmission with utmost purity, resulting in a clear improvement in perceived signal-to-noise ratio. In the DC-101, gold-plated copper traces further contribute to sonic purity. * Teflon is a registered trademark of DuPont USA.

- Ultra high performance optoisolators (transmission rate 80 MBit/second) ensure total electrical isolation of the digital and analog sections, to prevent unwanted mutual interaction and to shut out noise interference.
- Digital level control with wide adjustment range ($-\infty$, -84 to 0 dB)
- Two sets of balanced and unbalanced analog outputs
- User-editable alphanumeric input position indication



Option Boards

Accuphase offers a wide range of digital and analog input and output boards. Up to five such boards can be installed in the option board slots of the unit in addition to the boards provided as standard equipment. This allows the user to configure the system to fit any need.

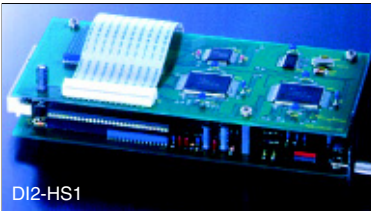
* For information on combination with the DG-38, see the catalog and documentation for that model.

- HS-Link Input Board DI2-HS1 for connection to DP-100 provided as standard equipment

Allows connecting the DP-100 to the DC-101 with an HS-Link cable. The cable carries both the SACD and CD signal for reproduction with optimal sound quality.

* For copyright reasons, the SACD/CD signal supplied via the HS-Link input board does not appear at the output connectors of other digital input/output boards (except HS-Link), and cannot be recorded.

* To record the digital CD signal from the DP-100, use the coaxial connection.



- Digital Input/Output Board DIO-OC1 with optical and coaxial connectors provided as standard equipment

This board allows connection of equipment such as a CD transport, MD recorder, etc. for high quality reproduction.

* The digital outputs carry the input source signal and allow digital recording (except for the HS-Link signal).

- EXT DSP option board slot allows connection of DG-28

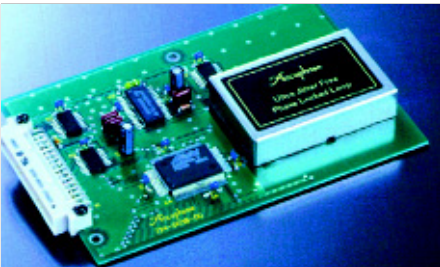
By installing a digital input/output board in this slot, sound field compensation entirely in the digital domain becomes possible.

* The DG-28 supports signals with a sampling frequency of up to 48 kHz. For sources with higher sampling frequencies such as SACD, the Wide Range Digital Input/Output Board for DG-28 Connection DIO2-I (see separate page) is required.

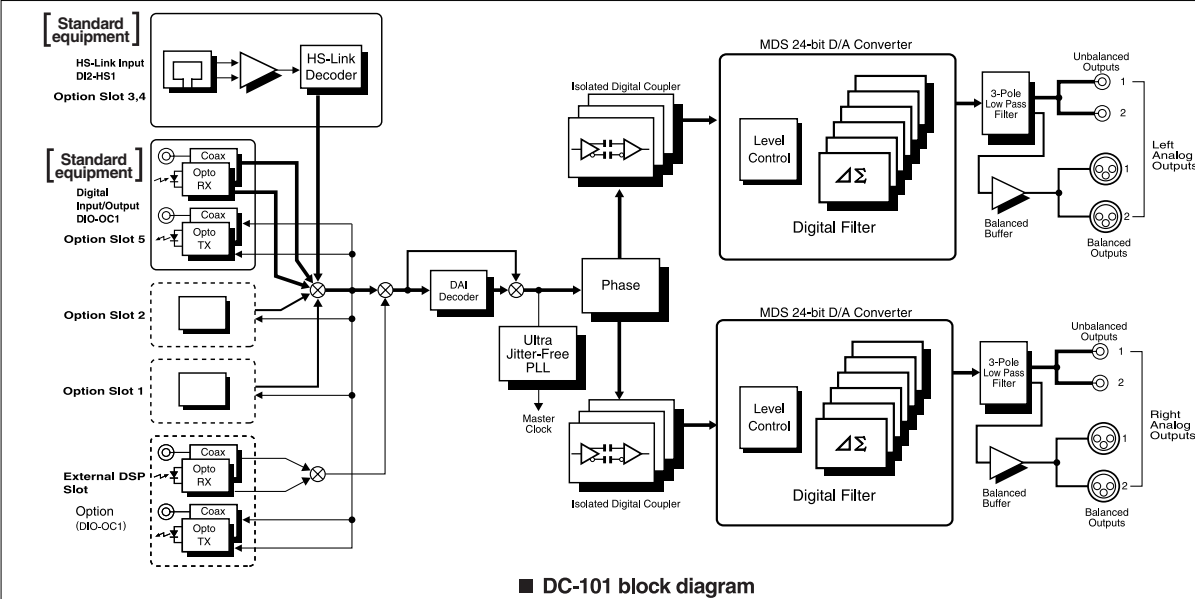


- Any option board can be used in any slot
- All option boards designed for the DC-330, DP-75V, DG-28, DF-35, etc. can be used.

Optional boards	
HPC Coaxial (BNC) Input Board	DI-BNC1
Digital Input/Output Board	DIO-OC1
HPC Optical (ST) Input/Output Board	DIO-ST1
AES/EBU Input/Output Board	DIO-PRC



- The photograph shows the DC-101 with separately available option boards installed and with the shielding cover removed.



■ DC-101 block diagram

Super Audio CD Transport

DP-100

A new era is about to unfold in the history of audio. The Super Audio CD offers a way to experience music like never before. Accuphase offers a no-holds-barred separate type player solution that lets the new medium develop its full potential: Transport DP-100 and Digital Processor DC-101.

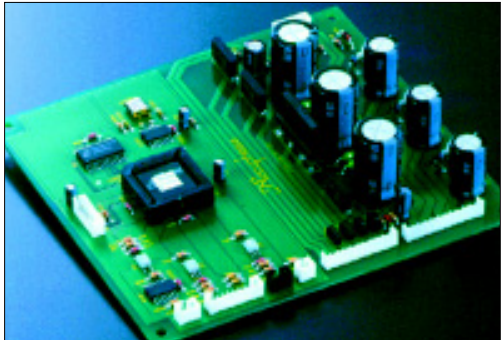
Whereas the conventional CD operates with a sampling frequency of 44.1 kHz and 16-bit resolution, the Super Audio Compact Disc (SACD) employs a 2.8224 MHz/1-bit format which enables it to hold four times more information. To make optimum use of the wide frequency range and dynamic range capabilities of this exciting new medium, separate type components are clearly the best approach. Accuphase presents two components that can take SACD to the heights it is designed for. And to make sure that nothing is lost in the transfer stage, the two components are linked by a new type of digital

SACD/CD transport with dedicated digital output and HS-Link: the ultimate digital audio interface. Stationary optical assembly with dual pickups assures absolutely pure digital signal readout. Top loading principle with smooth sliding door.

interface called HS-Link. This interface standard developed by Accuphase is ideal not only for new sources like SACD and DVD-Audio, it also can benefit existing digital audio components such as CD players or MD and DAT recorders. Future possibilities are just now beginning to unfold, giving the true audiophile much to look forward to.

The HS-Link interface uses a dedicated cable which can carry both upstream and downstream data. This makes it possible to use an unobtrusive signal verification system that assures full copyright protection for musical material. Using HS-Link, the DP-100 can be combined with other current Accuphase components such as the Digital Preamplifier DC-330 and the DP-85, DP-77, or DP-75V. In conjunction with the Digital Voicing Equalizer DG-38 or DG-28 (using wide-range option boards for DG-28), sound field compensation

for wide-range sources is possible. By configuring an HS-Link chain consisting of DP-100 ⇄ DC-330 ⇄ DF-35, you can create a multi-amped system that takes digital audio to sonic heights such as never experienced before.



■ Assembly with HS-Link encoder, master clock generator, power supply circuitry, etc.

■ Digital output of DP-100



■ "High Carbon" cast iron insulator feet

A Ground breaking New Digital Audio Interface
HS-Link — High Speed Link

HS-Link makes use of extremely sophisticated digital signal transmission technology. Accuphase developed this standard in order to allow reproduction of digital sources with superb sound quality. A single cable is used both to send and receive verification information for copyright purposes and to deliver the audio data stream without the slightest deterioration.



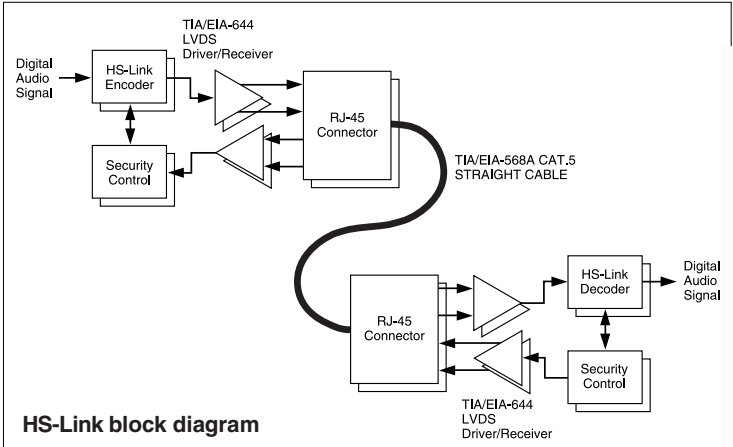
HS-Link cable

- Capability to carry new signal formats such as SACD or DVD-Audio as well as conventional digital audio formats such as CD, MD, DAT, etc.
- Transfer rate: 400 Mbps or higher (logical limit 1923 Mbps)
- Transfer signal format: Low Voltage Differential Signaling (LVDS) TIA/EIA-644
- Send/receive clock fully synchronized
- Full bidirectional capability with simultaneous send/receive
- Full security capability with send/receive verification
- Cable type: Shielded twisted pair 8-conductor OFC cable (TIA/EIA-568A CAT.5)

Sampling frequencies
32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz
(16 to 24-bit, 2-channel PCM)
2.8224 MHz (1-bit 2-channel DSD)



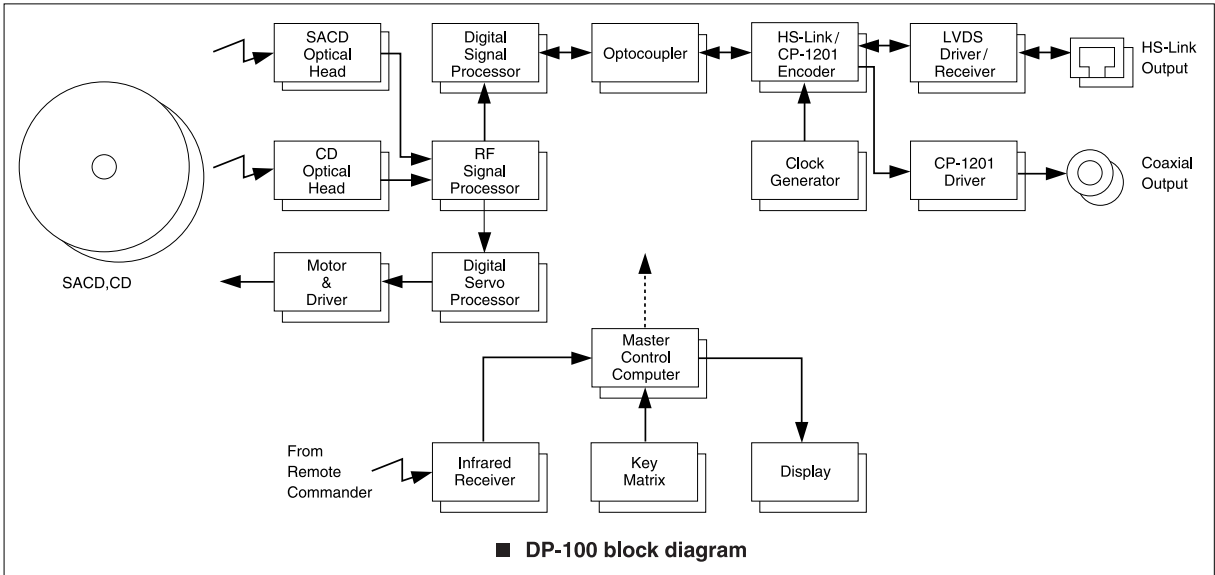
■ Connecting the DP-100 and DC-101 with HS-Link cable



HS-Link block diagram

DP-100 Features

- Digital output SACD/CD transport designed for ultra-precise signal readout
- Plays also regular CDs with optimum quality
- Stationary dual optical mechanism featuring separate pickups for SACD and CD
- Dedicated digital servo DSP for optical pickup and motor control
- Large display shows text data, operation status, and other information
- Compatible with super high quality digital audio interface HS-Link developed by Accuphase
- Built-in HS-Link RJ-45 connector for SACD/CD signal output
- Built-in coaxial connector for CD signal output
- High-precision smooth sliding door shuts out external noise and vibrations
- Strong chassis with resonance and vibration resistant construction
- "High Carbon" cast iron insulator feet with superior damping characteristics further enhance sound quality
- Dedicated HS-Link cable supplied as standard equipment
- Multi-function remote commander RC-27 supplied as standard equipment



■ DP-100 block diagram

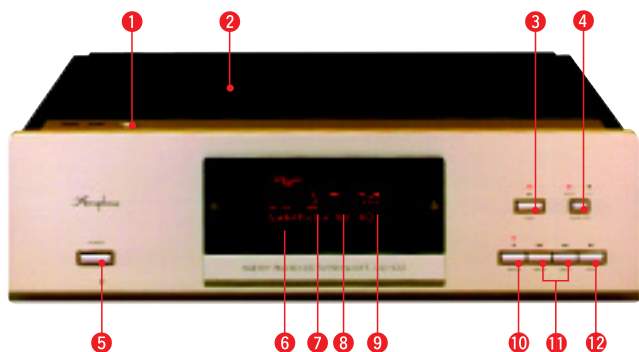
■ HS-Link connector (SACD/CD output) and coaxial connector (CD output) assembly

- Supplied remote commander RC-27
 - Versatile DP-100 functions including direct play, program, repeat, shuffle, etc.
 - DC-101 input switching and output level adjustment

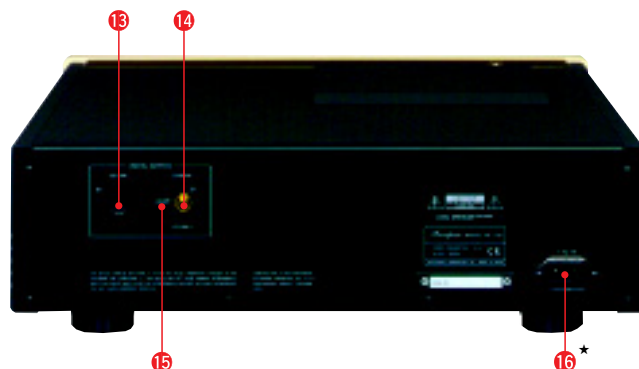


DP-100

FRONT PANEL



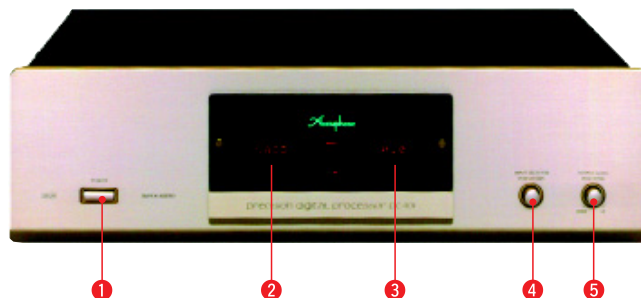
REAR PANEL



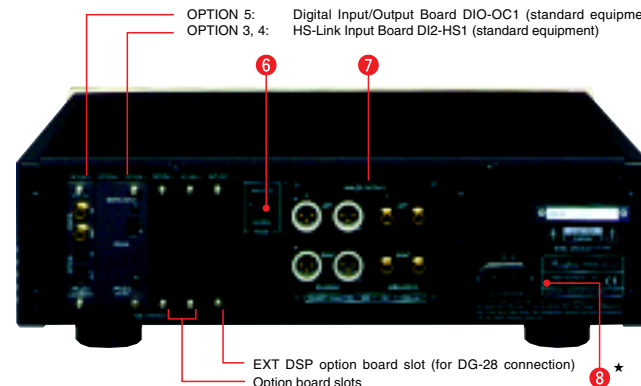
- | | |
|------------------------------|---|
| ① Disc lid open/close button | ⑩ Pause button |
| ② Disc lid | ⑪ Track search buttons |
| ③ Play button | ⑫ Stop button |
| ④ SACD/CD button | ⑬ SACD/CD digital output connector (HS-Link) |
| ⑤ Power switch | ⑭ CD digital output connector (coaxial) |
| ⑥ Text display | ⑮ CD digital output on/off switch |
| ⑦ Track indicator | ⑯ AC power connector (for supplied power cord)* |
| ⑧ Index indicator | |
| ⑨ Time indicator | |

DC-101

FRONT PANEL



REAR PANEL



- | | |
|--|--|
| ① Power switch | ⑥ Phase selector NORMAL/INVERTED |
| ② Input name display | ⑦ Analog output connectors (Unbalanced/balanced, 2 each) |
| ③ Output level display | ⑧ AC power connector (for supplied power cord)* |
| ④ Input selector (push: external digital equipment on/off) | |
| ⑤ Output level control | |

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 depend on the voltage rating and destination country.

DP-100 Guaranteed Specifications

- **Compatible disc formats** 2-channel Super Audio CD CD
- **Data read principle** Non-contact optical pickup
- **Laser diode wavelength** SACD: 650 nm
CD : 780 nm
- **Digital outputs**
HS-Link Connector type: RJ-45
Suitable cable: Dedicated HS-Link cable
COAXIAL Format: EIAJ CP-1201
- **Power requirements** AC120 V/230 V (Voltage as indicated on rear panel)
50/60 Hz
- **Power consumption** 20 W
- **Maximum dimensions** Width 475 mm (18-11/16")
Height 160 mm (6-5/16")
Depth 398 mm (15-11/16")
- **Weight** 19.2 kg (42.3 lbs) net
26.0 kg (57.3 lbs) in shipping carton
- **Supplied Remote Commander RC-27**
Remote control principle: Infrared pulse
Power supply: Two IEC R03 (size AAA) batteries
Max. dimensions: 66 mm (W) × 223 mm (H) × 20 mm (D)
Weight: 276 g (including batteries)

Supplied with DP-100

- AC power cord
- HS-Link cable (HDL-15)
- Stabilizer
- Remote commander RC-27

Supplied with DC-101

- AC power cord

DC-101 Guaranteed Specifications

[Guaranteed specifications are measured according to EIA standard CP-2402.]

- **Digital inputs**
HS-Link Connector type: RJ-45
Suitable cable: Dedicated HS-Link cable
COAXIAL Format: EIAJ CP-1201/AES-3 compliant
OPTICAL Format: EIAJ CP-1201 compliant
Sampling frequencies
32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz
(16 to 24-bit, 2-channel PCM)
[HS-Link only]
176.4 kHz, 192 kHz (16 to 24-bit, 2-channel PCM)
2.8224 MHz (1-bit 2-channel DSD)
- **Digital outputs**
COAXIAL Format: EIAJ CP-1201 compliant
OPTICAL Format: EIAJ CP-1201 compliant
- **D/A converter** 24-bit MDS converter
- **Frequency response** 0.5 - 50,000 Hz +0, -3 dB
- **Total harmonic distortion** 0.0008% (20 to 20,000 Hz)
- **Signal-to-noise ratio** 116 dB
- **Dynamic range** 112 dB
(24-bit input, low-pass filter off)
- **Channel separation** 108 dB (20 to 20,000 Hz)
- **Output voltage and impedance**
BALANCED : 2.5 V at 50 ohms, balanced XLR type
UNBALANCED : 2.5 V at 50 ohms, RCA phono jack
- **Output level control** -∞, -84 to 0 dB (digital)
- **Power requirements** AC120 V/230 V (Voltage as indicated on rear panel)
50/60 Hz
- **Power consumption** 24 W
- **Maximum dimensions** Width 475 mm (18-11/16")
Height 150 mm (5-7/8")
Depth 398 mm (15-11/16")
- **Weight** 20.8 kg (45.9 lbs) net
27.0 kg (59.5 lbs) in shipping carton

Optional cables

- HS-Link cable HDL-15 (1.5 m)

* 3 m, 5 m, 7.5 m, and 10 m cable lengths are available as special-order option.

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

Accuphase