

4 BLOCK DIAGRAM OF EQUIPMENT

4.1 Block Diagram Description

This optical disk drive can handle bare disks like CD and CD-ROM disk, DVD-RAM (2.6GB and 4.7GB) disk, which is 12cm phase change rewritable disk with disk cartridge, using same disk tray.

In the case of CD and CD-ROM disk, the rotation speed is set to the standard rotation speed of CD specification or 24x(Max.) speed of the specification depending on the medium and the host computer control.

The information signal from the CD or CD-ROM disk is retrieved by the laser diode. The laser spot is focused on the disk using objective lens and controlled by the digital servo LSI so as to follow the information track on the disk.

The read out signals from the CD or CD-ROM disks are decoded and converted to the digital data using Read Channel Decoder LSI, and after the error correction procedure, the data is transferred to the host computer.

In the case of DVD-RAM(2.6GB) disk, the Zoned Constant Liner Velocity (ZCLV) format is used with 24 divided zones on the disk and the rotation speed is set to 1014~2254rpm. The data is recorded at each zone on the DVD-RAM disk with the same recording density using different clock from the synthesizer circuit in the drive and the total recording capacity of the DVD-RAM disk becomes 2.6GB using this recording procedure.

The laser spot focused on the DVD-RAM disk is also controlled by the digital servo LSI for focusing and tracking control.

For the data recording, the information data transferred from the host computer is encoded to the (8,16), added the parity data for the error correction procedure and converted to the digital signal for recording to the DVD-RAM disk.

The converted digital signal is transferred to the Laser Power Controller LSI through the Digital Servo Controller LSI.

The laser power for the data recording is modulated between the erase power and the peak power following the information data and the direct overwrite is achieved by using this laser modulation scheme.

For the data reading, the read out signal retrieved from the DVD-RAM disk is maintained and converted to the digital signal using the Read Channel LSI, decoded from the (8,16) to the digital data using the Optical Disk Controller LSI and transferred to the host computer.

In the case of DVD-RAM(4.7GB) disk, the Zoned Constant Liner Velocity (ZCLV) format is used with 35 divided zones on the disk and the rotation speed is set to 1375~3246rpm. The data is recorded at each zone on the DVD-RAM disk with the same recording density using different clock from the synthesizer circuit in the drive and the total recording capacity of the DVD-RAM disk becomes 4.7GB using this recording procedure.

The laser spot focused on the DVD-RAM disk is also controlled by the digital servo LSI for focusing and tracking control.

For the data recording, the information data transferred from the host computer is encoded to the (8,16), added the parity data for the error correction procedure and converted to the digital signal for recording to the DVD-RAM disk.

The converted digital signal is transferred to the Laser Power Controller LSI through the Digital Servo Controller LSI.

The laser power for the data recording is modulated between the erase power and the peak power following the information data and the direct overwrite is achieved by using this laser modulation scheme.

For the data reading, the read out signal retrieved from the DVD-RAM disk is maintained and converted to the digital signal using the Read Channel LSI, decoded from the (8,16) to

the digital data using the Optical Disk Controller LSI and transferred to the host computer.

4.2 Theory of Operation

Please make reference to the chapter 4.1

Figure 4.1 Block Diagram of Model

