

# Accuphase

PRECISION SA-CD TRANSPORT

## DP-950

PRECISION MDS DIGITAL PROCESSOR

## DC-950

- DP-950: Digital-only SA-CD/CD transport ● High-rigidity, high-precision SA-CD/CD drive
- Accuphase original digital interface: HS-LINK
- DC-950: Digital processor with revolutionary SA-CD reproduction technology MDS
- MDS++ type D/A converter with 8 circuits driven in parallel ● "Direct Balanced Filter" with totally separate line and balanced signal paths ● Eight inputs including HS-LINK and USB



# The Pinnacle of Perfection



## DP-950

PRECISION SA-CD TRANSPORT

The centerpiece of the DP-950 is its ultra-massive SA-CD/CD drive with highly rigid, high-precision construction. This is complemented by an ultra-strong power supply featuring two high-efficiency toroidal transformers and an array of filtering capacitors. The result is an SA-CD/CD transport that delivers a digital signal of unsurpassed purity.

# The Shape of the Future



## DC-950

PRECISION MDSR DIGITAL PROCESSOR

The DC-950 is the ultimate digital processor using only specially selected materials and advanced digital technology. Glass fluoro-carbon resin PCBs and completely separate power transformers for digital and analog circuitry assure peerless performance that brings out the full musical richness of the digital source signal.



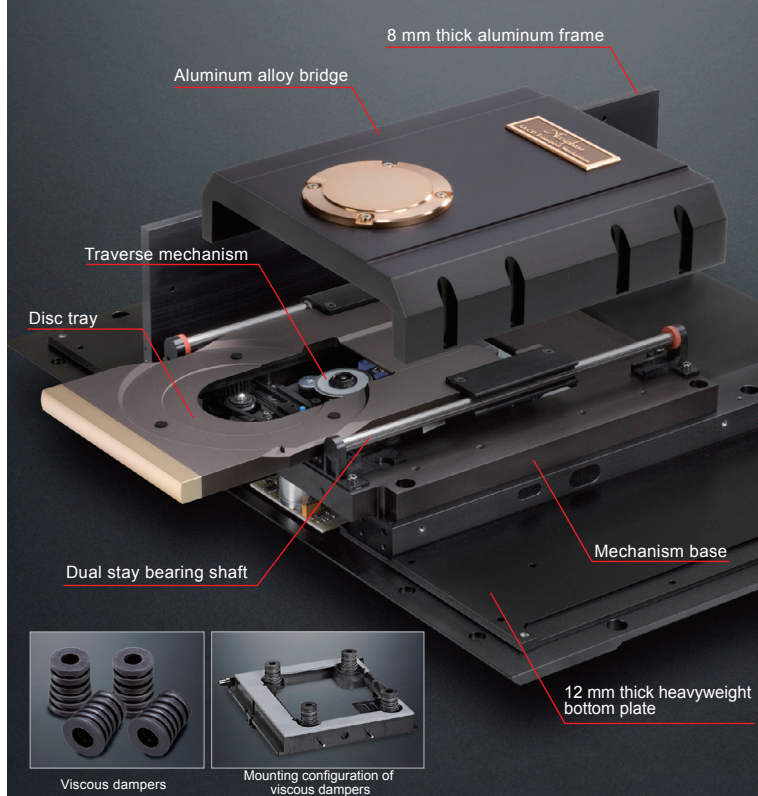
# DP-950

PRECISION SA-CD TRANSPORT

The supreme heavy-weight SA-CD/CD transport — The ultra-massive drive mechanism is machined with utmost precision, and the highly rigid construction with low center of gravity eliminates any unwanted vibrations. A luxurious disc tray is linked to an utterly quiet and smooth loading mechanism. Support for the digital audio interface HS-LINK Ver. 2 ensures accuracy on a level that far surpasses earlier standards, allowing the separate transmission of clock and data signals for enhanced purity. The DP-950 ushers in a new era of information fidelity, fully bringing out the enormous amount of musical detail stored on high-quality digital media.

## The Technology of Precision

### Newly developed high-rigidity, high-precision SA-CD/CD drive



### External vibrations reliably blocked by super-massive sturdy chassis Highly rigid and precise construction

The SA-CD/CD drive is mounted firmly to a strong aluminum frame, and the drive loading mechanism and mechanical base form a massive and highly rigid chassis of considerable weight (total 11.7 kg). Conversely, the traverse mechanism, an integrated structure consisting of the optical assembly including laser pickup and rotating parts, is designed for extremely light weight, and isolated from the loading mechanism by a floating suspension arrangement. A large, super-heavy bridge machined from a single block of aluminum is joined to the mechanism base to form an integrated structure.

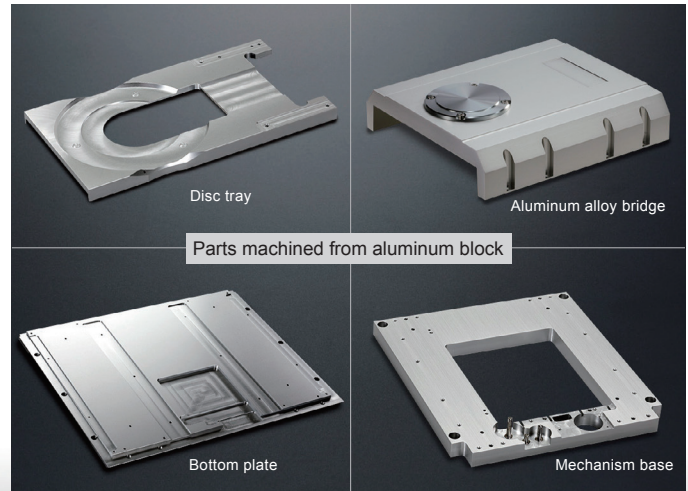
### "Traverse Mechanism" with 4-point floating design and viscous dampers

### Integrated construction with large heavyweight aluminum alloy bridge mounted to mechanism base

### High-quality disc tray extruded from an aluminum block

### Super-quiet smooth disc loading mechanism featuring dual stay configuration for steel bearing shafts

### Low center of gravity to further control and reduce vibrations



### Remote commander RC-120 supplied with DP-950

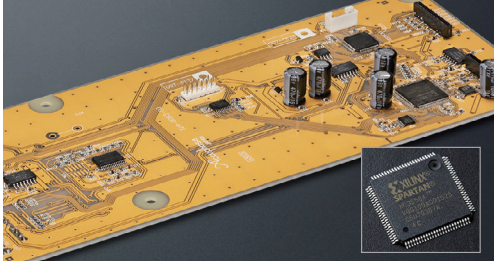
Controls DP-950 functions such as direct play, repeat, etc.

Also controls DC-950 functions such as input switching and output level adjustment, and can serve for volume control of Accuphase amplifiers.



**Dedicated digital output only SA-CD/CD transport for highly accurate signal pickup**

A digital servo system with a dedicated DSP for control of the optical pickup and the various motors allows optimized operation for SA-CD and CD media respectively, assuring stable and highly accurate signal readout.



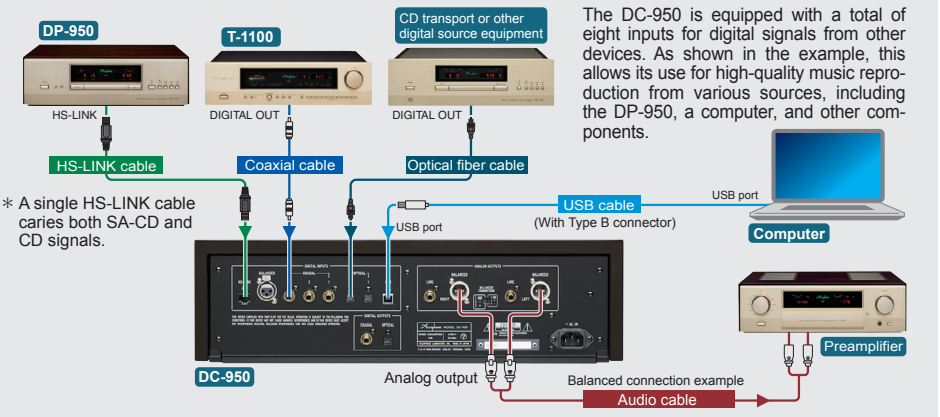
**Single-lens/twin laser diode pickup handles the 650 nm wavelength (SA-CD) and 780 nm (CD) with dedicated diodes for reliable high-speed access**

**Strong power supply with high-efficiency toroidal transformers and custom-made filtering capacitors**

Two separate high-efficiency toroidal transformers in conjunction with ten specially made high-quality filtering capacitors (4,700 µF/35 V) are used to separately power the SA-CD/CD drive mechanism and the signal processing section. The result is a perfectly stable digital signal of high accuracy.



**DP-950 and DC-950 connection example**



**Advanced Features**

**Support for HS-LINK Ver. 2 means that clock and data signals can be transmitted separately for direct input of a high-purity signal to the D/A converter, resulting in a drastic improvement in performance and quality.**

**High-quality playback of CD media as well**  
The sophisticated SA-CD signal processing technology of the DP-950 also benefits conventional CD media, allowing highly accurate signal readout for playback with excellent quality.

**Support for playback of DSC discs with DSF file format**

**Easy to read display**  
The 7-segment display is larger than earlier displays of this type, for improved readability. \* Text display is not supported.

**Chucking magnet using neodymium is designed to firmly and evenly hold the disc to prevent wobble**

The 8-pole magnetized yoke of the magnet ensures uniform force to securely clasp the turntable and the disc to prevent disc wobble.

**One RJ-45 output (HS-LINK) for SA-CD and CD, and one dedicated coaxial output for CD**

**Advanced High Carbon cast iron insulator feet with superior damping characteristics further enhance sound quality**

**Visually stunning cabinet made of carefully selected exquisite wood with natural grain and finished to a mirror polish**



**About HS-LINK Ver. 2**

HS-LINK Ver. 2 is a further elevated version of the Accuphase HS-LINK interface, providing significantly expanded sampling frequency and quantization support up to 5.6448 MHz/1-bit 2-channel DSD and 352.8 kHz and 384 kHz/32-bit 2-channel PCM. ● The DC-950 can reproduce both HS-LINK (Ver. 1) and HS-LINK Ver. 2 signals.

	HS-LINK (Ver. 1)	HS-LINK Ver. 2
Sampling frequencies	32.0 kHz, 44.1 kHz, 48.0 kHz, 88.2 kHz, 96.0 kHz, 176.4 kHz, 192.0 kHz / 16 to 24-bit 2-channel PCM	32.0 kHz, 44.1 kHz, 48.0 kHz, 88.2 kHz, 96.0 kHz, 176.4 kHz, 192.0 kHz, 352.8 kHz, 384.0 kHz / 16 to 32-bit 2-channel PCM
Number of bits	2.8224 MHz / 1-bit 2-channel DSD	2.8224 MHz, 5.6448 MHz / 1-bit 2-channel DSD

- Capability to carry the SA-CD signal as well as conventional digital audio signals
- Transfer rate: min. 400 Mbps (logical limit 1923 Mbps)
- Transfer signal format: Low Voltage Differential Signaling (LVDS) TIA/EIA-644
- Send/receive clock fully synchronized
- Cable type: dedicated HS-LINK cable



Supplied with DP-950:  
HS-LINK cable  
● Cable length: 1.5 m  
● Triple shielded twisted pair 8-conductor OFC cable

# DC-950

PRECISION MDS D DIGITAL PROCESSOR

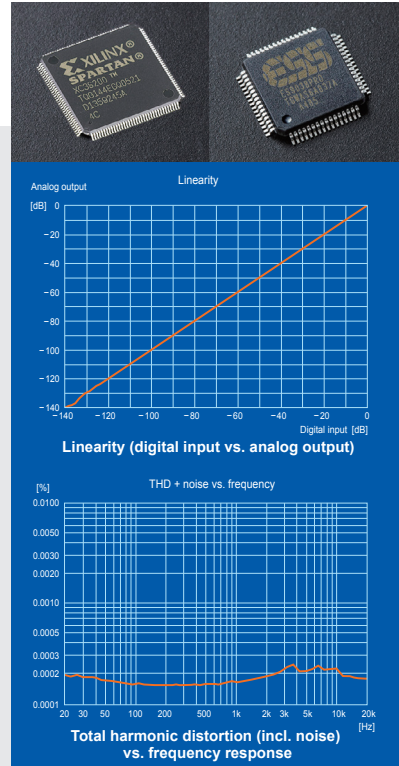
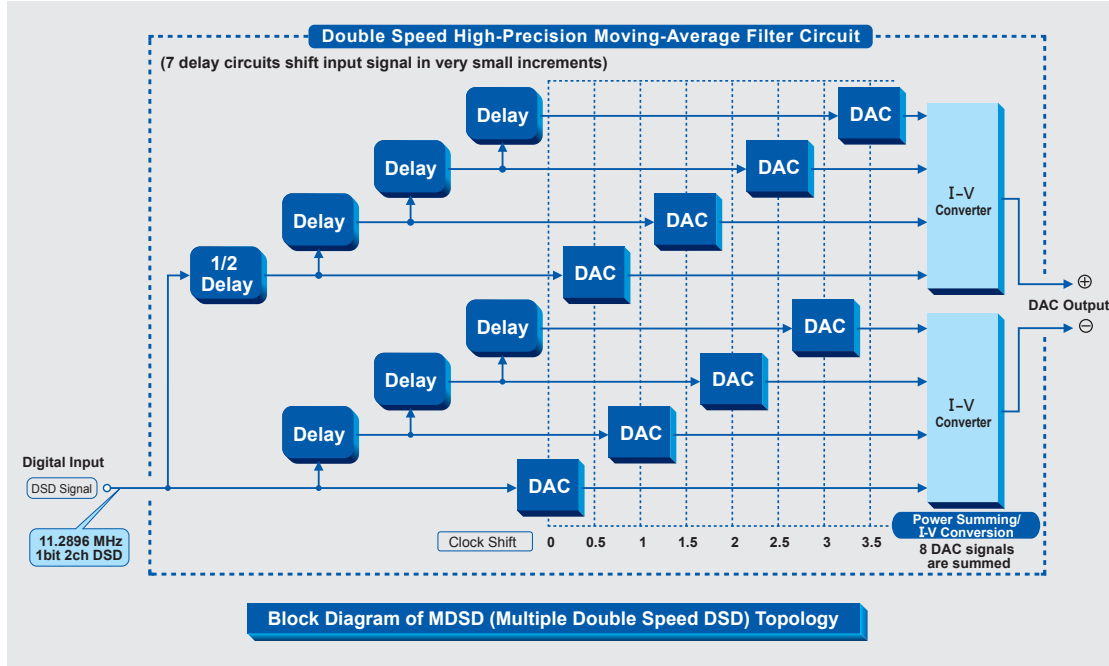
A digital processor that redefines the state of the art — Digital signal processing is implemented through an ultra-high-speed FPGA in conjunction with innovative MDS D reproduction technology, forming a double-speed high-precision moving-average filter circuit for straight D/A conversion of the DSD signal. Eight digital inputs including USB with support for 11.2896 MHz (1-bit 2-channel DSD) and 384 kHz (32-bit 2-channel PCM), as well as an HS-LINK connector (Version 1 and 2) provide enhanced versatility for the ultimate in performance and sonic purity.

## Innovation Meets Accuracy

### Ground-breaking digital processing: MDS D (Multiple Double Speed DSD) with support for 11.2896 MHz (1-bit 2-channel DSD)

The DSD signal by principle contains quantization noise components which rise drastically outside the range of human hearing and which must be removed. In conventional designs, a digital filter inserted before the D/A converter serves to cut the noise, and an analog filter with a gentle slope setting is then used after the converter to derive the analog output. The DC-950 by contrast takes a completely different approach. An FPGA (field-programmable gate array) is used in the digital processing section, together with a moving-average filter circuit for clock shifting. This innovative MDS D reproduction circuit topology is capable of highly effective noise removal. A major advantage is the fact that conversion errors in the D/A stage are kept extremely small, while the high-cut filter function is already integrated in the circuit.

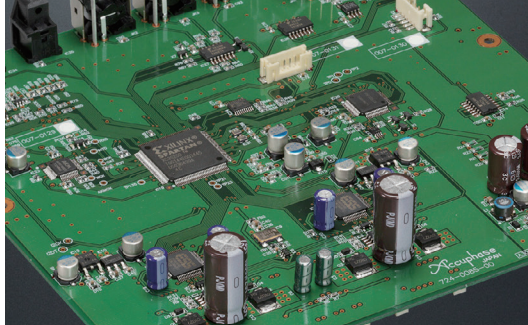
- High-cut filter function reliably removes signal components outside the range of human hearing (almost exclusively noise components).
- Conversion errors that could affect signal components in the range of human hearing are minimized, similar to MDS.



## Excitement That Lasts Forever

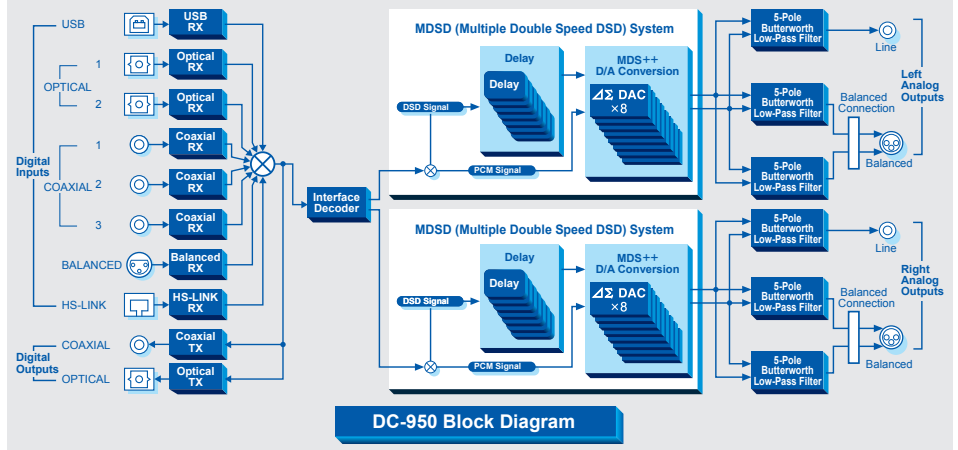
### MDS++ type D/A converter with 8 parallel circuits and support for 384 kHz (32-bit 2-channel PCM)

The super-advanced MDS++ type D/A converter used in the DC-950 was developed to further push the envelope, resulting in breathtaking performance and PCM signal reproduction of the highest order. Pioneering the application of the latest 32-bit Advanced Hyperstream™ DAC chip (ES9038PRO) from ESS Technology Inc., a solution for driving eight circuits in parallel was successfully implemented. Compared to a single converter circuit, this arrangement improves overall performance by a factor of about three.



### Strong power supply with high-efficiency toroidal transformers and array of custom-made filtering capacitors

Two separate highly efficient toroidal transformers in conjunction with specially made high-quality filtering capacitors (total 80,000 µF) are used to separately power the digital and analog sections.



## Advanced Features

### Easy to read display

The 7-segment display is larger than earlier displays of this type, for improved readability.

### Display can show sampling frequency and number of quantization bits

### Filter amplifier printed circuit board made from glass cloth fluorocarbon resin with low dielectric constant and minimum loss

### Digital level control allows adjustment down to -80 dB.

The level control employs the digital principle for optimum accuracy and minimal degradation of sound quality. Integration of the level control function in the D/A converter prevents noise and provides a wide adjustment range down to -80 dB.

### Balanced connectors to shut out external noise interference

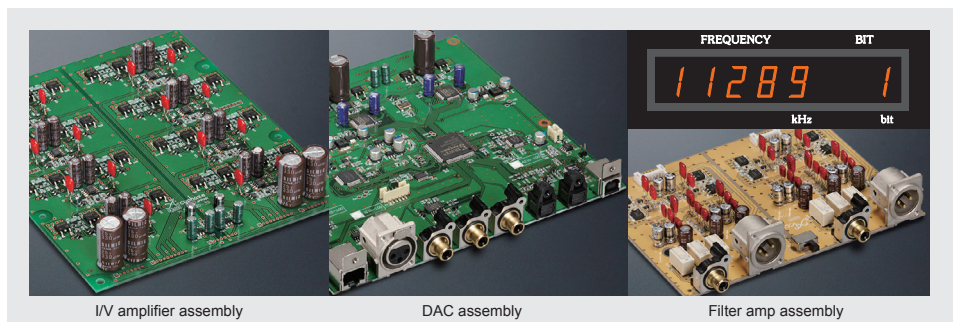
### Phase selector for balanced output

### Versatile array of inputs including HS-LINK (Version 1 and 2), BALANCED, COAXIAL x 3, OPTICAL x 2, and USB

### One COAXIAL and one OPTICAL digital output

### Advanced High Carbon cast iron insulator feet with superior damping characteristics further enhance sound quality

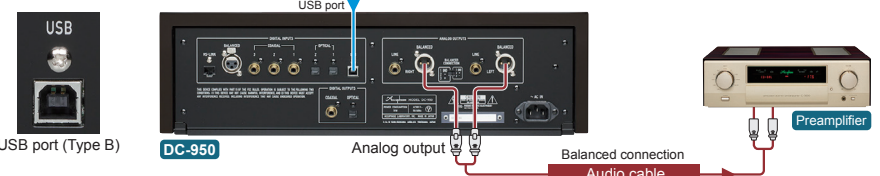
### Massive wood cabinet with natural grain, individually finished by master craftsmen



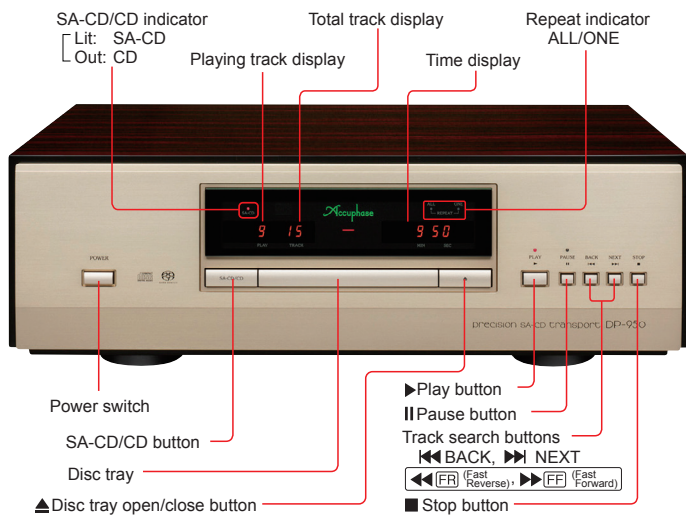
## Using USB cable to connect a computer

The DC-950 is equipped with a USB port (Type B). This allows a computer with a music library to be connected via a USB cable (with Type B plug), for playback of high-resolution music data to a sampling frequency of 384 kHz/32-bit or 11.2896 MHz (1-bit DSD) with high quality.

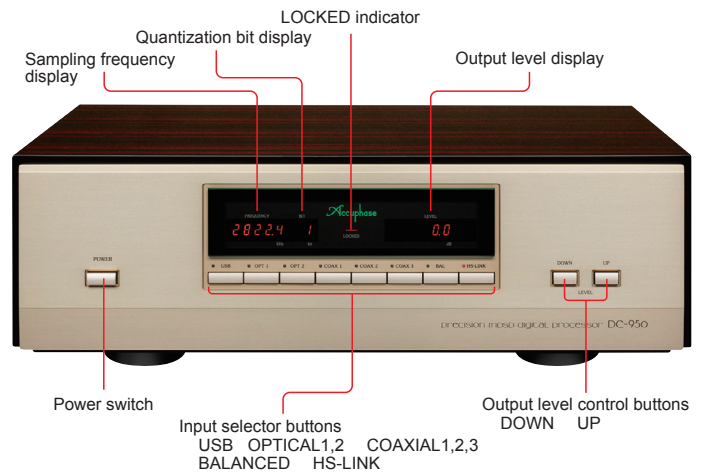
- \* Before using the USB port, install the suitable software for the computer from the supplied USB Utility 2 CD-ROM.
- \* Playback of music data via the USB link is dependent on the operating system and music playback software of the computer.
- \* For information on USB settings and connection, refer to the documentation of the computer.



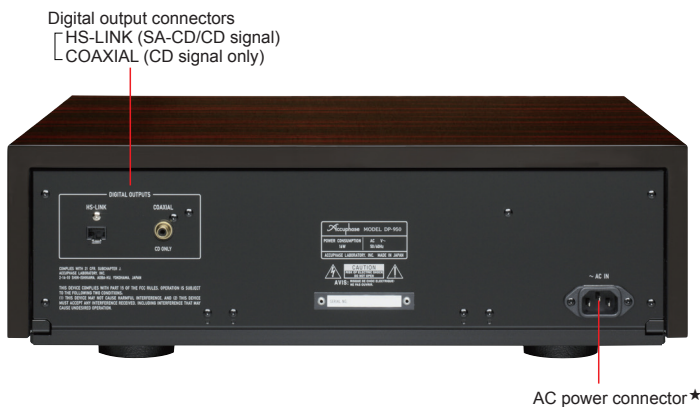
## DP-950 Front Panel



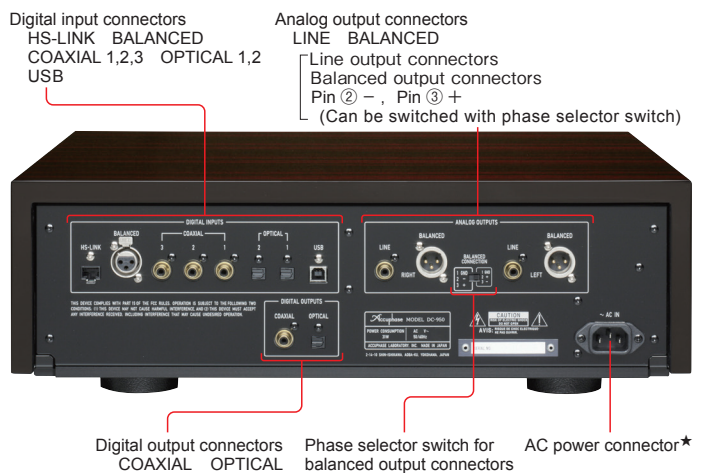
## DC-950 Front Panel



## DP-950 Rear Panel



## DC-950 Rear Panel



## DP-950 Guaranteed Specifications

\* Guaranteed specifications measured according to JEITA standard CP-2402A

<b>Compatible disc formats</b>	2-channel SA-CD (Super Audio CD) DSD disc (DSF file format) CD				
<b>Data read principle</b>	Non-contact optical pickup				
<b>Laser diode wavelength</b>	SA-CD: 650 nm CD: 780 nm				
<b>Digital outputs</b>	<table border="1"> <tr> <td>HS-LINK</td> <td>Connector type: RJ-45 Suitable cable: dedicated HS-LINK cable SA-CD Ver. 1, Ver. 2: 2.8224 MHz / 1 bit DSD CD: 44.1 kHz / 16-bit PCM</td> </tr> <tr> <td>COAXIAL</td> <td>Format: IEC 60958 compliant CD: 44.1 kHz / 16-bit PCM</td> </tr> </table>	HS-LINK	Connector type: RJ-45 Suitable cable: dedicated HS-LINK cable SA-CD Ver. 1, Ver. 2: 2.8224 MHz / 1 bit DSD CD: 44.1 kHz / 16-bit PCM	COAXIAL	Format: IEC 60958 compliant CD: 44.1 kHz / 16-bit PCM
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<b>Power requirements</b>	120 V, 220 V, 230 V AC, 50/60 Hz (voltage as indicated on rear panel)				
<b>Power consumption</b>	16 W				
<b>Maximum dimensions</b>	Width 477 mm (18.8 in) Height 156 mm (6.1 in) Depth 394 mm (15.5 in)				
<b>Weight</b>	30.6 kg (67.5 lbs) (with batteries) 38.0 kg (83.8 lbs) in shipping carton				

### 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.
- ★ The 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.

## DC-950 Guaranteed Specifications

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<b>Digital inputs</b>	<table border="1"> <tr> <td>HS-LINK</td> <td>Connector type: RJ-45 Suitable cable: dedicated HS-LINK cable</td> </tr> <tr> <td>BALANCED</td> <td>Format: IEC 60958/AES3 compliant Suitable cable: 110 ohm digital balanced cable</td> </tr> <tr> <td>COAXIAL</td> <td>Format: IEC 60958/AES3 compliant Suitable cable: 75 ohm coaxial digital cable</td> </tr> <tr> <td>OPTICAL</td> <td>Format: JEITA CP-1212 compliant Suitable cable: JEITA standard optical fiber cable</td> </tr> <tr> <td>USB</td> <td>Format: USB 2.0 High Speed (480 Mbps compliant) Suitable cable: USB 2.0 cable</td> </tr> </table>	HS-LINK	Connector type: RJ-45 Suitable cable: dedicated HS-LINK cable	BALANCED	Format: IEC 60958/AES3 compliant Suitable cable: 110 ohm digital balanced cable	COAXIAL	Format: IEC 60958/AES3 compliant Suitable cable: 75 ohm coaxial digital cable	OPTICAL	Format: JEITA CP-1212 compliant Suitable cable: JEITA standard optical fiber cable	USB	Format: USB 2.0 High Speed (480 Mbps compliant) Suitable cable: USB 2.0 cable
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<b>Supplied with DP-950</b>	<ul style="list-style-type: none"> <li>Remote Commander RC-120</li> <li>AC power cord</li> <li>HS-LINK cable AHDL-15</li> <li>Cleaning cloth</li> </ul>										
<b>Supplied with DC-950</b>	<ul style="list-style-type: none"> <li>AC power cord</li> <li>Audio cable ASL-10 with plugs</li> <li>USB Utility 2 CD</li> <li>USB Utility 2 Setup Guide</li> <li>Cleaning cloth</li> </ul>										

<b>Digital outputs</b>	<table border="1"> <tr> <td>COAXIAL</td> <td>Format: IEC 60958 compliant</td> </tr> <tr> <td>OPTICAL</td> <td>Format: JEITA CP-1212 compliant</td> </tr> </table>	COAXIAL	Format: IEC 60958 compliant	OPTICAL	Format: JEITA CP-1212 compliant		
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OPTICAL	Format: JEITA CP-1212 compliant						
<b>D/A converter</b>	8 MDS principle (DSD signal) 8 MDS++ principle (PCM signal)						
<b>Frequency response</b>	0.5 to 50,000 Hz +0, -3 dB						
<b>Total harmonic distortion</b>	0.00045% (20 to 20,000 Hz)						
<b>Signal-to-noise ratio</b>	122 dB						
<b>Dynamic range</b>	119 dB						
<b>Channel separation</b>	120 dB (20 to 20,000 Hz)						
<b>Output voltage and impedance</b>	<table border="1"> <tr> <td>BALANCED</td> <td>2.5 V</td> <td>50 ohms, balanced XLR type</td> </tr> <tr> <td>LINE</td> <td>2.5 V</td> <td>50 ohms, RCA phono jack</td> </tr> </table>	BALANCED	2.5 V	50 ohms, balanced XLR type	LINE	2.5 V	50 ohms, RCA phono jack
BALANCED	2.5 V	50 ohms, balanced XLR type					
LINE	2.5 V	50 ohms, RCA phono jack					
<b>Output level control</b>	0 dB to -80 dB (digital)						
<b>Power requirements</b>	120 V, 220 V, 230 V AC, 50/60 Hz (voltage as indicated on rear panel)						
<b>Power consumption</b>	31 W						
<b>Maximum dimensions</b>	Width 477 mm (18.8 in) Height 156 mm (6.14 in) Depth 393 mm (15.5 in)						
<b>Weight</b>	24.2 kg (53.4 lbs) net 31.0 kg (68.3 lbs) in shipping carton						
<b>Optional HS-LINK cable (supplied with DP-950)</b>	<ul style="list-style-type: none"> <li>AHDL-15 (1.5 m)</li> <li>AHDL-30 (3.0 m) available by special order</li> </ul>						