Accuphase

PRECISION MDSD SA-CD PLAYER

DP-720

● High-grade SA-CD/CD drive ● MDSD type D/A converter using eight parallel devices ● Support for playback of DSD discs with DSF file format ● "Direct Balanced Filter" with separate balanced and unbalanced signal paths ● HS-LINK and USB digital interfaces ● EXT DSP inputs and outputs allow insertion of DG-58 into signal path for sound field correction ● Phase selector for balanced outputs ● Numeric indication of sampling frequency

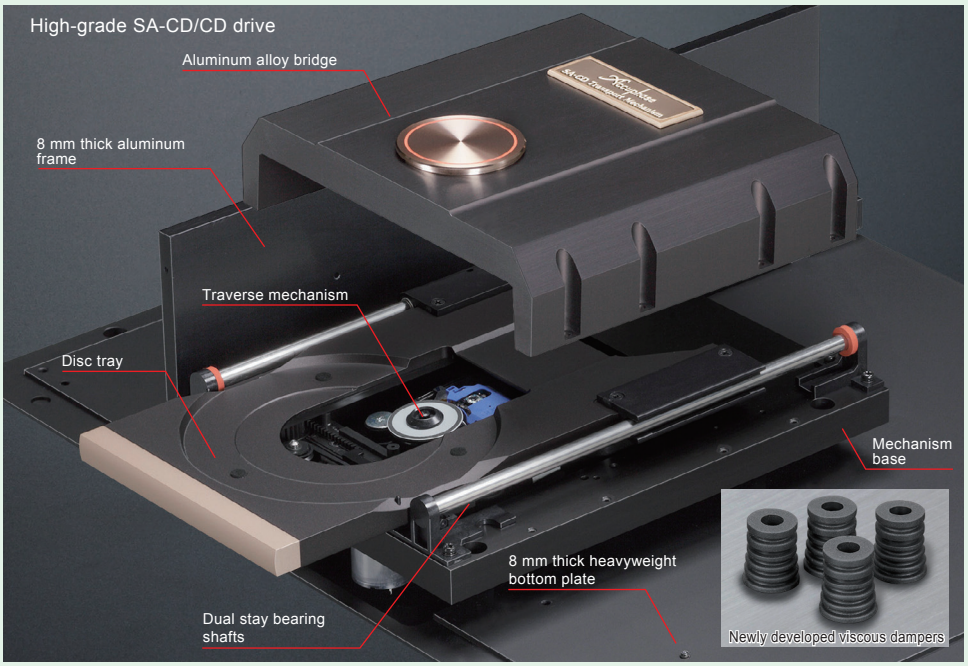
The superlative integrated SA-CD/CD player —— High-rigidity, high-precision SA-CD/CD drive combined with exquisite disc tray and ultra-smooth loading mechanism. Innovative MDSD (Multiple Double Speed DSD) processing circuitry constitutes a moving average filter for straight D/A conversion of DSD signal. USB port and superior quality digital audio interface HS-LINK.

In 2011, Accuphase released the ultra high-end separate type SA-CD/CD player combo DP-900 and DC-901, incorporating latest digital technology and embodying the company's unwavering passion for pristine sound. The components were the second entry in the company's 40th anniversary commemorative model lineup. Their superlative musicality and bold reinvention of what digital audio can be caused a sensation in the audio community, garnering high praise in Japan and abroad and earning them a place as the new SA-CD reference. The DP-720 is an integrated SA-CD/CD player that reflects the superb know-how of the DP-900/DC-901 combo, aiming for top performance in the integrated category. As appropriate for a high-end player, the DP-720 features the latest versions of major Accuphase in-house developments: a high-precision SA-CD/CD drive and an advanced MDSD type D/A converter. The high-precision SA-CD/CD drive inherits vital know-how and technology from the DP-900, realizing the ideal transport design for bringing out the full potential of the SA-CD medium. The ultra-heavy, high-rigidity, high-precision mechanism has been finely honed to further perfection.

The digital processor section is optimally suited to handle the SA-CD format, using cutting-edge circuit topology and advanced digital technology to further enhance the innovative MDSD (Multiple DoubleSpeed DSD) principle for direct D/A conversion of the DSD signal. With MDSD, multiple DSD signals are delayed through digital processing in an ultra-high-speed FPGA (Field Programmable Gate Array) and then processed by separate D/A converters driven in parallel. After D/A conversion, summation of the multiple data results in a moving-average filter circuit with double-speed accuracy. An important characteristic of MDSD is the use of MDS++ type D/A converters. This keeps conversion errors to an absolute minimum and at the same time implements a 5-pole high-cut filter with completely linear phase characteristics.

The end result is a digital signal of impeccable quality. It allows the music to unfold with awe-inspiring expressiveness, fully harnessing the ultimate potential of the SA-CD format. The external design with gold hue panel face and natural wood grain cabinet exudes an elegant, warm atmosphere of understated elegance. As an integrated SA-CD/CD player of the highest order, the DP-720 employs only the best in materials and parts throughout, specially selected for sonic performance. The immense amount of information conveyed by this player truly has the power to move the listener.

Features and Functions of Transport Section



■ **High-grade SA-CD/CD drive.**
(1) Highly rigid and precise construction with sturdy, heavyweight chassis to absorb external vibrations.
(2) Newly developed "Traverse Mechanism" with floating design and viscous damping.
(3) Large bridge cover.
(4) Effective control of vibrations enhanced by low center of gravity.
(5) High-quality disc tray extruded from an aluminum block, plus super-quiet smooth disc loading mechanism.

■ **SA-CD/CD transport outputs ultra pure digital signal.**

■ **New chucking magnet design using neodymium with high flux density and 8-pole magnetized yoke to firmly and evenly grasp the turntable and prevent disc wobble.**

■ **Accuphase proprietary digital audio interface HS-LINK (carries both SA-CD and CD signal).**

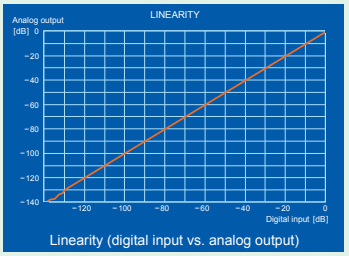
■ **Display of external input sampling frequency (kHz) during transport operation.**

Sampling frequency display example

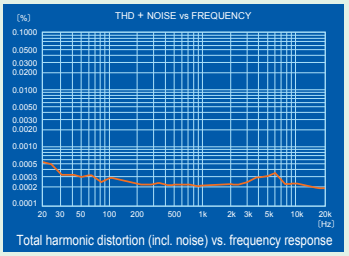
■ **High-speed access mechanism with single lens/twin laser diode pickup.**

■ **"Advanced High Carbon" cast iron insulator feet with superior damping characteristics ensure quiet operation and further enhance sound quality.**

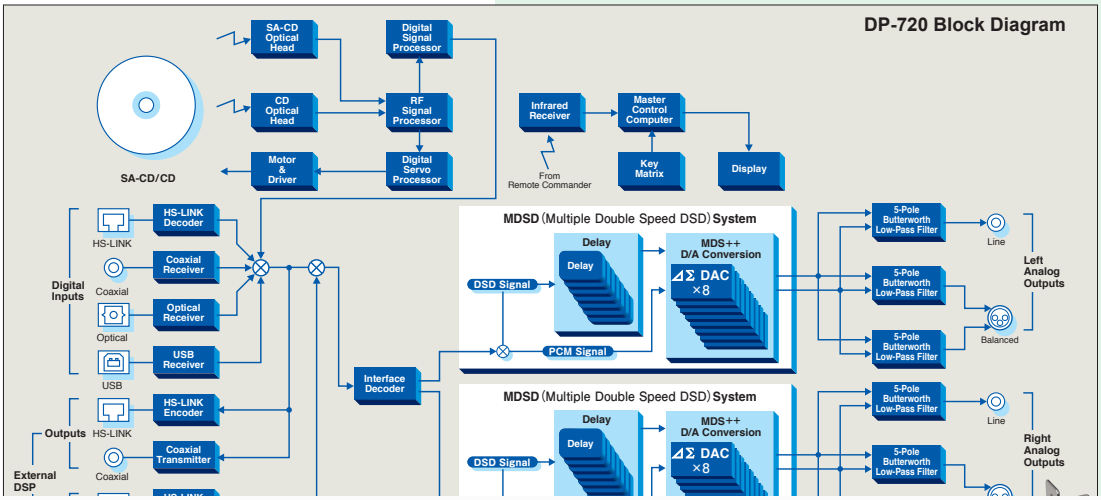
■ **Support for playback of DSD discs with DSF file format, recorded on a computer or similar.**



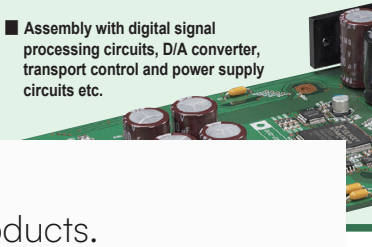
Linearity (digital input vs. analog output)



Total harmonic distortion (incl. noise) vs. frequency response

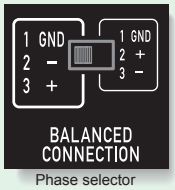


■ **Assembly with digital signal processing circuits, D/A converter, transport control and power supply circuits etc.**

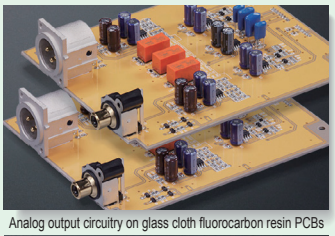


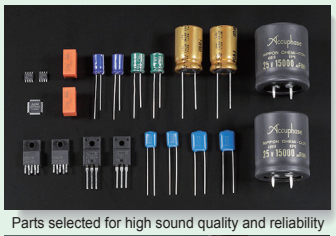
Features and Functions of Digital Processor Section

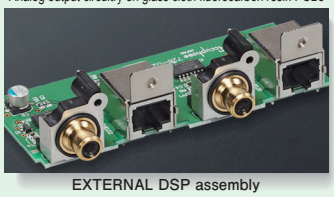
- MDSD (Multiple Double Speed DSD) implements innovative digital signal processing.
- Digital level control allows adjustment down to -80 dB.
- "Direct Balanced Filter" configuration for analog filter.
- MDS++ type D/A converter using eight parallel devices.
- Separate transport and processor sections. Versatile input/output configuration with HS-LINK, coaxial, optical (input only), and USB (input only) connectors.
- Analog output printed circuit boards made from glass cloth fluorocarbon resin with low dielectric constant and minimum loss.
- Phase selector for balanced outputs.
- Balanced and unbalanced analog outputs (1 set each).
- Massive wood cabinet with natural grain finish.



Phase selector


Analog output circuitry on glass cloth fluorocarbon resin PCBs


Parts selected for high sound quality and reliability

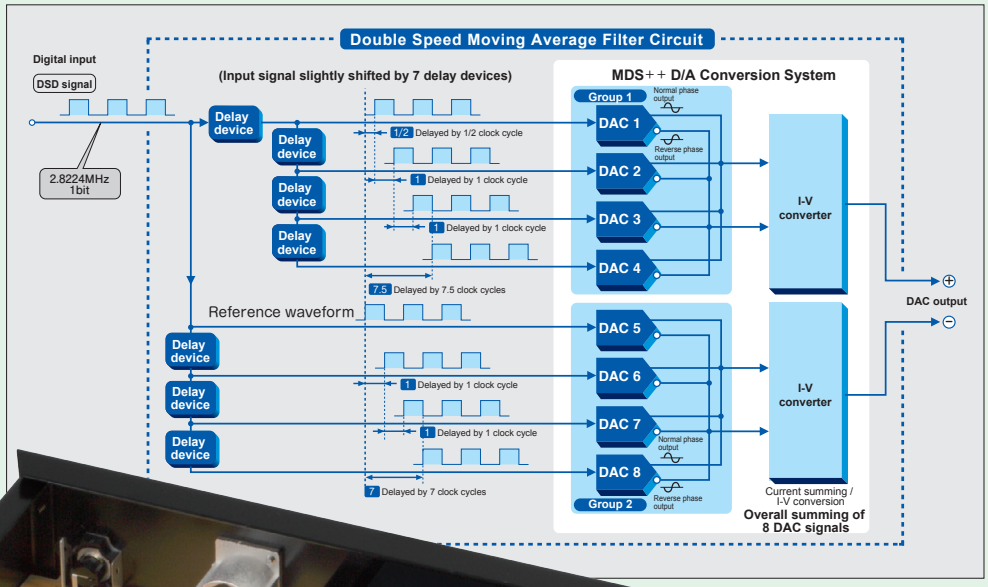

EXTERNAL DSP assembly


Power supply circuit assembly

Innovative Digital Processing: MDSD (Multiple Double Speed DSD) Playback Principle


32-bit Hyperstream™ DAC chips

The DP-720 employs MDS++ type D/A converters in an MDSD moving-average filter circuit which achieves stunning performance and sound quality. Eight high-performance 32-bit Hyperstream™ DAC chips (ES9018 from ESS Technology Inc.) are driven in parallel, thereby improving overall performance by a factor of about 3, as compared to a single converter circuit. Because the performance improvement afforded by the MDS principle is independent of signal frequency and signal level, output signal noise at very low levels is also successfully minimized, a feat that is very difficult to achieve with conventional delta-sigma converters. By locating a dedicated quartz oscillator very close to each ES9018 chip and driving the D/A converter as a master clock in asynchronous mode, jitter is also significantly reduced.

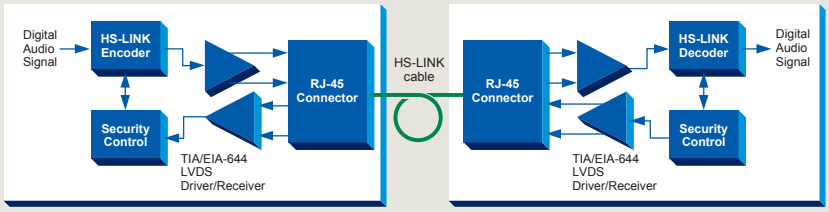


■ **Supplied Remote Commander RC-110**

Gives access to various functions including direct play, repeat, input switching, and level control.

— Accuphase Exclusive Digital Interface — HS-LINK: High Speed LINK

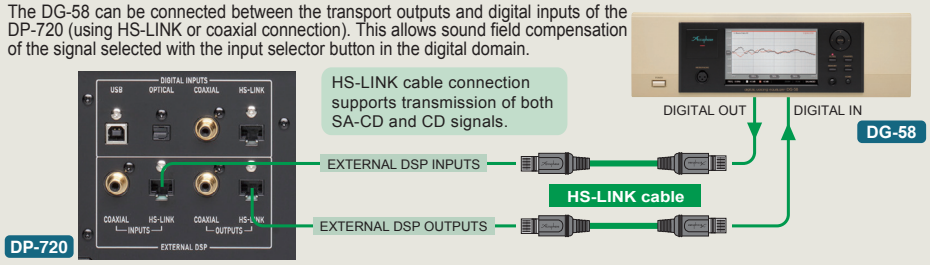
HS-LINK is an ultra high-quality digital audio interface developed by Accuphase using latest digital signal transmission technology. It supports send/receive verification for copyright protection. The LVDS (Low Voltage Differential Signaling) principle allows a single dedicated HS-LINK cable to transmit all audio data with utmost fidelity, including conventional digital signals as well as 2.8224 MHz/1-bit and 192 kHz/24-bit signals.



HS-LINK Signal Transmission Block Diagram

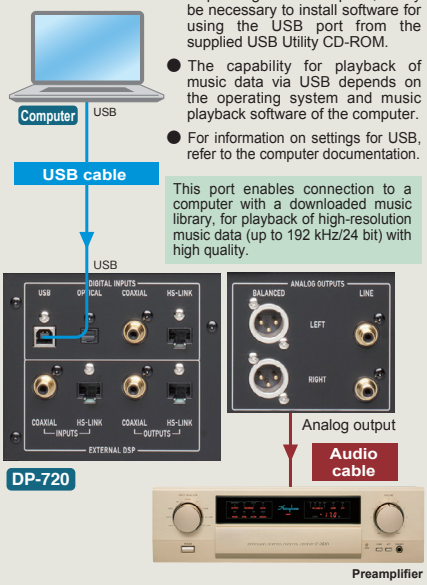
DG-58 Connection Example

The DG-58 can be connected between the transport outputs and digital inputs of the DP-720 (using HS-LINK or coaxial connection). This allows sound field compensation of the signal selected with the input selector button in the digital domain.



Using the USB port

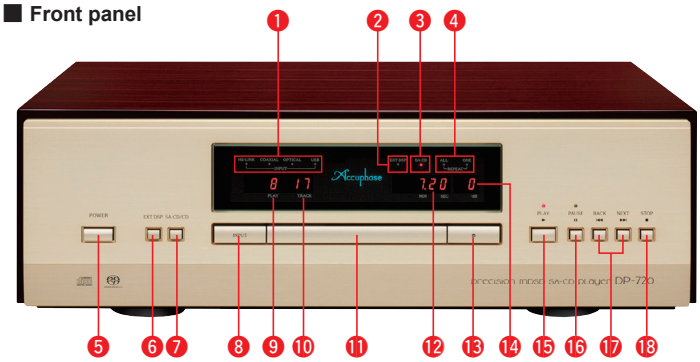
Use a USB cable with Type B plug to connect the USB port (Type B) of the DP-720 to the USB port on the computer.



- Depending on the computer, it may be necessary to install software for using the USB port from the supplied USB Utility CD-ROM.
- The capability for playback of music data via USB depends on the operating system and music playback software of the computer.
- For information on settings for USB, refer to the computer documentation.

This port enables connection to a computer with a downloaded music library, for playback of high-resolution music data (up to 192 kHz/24 bit) with high quality.

■ Front panel



■ Rear panel

❶ Input type indicators HS-LINK / COAXIAL / OPTICAL / USB
❷ EXT DSP indicator
❸ SA-CD indicator
❹ REPEAT indicator
❺ Power switch
❻ EXT DSP ON/OFF button
❼ SA-CD/CD selector button
❽ Input selector button
❾ Playing track indicator
❿ Total track number indicator
⓫ Disc tray
⓬ Time indicator
⓭ ⏏ Disc tray open / close button
⓮ Output level indicator
⓯ ▶ PLAY: Play button
⓰ ⏸ PAUSE: Pause button
⓱ ⏮ BACK / ⏭ NEXT: Track search buttons
⓲ ■ STOP: Stop button
⓳ Digital inputs (USB, optical, coaxial, HS-LINK)
⓴ EXTERNAL DSP input / output connectors
㉑ Analog outputs
  Balanced output connectors
    ① Ground ② Inverted (−) ③ Non-inverted (+)
    (Phase can be changed with balanced output polarity selector ㉒)
  Line output connectors
㉒ Balanced output polarity selector
㉓ AC power connector ★

■ Supplied accessories

- AC power cord
- Audio cable with plugs (1 m)
- Remote Commander RC-110
- USB Utility CD
- USB Setup Guide
- Cleaning cloth

DP-720 Guaranteed Specifications

* Guaranteed specifications measured according to JEITA standard CP-2402A
* Measurement disc: PHILIPS 3122-783-00632

Transport section

Compatible disc formats	2-channel Super Audio CD CD DSD disc (DSF file format)	
Data read principle	Non-contact optical pickup	
Laser diode wavelength	SA-CD:	650 nm
	CD:	780 nm
EXT DSP (Transport output signal)	HS-LINK	Connector type: RJ-45 Suitable cable: Dedicated HS-LINK cable
	COAXIAL	Format: IEC 60958 compliant

Digital processor section

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
	USB	Format: USB 2.0 Hi-Speed (480 Mbps) compliant
EXT DSP	HS-LINK	Connector type: RJ-45 Suitable cable: Dedicated HS-LINK cable SA-CD: 2.8224 MHz/1bit DSD CD: 44.1kHz/16 bit PCM
	COAXIAL	Format: IEC 60958 compliant CD: 44.1kHz/16 bit PCM
Sampling frequency	32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz,176.4 kHz, 192 kHz (16 to 24 bits, 2-channel PCM) (OPTICAL: 32 kHz to 96 kHz) [Only via HS-LINK] 2.8224 MHz (1-bit 2-channel DSD)	
D/A converter	8 MDSD type converters (DSD signal) 8 MDS++ type converters (PCM signal)	
Frequency response	0.5 to 50,000 Hz +0, -3.0 dB	
Total harmonic distortion	0.0006% (20 to 20,000 Hz)	
Signal-to-noise ratio	119 dB	
Dynamic range	116 dB (24-bit input, low-pass filter off)	
Channel separation	117 dB (20 to 20,000 Hz)	
Output voltage and impedance	BALANCED:	2.5 V 50 ohms, balanced XLR type
	LINE:	2.5 V 50 ohms, RCA phono jack
Output level control	0 dB to -80 dB in 1-dB steps (digital)	

General

Power requirements	120 V, 220 V, 230 V AC (voltage as indicated on rear panel), 50/60 Hz
Power consumption	31 W, Standby: 0.3 W
Maximum dimensions	Width 477 mm (18.8") Height 156 mm (6.1") Depth 394 mm (15.5")
Mass	28.0 kg (61.7 lbs) net 34.0 kg (75.0 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.*
★ *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.*