

# Accuphase

COMPACT DISC PLAYER

## DP-55V

- MDS type D/A converter achieves 24-bit linearity and minimizes noise
- Two sets of digital inputs and outputs
- High-performance digital demodulator with minimum jitter
- 3-pole analog filter with hand-selected components
- Fully digital control of CD mechanism
- Balanced actuator drive circuitry



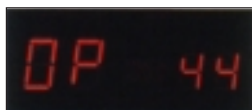
COMPACT  
disc  
DIGITAL AUDIO



**First-rate CD player built for no-compromise sound. Independent processor section features revolutionary MDS (Multiple Delta Sigma) converter with 24-bit ultra high precision. Full array of coaxial and optical inputs and outputs. Digital control of CD transport mechanism allows instantaneous optimizing of servo operation. Noise-free analog output with totally balanced configuration.**

The DP-55V is a further refined version of the model DP-55 coveted by audio connoisseurs the world over. It incorporates the latest advances in digital technology, allowing it to deliver superb Compact Disc sound. Independent use of the digital processor is also possible, providing excellent cost-performance ratio.

The processor features a revolutionary MDS (Multiple Delta Sigma) converter with superb 24-bit precision. This ensures ultra low distortion and outstanding signal-to-noise ratio. A set of digital inputs (coaxial and optical) lets external digital sources also gain access to this superb D/A converter, for playback with optimum sound quality. The DP-55V even provides digital outputs (coaxial and optical), allowing connection of digital recorders such as CD-R, DAT or MD units.



Optical input display example



Optical input display example

This lets you make direct digital recordings of supreme quality, using the signal from the internal CD transport or from an external source. The CD transport section uses fully digital circuitry for control of all actuators and mechanical functions. This enables instant optimization of servo parameters for each individual disc as it is being played, resulting in stable operation and a drastic reduction of readout errors. The laser pickup is an ultra-compact type with integrated RF amplifier, and all actuators are driven by balanced circuits where no current flows in the ground line. A tray lock feature firmly secures the tray during playback, and the entire CD mechanism is mounted on a metal chassis of high rigidity, designed to minimize any vibrations that may arise during playback. In this way, the DP-55V covers every electrical as well as mechanical aspect to assure highly precise readout of the digital signal. A digital level control and balanced output circuitry are further advantages for optimum sound.

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### Digital Processor Section

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

The D/A converter which generates the output signal is a newly developed type that provides excellent performance in terms of performance and sound quality. The MDS (Multiple Delta Sigma) principle employs several delta sigma type converters in a parallel configuration which results in a



drastic precision enhancement. 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 fed with the same signal and whose

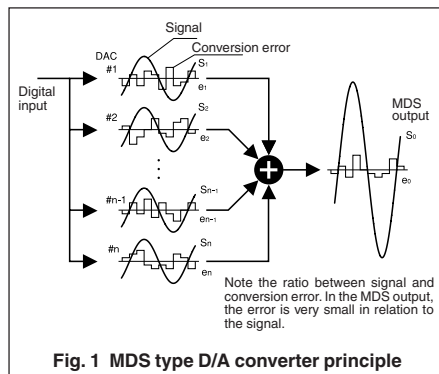
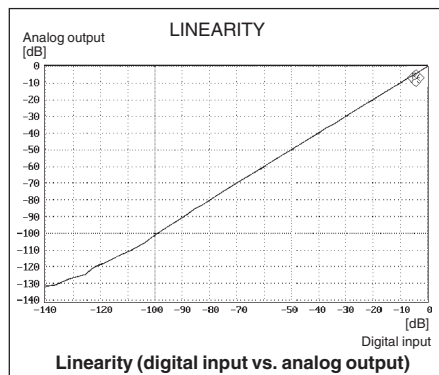


Fig. 1 MDS type D/A converter principle

outputs are combined to arrive at the overall waveform.

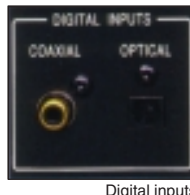
In the DP-55V, two delta sigma converters are operated in parallel, which results in a performance improvement by a factor of 1.4 ( $=\sqrt{2}$ ). An important characteristic of the MDS principle is that the performance benefits are achieved regardless of signal frequency and signal level. Therefore noise at very low signal levels that was difficult to contain with conventional delta sigma converters is now



drastically reduced. The audible result is music reproduction emerging from utter silence with an impressive sense of clarity and nuance.

**Separate processor section with coaxial and optical input for digital signals**

Digital inputs allow the user to enjoy the top-level performance of the processor section also with other components that can supply a digital signal, such as another CD transport or a DAT or MD player. For utmost flexibility, the input can



Digital inputs

handle both optical and coaxial connections. Internal processing of audio data is carried out entirely in 24-bit format.

**Two digital outputs allow direct digital recording**

The DP-55V provides a coaxial and an optical output connector which allows direct connection to the Digital Pre-amplifier DC-330, or to a digital recorder such as a DAT, MD, or CD-R unit. The outputs carry not only the signal from the internal CD transport, but also from components connected to the digital input, allowing direct digital recording with unprecedented flexibility.



Digital outputs

**Jitter-free high-performance digital demodulator**

Demodulation of the digital signal is carried out by a CS8412 chip (made by Crystal Semiconductor). This device not only has extremely low inherent jitter, it also is capable of absorbing any jitter components contained in the input signal. Since the chip can handle digital signals up to a width of 24 bits, the advantages of the MDS principle can be realized with any type of program source.



**Linear phase analog filters provide superior phase characteristics**

The frequency upper range of the D/A converter output signal by principle contains noise components. The analog filter serves to remove such aliasing noise. The filter in the DP-55V is a 3-pole linear phase type filter with outstanding phase characteristics. The cutoff frequency is designed to minimize phase shift within the passband. Strict selection of all filter components assures sonic purity and total musical accuracy.

**Digital level control prevents sound quality deterioration**

The 24-bit MDS D/A converter in the DP-55V has an 8-bit margin, which allows precise level attenuation down to -40 dB without any loss in signal quality.

**Fully balanced analog output circuitry**

The audio output section features completely balanced circuitry which is isolated from the ground line. Any noise that may be induced in

■ **CD transport control assembly**  
Comprises the CD transport servo control/key input/display/output level microcontroller, balanced actuator drive circuit and other components.

■ **Analog output assembly**  
Comprises the 3-pole analog filter, balanced/unbalanced audio output circuitry, power supply circuits, unbalanced output jacks, balanced output connectors and other components.

■ **Digital I/O, D/A converter assembly**  
Comprises the coaxial/optical digital input/output connectors, PLL circuitry, digital filter, MDS type D/A converter and other components.



the signal path will be canceled out, so that the playback sound remains utterly pure and undiluted. For utmost flexibility, balanced XLR connectors as well as unbalanced RCA-type connectors are provided.



Analog output with balanced circuitry

## CD Transport Section

### Fully digital control of CD mechanism

The control circuitry of the mechanism section is fully digital, allowing the use of adaptive filters

to optimize servo performance for each individual disc. This assures enhanced operation stability and a drastic reduction in error rate.

### Laser pickup with integrated RF amplifier for error-free operation

Since the output level of a laser pickup is very low, it is highly vulnerable to externally induced noise. To prevent such problems, the pickup used in the DP-55V employs an RF amplifier which is so compact that it can be directly

### Remote commander RC-18

Allows operation of all functions except power on/off. Enjoy superb convenience by switching input sources or controlling features such as direct play, program play and repeat play.

integrated in the pickup assembly. This assures that the high-level output signal remains free from noise interference, which in turn reduces the error rate.

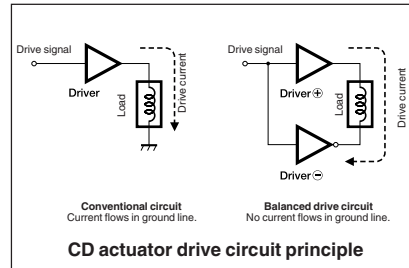
## Tray lock prevents resonances

If the disc tray is disengaged from the rotating assembly while the disc is playing, resonances can degrade the signal quality. In the DP-55V, the tray is firmly secured during playback, to eliminate any possibility of harmful resonances.

## Balanced drive circuitry for CD actuators

The motors and actuators which move the disc tray, spindle, sled, and the focussing and tracking assembly are driven by two amplifiers arranged in a balanced configuration. Because there is

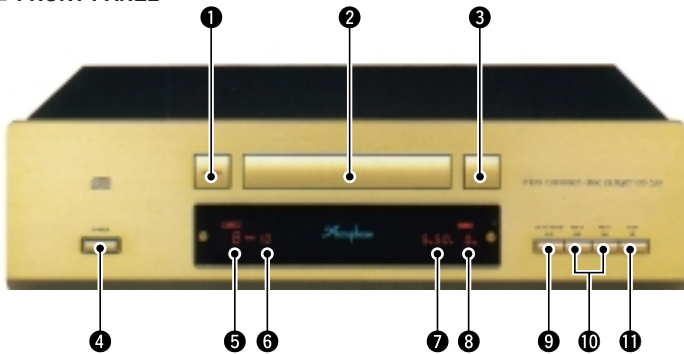
no circuit flowing in the ground line, the operation of other circuits in the player remains entirely unaffected.



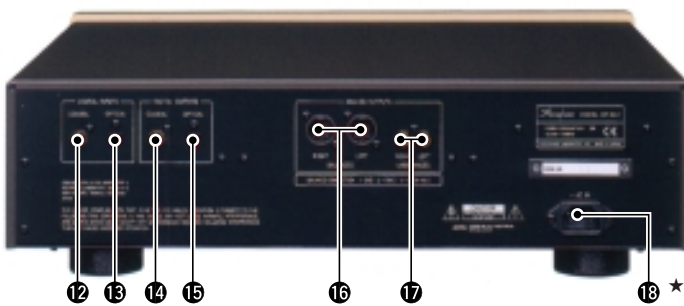
## Power-on play and frame display

"Power-on play" means that the DP-55V can start playback when power is turned on, allowing automatic playback in conjunction with an audio timer. For precise location of any spot on a disc, the player can display frame information (1 frame = 1/75 second), and functions such as search and repeat can be carried out in steps of individual frames.

### FRONT PANEL



### REAR PANEL



- |  |   |
|--|---|
| <p>1 CD player/processor selector button</p> <p>2 Disc tray</p> <p>3 Disc tray open/close button</p> <p>4 Power switch</p> <p>5 Play track display<br/>Processor operation: digital input display</p> <p>6 Track/index display<br/>Processor operation: sampling frequency display</p> <p>7 Time display</p> <p>8 Output level indicator</p> <p>9 Play/pause button</p> <p>10 Track search buttons</p> | <p>11 Stop button</p> <p>12 Coaxial digital input</p> <p>13 Toslink optical fiber input</p> <p>14 Coaxial digital output</p> <p>15 Toslink optical fiber output</p> <p>16 Balanced output connectors (analog output)<br/>①: Ground<br/>②: Inverted (-)<br/>③: Non-inverted (+)</p> <p>17 Unbalanced output connectors (analog output)</p> <p>18 AC power input (for supplied power cord)*</p> |
|--|---|

### 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, plug of the supplied power cord, and AC outlet depends on the voltage rating and destination country.

Supplied accessories:

- AC power cord
- Audio cable with RCA plugs
- Remote commander RC-18

## GUARANTEED SPECIFICATIONS

Guaranteed specifications are measured according to the EIA standard CP-2402.  
Measurement disc: CP-2403

### CD Transport

- **Format**
  - Standard CD format
  - Quantization: 16 bit
  - Sampling frequency: 44.1 kHz
  - Error correction principle: CIRC
  - Number of channels: 2
  - Revolution speed: 500 - 200 rpm (constant linear velocity)
  - Scan velocity: 1.2 - 1.4 m/s, constant
- **Data read principle**
  - Non-contact optical pickup (semiconductor laser)
- **Laser type**
  - GaAlAs (double heterodyne diode)

### Digital Processor

- **Input format**
  - EIAJ CP-1201 compatible
  - Quantization: 16 - 24 bit, linear
  - Sampling frequency: 32 kHz, 44.1 kHz, 48 kHz
- **Digital input format and level (EIAJ CP-1201)**
  - Format: Digital audio interface
  - OPTICAL: Input -27 to -15 dBm
  - COAXIAL: 0.5 Vp-p, 75 ohms
- **Digital output format and level (EIAJ CP-1201)**
  - Format: Digital audio interface
  - OPTICAL: Input -21 to -15 dBm
  - Wavelength 660 nm
  - COAXIAL: 0.5 Vp-p, 75 ohms
- **Frequency response**
  - 4.0 to 20,000 Hz ±0.3 dB
- **D/A converter**
  - MDS type, 24 bit
  - Digital deemphasis
- **Total harmonic distortion**
  - 0.0009% (20 - 20,000 Hz)
- **Signal-to-noise ratio**
  - 114 dB
- **Dynamic range**
  - 110 dB
- **Channel separation**
  - 105 dB
- **Output voltage and impedance**
  - BALANCED: 2.5 V into 50 ohms, balanced XLR type
  - UNBALANCED: 2.5 V into 50 ohms, RCA-type phono jack
- **Output level control**
  - 0 to -40 dB in 1-dB steps (digital)
- **Power requirements**
  - 120 V/230 V (Voltage as indicated on rear panel) AC, 50/60 Hz
- **Power consumption**
  - 15 W
- **Dimensions**
  - Width 475 mm (18-11/16")
  - Height 140 mm (5-1/2")
  - Depth 394 mm (15-1/8")
- **Weight**
  - 11.8 kg (26 lbs) net
  - 16.8 kg (37 lbs) in shipping carton
- **Supplied Remote Commander RC-18**
  - Remote control principle: infrared pulse
  - Power requirements: 3 V DC, IEC R6 (size AA) batteries × 2
  - Dimensions: 55 × 194 × 18 mm
  - Weight: 100 g (including batteries)