MERIDIAN 208 COMPACT DISC PLAYER

SPECIFICATION

Total harmonic distortion: <0·004%
Signal-to-noise ratio: >90dB
Input sensitivity: Line 500mV
Tape 500mV
Phono bypass 1V
Phono (optional extra) MM 1·5mV
MC 60μV
Outputs: 2V fixed; 775mV variable (max 2V)
Dimensions (W × H × D): 320 × 100 × 325mm
Weight: 6·5kg
UK retail price: £1,490 including 209 remote control panel. Optional 215 MM/MC phono input board £99
Manufacturer: Boothroyd Stuart Ltd., 13 Clifton Road, Huntingdon, Cambs PE18 7EJ
UK distributor: Meridian Audio Ltd., Eccleston Road, Tovil, Maidstone, Kent ME15 6QP

MERIDIAN'S 200 series of specialist audio components—designed to form either an integrated 'multiroom' system or capable of use individually as component parts of a more conventional set-up—has continued to evolve since John Borwick reviewed the 207 CD player, 209 remote control unit and 204 tuner/timer (together with the M30 active loudspeaker) in July 1988. Since that review a new 'digital active' loudspeaker, the D600 has been introduced—in many respects the centrepiece of the complete Meridian system, with its built-in D/A converters, preamplifier section and 200 series communications link (JB reviewed the D600 in July 1989)—as well as another CD player, the 206. Now a third CD player has been launched, the 208, and this actually replaces the 207. Quite a list, and with casual acquaintance hard to keep pace with, although the sequence of progression has been logical enough.

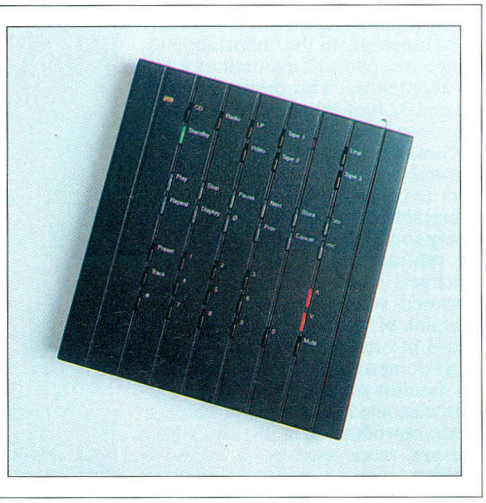
All three 200 series CD players employ a linked two-box construction whereby the laser transport and mains power supply are housed in one section and the electrically sensitive D/A and analogue circuitry in the other, ensuring a minimum of interference between the two. The 207 and this new 208 are unusual in including a minimalist preamplifier section in addition to the CD circuitry so that the unit can, if required, form the control centre of a simple system, taking external inputs from, typically, a radio tuner, LP turntable and analogue tape machine and sending the selected signal via an on-board volume control directly to the power amplifier. In such a set-up the conventional preamplifier is redundant. The 206 is more conventional in being just a CD player, although it does include optical and co-axial digital outputs for those who wish to use an external D/A converter (such as is housed in the D600).

All the Meridian CD players have used a Philips laser transport in one form or another, although just about everything other than that is Meridian-designed and realized, with novel circuit configurations around the D/A converters and wholly original analogue output stages. The 206 and 207 were centred on an advanced form of the Philips 16-bit, four-times oversampling 'chip' set, but the 208 looks well into the new decade by offering us an already advanced application of Philips's new one-bit circuit, Bitstream. This PDM (Pulse Density Modulation) system contrasts with the earlier approach in being what one might term 'state' rather than 'value' based. Conventional D/A converters use 16- (or 18

or even 20) bit quantization methods to represent the instantaneous 'value' of the wanted analogue waveform 44,100 times every second, but of course any errors in the individual steps of the quantization decoding circuits degrade the accuracy of this value, the audible effect being to compromise low-level resolution and detail. Very precise component alignment is required if such distortion is to be avoided entirely and thermal drift is a common problem. With Bitstream the normal 44·1kHz sampling rate is increased 256-fold to 11·2MHz and the quantization reduced to a one-bit data stream which has just two 'states', high or low; the actual instantaneous value is irrelevant. The analogue waveform is represented by the changing density in which the corresponding pulses are packed. A relatively simple filter is all that is needed at the output in order to recover the original waveform intact and with great precision. John Borwick gave a more detailed outline of the system in "Inside Audio" in July last year (page 252) and reviewed Philips's own first Bitstream player, the CD840, last month.

Philips themselves describe an extension of the Bitstream application whereby two of their stereo converter ICs are employed in differential mode, giving a 6dB gain in the wanted signal while the uncorrelated noise signals gain only 3dB; the end result being an overall increase of some 4dB in signal-to-noise ratio and a 2dB improvement in distortion and dynamic range capability. Meridian have refined this concept by using one complete SAA7321 converter per channel (as opposed to two halves of two converters), thus gaining from the inherently closer matched common-mode performance of a circuit grown upon a single silicon substrate. They then follow this with an external differential adder to produce the required output signal. Simple passive filtering is used to remove RF noise and intermodulation artefacts. Meridian claim a reduction in noise and distortion of around 5dB with their configuration. Extensive use is made of high quality ultra low noise NE5534N operational amplifiers for the analogue stages.

The 208 uses the top Philips CDM-4 laser transport, the latest version of a well-proven design. Built on a reinforced plastics subchassis it employs the simple swinging arm laser carrier that Philips have advocated from the start. Meridian suspend the chassis from their own Nextel-coated die-cast top plate/disc tray and the whole assembly is mounted on a motorized steel carriage which runs on steel rods in and out of the cabinet. Unlike most front-loading players where the transport stays put and a disc loading carrier pops in and out, in the 208 the entire transport moves, which maximizes its mechanical integrity and has the secondary advantage of exposing the laser assembly for ready cleaning of its lens (but also the disadvantage of risking of damage by the clumsy-handed). A new disc tracking servo system has been developed to improve tracking, this being mounted on a separate pcb on the transport shuttle.



The 209 remote control panel duplicates and extends the range of functions available from the CD player's front panel.

The 208 also features a new master quartz oscillator with four buffered outputs to produce the clock signals required by the various digital ICs, and Meridian claim that this gives a reduction in 'jitter' of some 100 times compared with that of their original player. The two main circuit boards are mounted one above the other in the second enclosure. These are advanced four-layer types which provide the full ground plane needed by the Bitstream chips. A separate horizontal metal sheet forms a further screen between the two boards. The analogue signal routing is handled by CMOS integrated circuit switches (*à la* Quad) and the volume control is a 64-step attenuator (very approximately 1·25dB per step, although the channels are extremely closely balanced), again based around CMOS switches. As supplied the 'LP' input is simply another flat frequency response input suitable for line-level signals (although it is some 6dB less sensitive than the Tape and Radio inputs). An optional 215 phono preamplifier board is available which has the necessary gain and RIAA equalization circuitry to convert this input to proper LP use for either MM or MC pickup cartridges as determined by a micro-switch.

How one connects up the 208 will depend upon whether it is to be used as a conventional CD player with a separate preamplifier or as a control centre itself. For the former there are fixed level analogue outputs which would normally go to the CD inputs of a separate preamplifier. Additionally there are two EIAJ-standard optical digital outputs intended for use when the 208 is connected to the D600 loudspeakers, plus a standard co-axial digital output. When used as a CD player/preamplifier the analogue output signals to the power amplifier are taken from sockets marked Variable—a low impedance (12 Ohms) source capable of driving very long pre-power interconnecting leads. The remaining inputs and tape outputs are via phono sockets (all gold plated) and also on the rear panel is a headphones socket and the mains on/off switch. Finally there is a five-pin DIN socket marked 200 Comms which carries the control signals between the 208 and other 200 series components, and an IEC three-pin mains socket.

The front panel of the 208 carries 16 pushbuttons in two rows. These operate the basic functions of the CD player such as Open/Close of the disc loading drawer, Play, Pause and Stop, plus Next and Previous track selection and simple programming operations. Six of the buttons are for alternative input selection (marked LP, Line and Tape), volume level and Mute. The remaining button puts the unit in and out of Standby mode, since it is normally left powered ready to wake up on demand from the remote control unit. Several of the buttons are illuminated from behind by red, green or orange LEDs when the function is selected.

A four-digit green LED display panel show the general status of the selected input. By default this shows simply the track number of the CD in play but by toggling the Display button it shows track elapsed time, overall elapsed time or disc time remaining. Selecting LP, Line or Tape changes this to show the first two letters of the name followed by a decimal point and the volume control setting as a number between 1 and 64 (max). A limitation of the seven-segment type display is that not all alphabetical characters are available in upper and lower case, so that whilst LP is available in capitals, Line is shown as Li and Tape as t3 (equals Tape 3 which I will explain below); similarly Standby is shown as Stb and Stop as StOP. The result is a rather stylized, high-tech display which is in keeping with the Meridian approach. It is unfortunate that 5 and S (for Select) look identical though, distinguished here only by a full stop after the S.

The 208 is supplied with the 209 infra-red remote control unit. This has 37 pushbuttons and will operate the 201 preamplifier and 204 tuner/timer in addition to the 208. The complete system provides for additional Radio and Video inputs as well as three Tape machines and it is the third of these which is connected to the 208, which is a little confusing for the uninitiated. The 209 duplicates all of the 208 panel controls and extends the available range of CD functions to include direct track and index access via a numeric keypad, and fast forward and reverse searching. Additionally it has an absolute phase control of the CD output (managed in the digital domain), the status of this shown by a red LED on the 208 front panel. As the booklet says, the setting of this may or may not be apparent and it depends on a number of factors, including how the recording itself was made, the ancillary replay equipment and individual susceptibility (not everyone perceives the difference and at best it is very subtle). Programming for up to 31 selections (tracks and/or index points) can be made and this can be additive or subtractive, the latter comprising a store of track numbers which are *not* to be played.

There are two other indicators on the 208 front panel. The first, Error, shows the degree of error correction in use—if the LED flashes it indicates that there is some substantial defect on the disc and that the circuit has not been able to re-establish the data completely, although it will only be particularly severe cases which produce audible errors (in a month of using the 208 I have yet to see this light come on). The other indicator is marked Eq and lights to show that the disc in play was made with pre-emphasis, a boosting of the high frequencies at the recording stage in order to reduce noise on replay. All machines detect this and switch in a de-emphasis circuit automatically. The process is thus transparent to the user and it is not usual to display its status in this manner; I can't see any domestic need for its inclusion, although I suppose it will be of interest to a few enthusiasts.

How it performed

The styling of the 208 and 206 has been subtly refined over the original 207 in that the glass front panels covering the transport housing and display are now set into plastics frames rather than left standing proud. The machine is very robustly built using extruded U-shaped sections for the top and bottom of each housing, with steel end plates and internal chassis members. The indented ribbing of the cover is echoed by pale yellow lines on the front glass panel of the transport and by the layout of the switches. These visual features are reflected also in the 209 remote control, which is the exact width of one of the twin housings of the player. Mechanically the player is almost silent, thanks to the brushless, hall-effect disc motor and the transport's operation within a sealed box (the front panel mates with the housing via a felt gasket). Immunity to physical shock has been improved markedly and the player copes adequately with the standard gap error tests. Track access is rather lethargic compared with the recent Japanese transports which reach any point on a disc at about the moment the button is released. This Philips transport ambles along, taking around 3·5 seconds to reach track 15 from standstill on the test record and there is a good second's playing of the current track after a jab of the Next

button before it takes effect. In practice life isn't so short that this really matters.

Routine testbench measurements on the CD section showed the expected ruler-straight frequency response, whilst channel balance was adequate with the right channel down in level by just 0·26dB. Distortion was below 0·004% as claimed. Output level via the fixed CD output was within a whisker of the 2 Volt standard. Calibrated level tests were also accurate as far down as I could measure them and more elaborate lab tests elsewhere have confirmed the excellent linearity of this circuit right down into the noise floor at −112dB. The preamplifier section was exceptionally well behaved, as expected, with a frequency response flat to within 0·2dB across the audio bandwidth and channel separation figures of around 101dB at 1kHz and still 80dB at 10kHz. The RIAA phono stage was accurate too, just 0·6dB down on spec at 20kHz with the recommended IEC fourth pole at 20Hz giving an extra LF roll-off.

In the few months since its launch the 208 has unwittingly acquired something of a cult status, having been the first top-end specialist Bitstream player to arrive on the market, albeit in very limited quantities. In general terms Bitstream is thought by some commentators to have a more 'laid back' kind of sound, almost soft-grained in comparison with what we have been used to hearing until now, perhaps even more analogue-like. The judging of sound quality is a notoriously risky business at this level and there are those who would argue vociferously that provided the circuits are realized properly there will be no audible difference anyway, regardless of the techniques used. Doubtless that is the way things should be but in practice subtle differences do seem to obtain.

To my ears the 208 provides an extremely listenable, more-ish kind of sound, and one which has had me rifling through my CD collection with a renewed interest and spending far longer than I have done for many months in the sheer enjoyment of listening to good music. To be specific, the top end is uncannily smooth and rounded, initially almost lacking in sparkle until it is realized that perhaps what is missing is emphasis. The effect is not dissimilar to the way in which a good electrostatic driver compares with most moving-coil tweeters—a sort of clarity by omission. Stereo placement is exceptional as is depth of image, again more apparent once one has settled into this very comfortable environment. Low level details such as hall ambience are gratifyingly tangible and one can almost visualize the space around voices and instruments. One of my favourite discs is Hyperion's 1983 analogue recording of Howells's Requiem, from the Corydon Singers under Matthew Best (◐ CDA66076, 10/87). The differentiation of the solo voices as they combine in the second movement setting of Psalm 23 poses the sort of challenge which all too readily exposes shortcomings in replay equipment, a challenge the 208 meets in every way.

There will be those who find they prefer the more overtly analytical sound of some of the better second-generation machines; certainly it took me a good few hours of listening to settle into the realization that this sound was, to my ears, more life-like than the one I had known for so long. I think it would be wrong to say that Bitstream is the only way forward, though, for there are several players around which use established conversion techniques to as, possibly slightly more, convincing an effect. Bitstream probably enables more ready access to this particular kind of Utopia, though, and most manufacturers are now following suit. Sonically the Meridian 208 is amongst the best sounding machines I have used.

IVOR HUMPHREYS.