

FREQUENCY DEMODULATING CIRCUIT, OPTICAL DISK APPARATUS
THEREOF AND PREFORMATING DEVICE

ABSTRACT

A frequency demodulating circuit, optical disk and preformatting device having a decoder for decoding a bit "0" and a bit "1" for reproducing address information recorded as a wobble groove wherein, along with detecting the edge of the pulse signal, the decoder has a first and second window pulse generator circuit corresponding to the bit patterns of the pulse signal and a coincident signal detecting circuit for acquiring a matching signal when the edge detection signal corresponds to the first and second window pulse output timing. The decoder then determines whether the resultant output is a digital "1" or a digital "0" so that even if the waveform of the reproduced signal is erratic or unstable due to a defect, a digital "1" or a digital "0" can be correctly identified by utilizing the window pulses.

Changes in the slope of the zero cross point of the groove wobble which is a junction point for the "1" and "0" of the address information ADM are prevented from occurring by making the groove wobble amplitude fluctuate according to the signal frequency modulation which also greatly reduces jitter occurring along the wobble signal time axis at the junction point of the "1" and "0" of the address information ADM allowing satisfactory acquisition of the address information.

Oversampling clock signals of biphase bits are generated by frequency division of data clock signals, with an integer ratio of the frequency of the data clock signals to the frequency of

the oversampling clock signals of biphasic bits. Since the demodulation is accomplished with a single phase lock loop circuit in the data system using clock signals for both the data and the addresses, the configuration can be made extremely simple.

By means of the polarity of the playback signal mark having phase information, it is determined whether the beam that scans the optical disk is above the land or above the groove, thus allowing easy identification and acquisition of phase information showing that the beam is either above the land or above the groove.

The marks containing phase information are formed on the base disk surface solely by the on and off control of the paired cutting beams with respect to the direction of the time axis, for easy preformatting of a mark to permit acquiring (phase) position information with high precision.

FIGURE 11E