

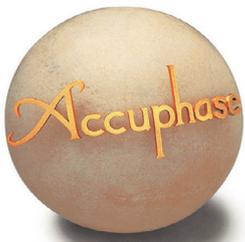
Accuphase

MDS COMPACT DISC PLAYER

DP-430

- High-precision CD drive
- High-quality CD tray and ultra quiet and smooth loading mechanism
- MDS D/A converter with four circuits driven in parallel
- Direct Balanced Filter with separate line and balanced signal paths
- Phase selector for balanced outputs
- Digital interface with USB input
- Transport outputs and digital inputs allow insertion of DG-58 into signal path for sound field correction
- Sampling frequency and quantization bit display





Dedicated CD player designed for the ultimate in sonic excellence — High-precision CD drive mechanism combined with high-performance processor section featuring support for 384 kHz/32-bit PCM and 11.2896 MHz/1-bit DSD.

The Accuphase-developed high-rigidity, high-precision drive optimized for CD reproduction, along with a super-quiet and smooth disc loading mechanism ensure pure signal readout of the highest order. In the processor section, the MDS type D/A converter utilizes four DAC chips driven in parallel, and the filter amplifier features the newly developed ANCC (Accuphase Noise and Distortion Cancelling Circuit). CD transport section and digital processor are kept completely separate. In addition to a USB input, coaxial and optical connectors are provided for digital input and transport output. Quality construction and highly advanced digital technology fully reveal the potential of the CD medium and provide a listening experience that opens up new emotional depths even with familiar music sources.

The Technology of Precision

Features and Functions of Transport Section

- Highly rigid and precise CD drive unaffected by external vibrations**
 The highly rigid CD drive employs a stiff construction that not only minimizes vibrations from the internal rotation but also absorbs any external vibrations, whether large or small. The rigid mechanism base is fully integrated with the massive and highly rigid chassis, resulting in a strong frame structure with elaborate and sophisticated construction.

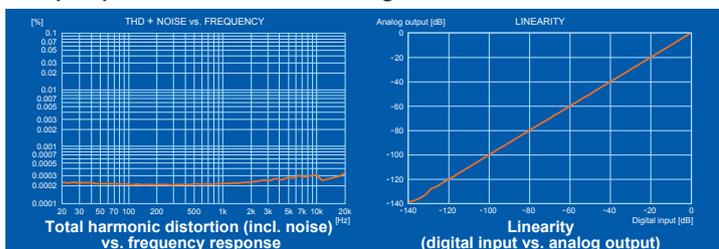


- Floating type traverse mechanism (laser pickup unit)**
 Mechanical isolation between the traverse mechanism and the CD drive is provided by silicone type viscous dampers whose shape and material composition have been carefully optimized.



- Large bridge cover**
 The massive bridge cover which also comprises the magnetic chucking mechanism for the disc is firmly mounted on the mechanism base, forming a strong integrated structure. To ensure quiet operation, a special design is implemented to reduce wind noise due to the air flow caused by the rotating disc.
- Non-resonant design**
 If there is overlap between the rotation frequency of the spindle motor that turns the disc for playback and the resonance frequency of the viscous dampers that support the traverse mechanism, the risk of pickup dropouts increases and sound quality may deteriorate. It is therefore crucial to design the player components in such a way that resonance points within this frequency band are avoided. As a result of numerous listening tests and a series of careful vibration measurements, Accuphase engineers were able to achieve optimum isolation between the traverse mechanism and the CD drive itself. Contact sections of individual metal parts employ a sophisticated frame construction that further contributes to keeping resonances in the pickup vicinity to an absolute minimum.

- Low center of gravity**
- High-quality disc tray extruded from an aluminum block, plus super-quiet and smooth disc loading mechanism**



Features and Functions of Digital Processor Section

- MDS type D/A converter**
 MDS (Multiple Delta Sigma) is a revolutionary approach that employs several delta-sigma type D/A converters connected in parallel, for drastically improved performance. The same digital signal is supplied to each converter, and the output of the converters is summed before being sent to subsequent stages. In the DP-430, four converter circuits are used in parallel. This improves overall performance by a factor of about 2 ($\approx \sqrt{4}$) 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.
- Four high-performance AK4490EQ delta-sigma D/A converter chips made by Asahi Kasei Microdevices**
- Filter amplifier with ANCC topology**
 - ANCC (Accuphase Noise and Distortion Cancelling Circuit) is a newly developed topology that improves performance by canceling noise and distortion components arising in an amplifier through subtraction at a following stage. THD is minimized, and noise performance is improved to the level of the canceling amplifier. Gain distribution is optimized through measures such as increasing the gain in the filter circuit's input stage, thereby elevating performance to a level that rivals the technology of higher-ranked models.
 - The ANCC uses a low-noise OP amp (input converted noise voltage density 1.5 nV/√Hz) which results in 30% better performance as compared to conventional circuitry.
- SA9227A chip from Savitech for USB input realizes support for DSD256**



MDS type D/A converter



AK4490EQ delta-sigma type D/A converter chips

Block diagram of MDS converter in DP-430
 Shows four DACs (DAC 1-4) driven in parallel. DAC 1 and 3 provide normal phase outputs, while DAC 2 and 4 provide reverse phase outputs. The outputs are summed at two summing junctions (+), and the results are then subtracted at a final subtraction stage to produce the DAC Output.

Block diagram of ANCC
 Shows an input signal being summed (+) and then processed by a Main Amplifier (gain β) and a Sub Amplifier (gain 1/β). The outputs of both amplifiers are summed (+) to produce the final Output.

Block diagram of Direct Balanced Filter circuitry
 Shows a 4x MDS D/A Conversion System feeding into three parallel filter stages: a 4-Pole Butterworth LPF (positive), a 4-Pole Butterworth LPF (negative), and another 4-Pole Butterworth LPF (positive). The outputs are summed (+) to produce balanced Analog Outputs.

USB chip SA9227A
 A photograph of the SA9227A chip, a BRAVO SA9227 BTFM.

Circuit assembly with transport outputs, digital inputs, D/A converter, ANCC, Direct Balanced Filter circuitry, line/balanced analog outputs, power supply circuitry etc.

Advanced Features

Power supply optimized for performance and sound quality

The power transformer has separate windings for supplying the analog and digital sections. A strengthened reference power supply for the D/A converter ensures stability and minimizes noise. Both in terms of performance and sound quality, the results are outstanding.

Display can show sampling frequency and number of quantization bits

Besides showing track numbers and elapsed playing time, the display can also indicate the sampling frequency and the number of quantization bits when using the external input and during CD playback.

Digital level control allows adjustment down to -60 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 -60 dB.

Digital inputs and outputs for COAXIAL, OPTICAL, and USB (input only)

Harnessing the high performance of the built-in processing section, data from other digital equipment can be supplied to the DP-430 via the digital inputs and played back with high sound quality.

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

Analog outputs provide a choice of line level and balanced types for shutting out external noise interference

Fully digital circuitry for mechanism control

Phase selector for balanced output

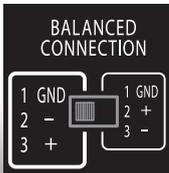
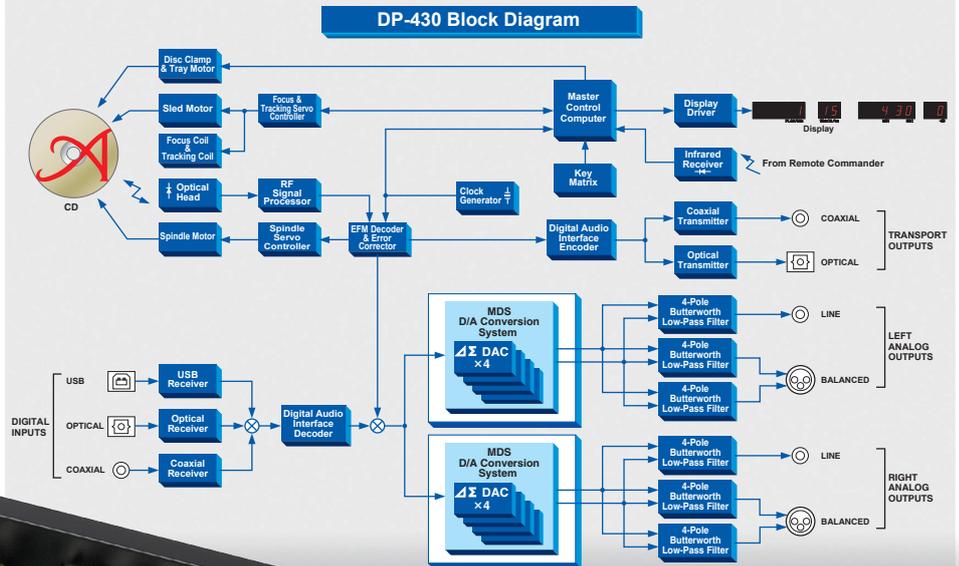


Low-noise power supply



Display indication example

Actual measured sampling frequency and quantization bits are indicated during transport operation and use of external input.



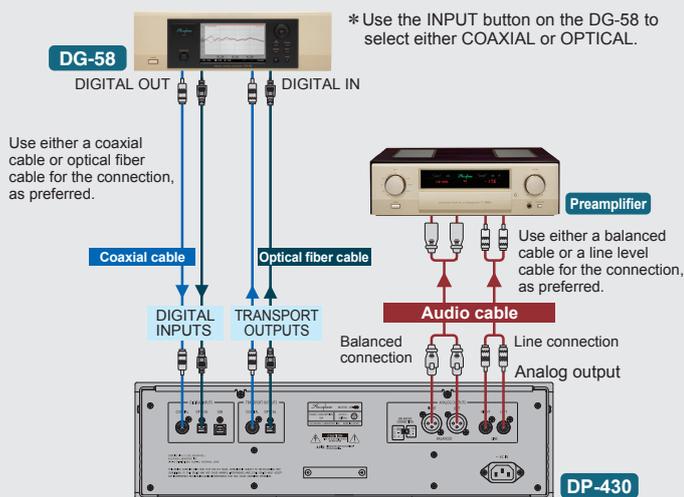
Phase selector



Supplied remote commander RC-130 Gives access to various functions including direct play, repeat play, input switching, and level control.

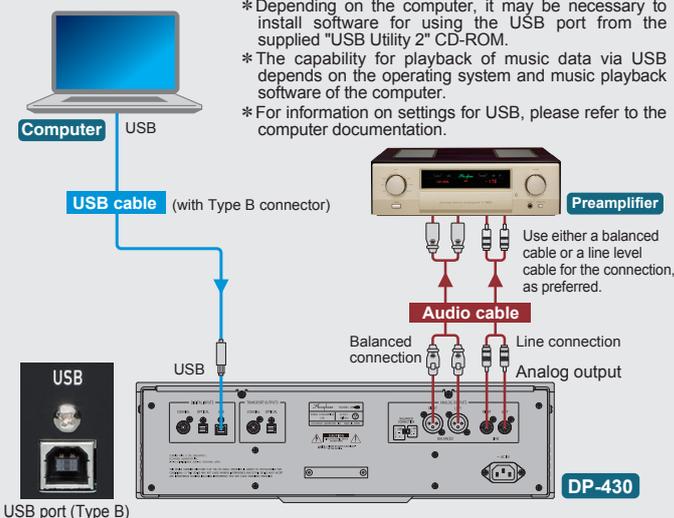
DG-58 connection example

The DG-58 can be connected between the transport outputs and digital inputs of the DP-430 (using the coaxial or optical connectors). This allows sound field compensation of the signal from the CD transport in the digital domain.

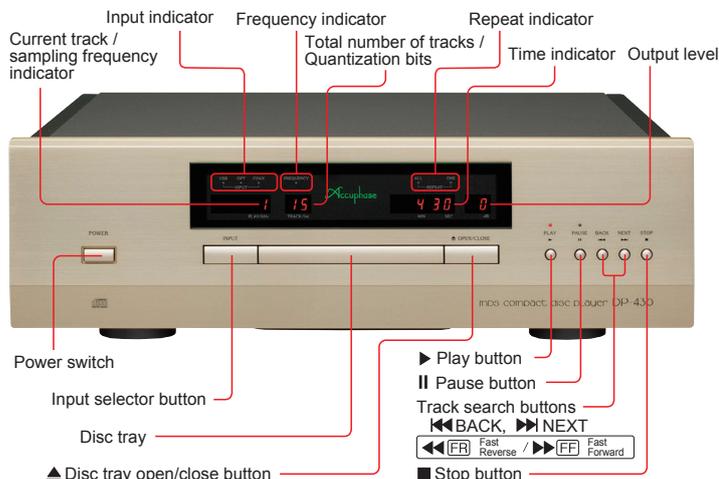


Using the USB port

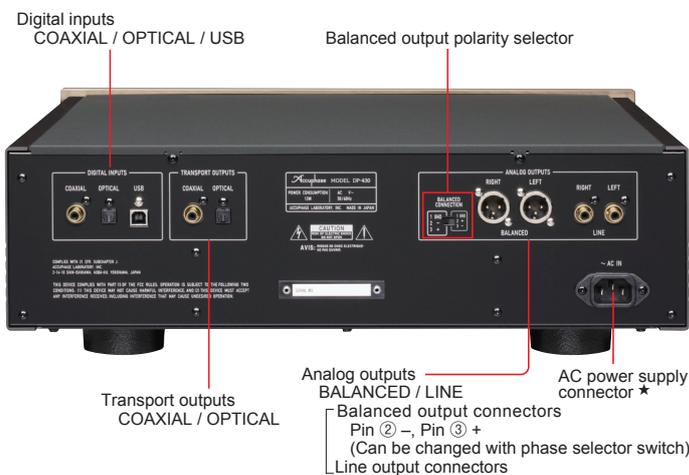
The USB port (Type B) of the DP-430 allows connection to a computer via USB cable (with Type B connector), for reproduction of music library data. Because sampling frequencies up to 384 kHz/32-bit and 11.2896 MHz (1-bit DSD) are supported, high-resolution music files can be reproduced with superior sound quality.



Front Panel



Rear Panel



DP-430 Guaranteed Specifications

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

Transport Section

| | |
|--------|---|
| Format | Standard CD format |
| | Quantization: 16 bits |
| | Sampling frequency: 44.1 kHz |
| | Error correction principle: CIRC |
| | Number of channels: 2 |
| | Revolution speed: 500 to 200 rpm (CLV) |
| | Scan velocity: 1.2 to 1.4 m/s, constant |

| | |
|---------------------|---|
| Data Read Principle | Non-contact optical pickup |
| Laser Diode | GaAlAs (double hetero-junction visible-spectrum semiconductor laser diode) Wavelength: 667 nm |
| Transport Outputs | COAXIAL Format: IEC 60958 compliant OPTICAL Format: JEITA CP-1212 compliant |

Digital Processor Section

| | |
|----------------|---|
| Digital Inputs | COAXIAL Format: IEC 60958 AES-3 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 Hi-Speed (480 Mbps) compliant Suitable cable: USB 2.0 cable |

Supplied accessories

- Remote Commander RC-130
- AC power cord
- Audio cable with plugs AL-10
- USB Utility 2 CD
- USB Utility 2 Setup Guide

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.

| | |
|------------------------------|---|
| Sampling Frequencies | COAXIAL 32 kHz to 192 kHz (16 to 24 bits, 2-channel PCM) OPTICAL 32 kHz to 96 kHz (16 to 24 bits, 2-channel PCM) USB 32 kHz to 384 kHz (16 to 32 bits, 2-channel PCM) 2.8224 MHz, 5.6448 MHz, 11.2896 MHz (1-bit 2-channel DSD) (11.2896 MHz: ASIO only) |
| D/A Converter | 4MDS principle |
| Frequency Response | 0.7 to 50,000 Hz +0, -3.0 dB |
| Total Harmonic Distortion | 0.0008% (20 to 20,000 Hz) |
| Signal-to-Noise Ratio | 117 dB |
| Dynamic Range | 113 dB |
| Channel Separation | 113 dB |
| 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 -60.0 dB in 1-dB steps (digital) |

General

| | |
|--------------------|---|
| Power Requirements | 120/220/230 V AC, 50/60 Hz (voltage as indicated on rear panel) |
| Power Consumption | 13 W |
| Max. Dimensions | Width: 465 mm (18.3") Height: 151 mm (5.9") Depth: 393 mm (15.5") |
| Mass | 14.0 kg (30.9 lbs) net 20.0 kg (44.1 lbs) in shipping carton |



ACCUPHASE LABORATORY, INC.

C1705Y PRINTED IN JAPAN 850-2202-00 (B1)