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United States Patent [19]

Harcourt

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[54] **APPARATUS AND METHOD FOR DISPLAYING MULTIPLE SAMPLE SPACING WAVEFORM SEGMENTS**

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[52] **U.S. Cl.** **356/73.1**

[58] **Field of Search** 556/73.1

[56] **References Cited**

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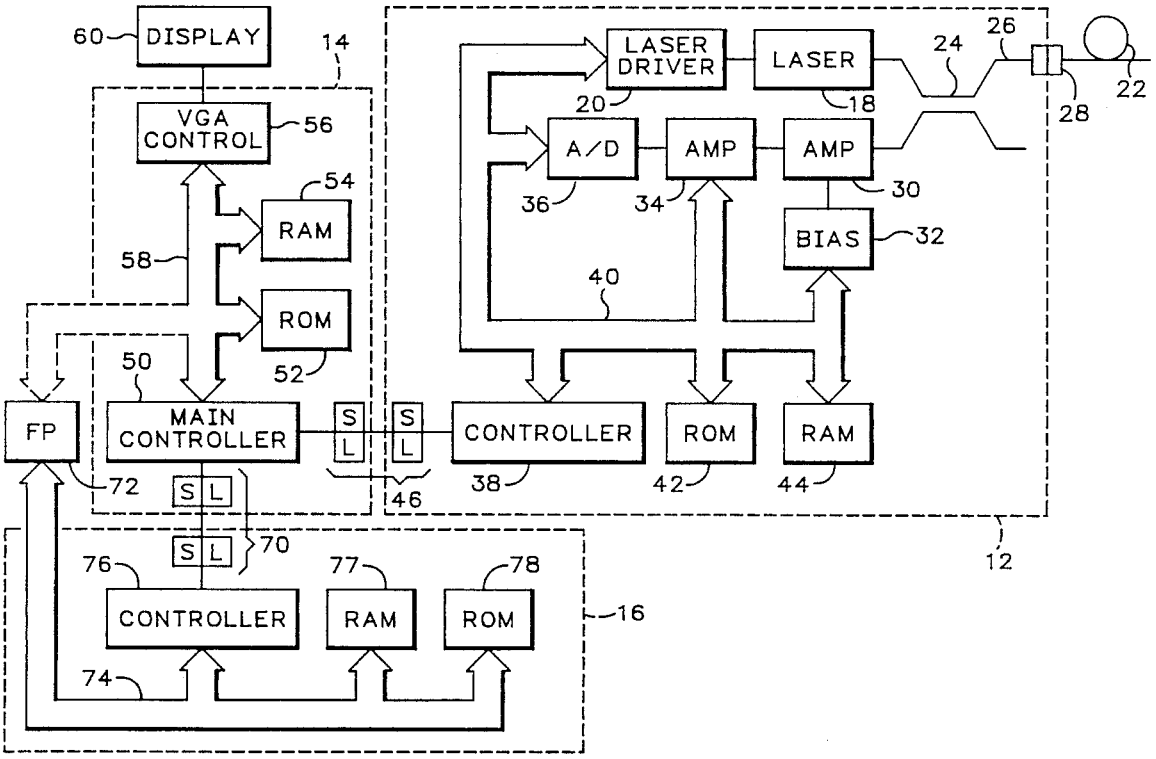
[57] **ABSTRACT**

An optical time domain reflectometer acquires and displays waveform data as a waveform trace on a display device having a viewport defined by a start distance and an end distance using waveform data segments having data points where each waveform segment is acquired using different pulsewidth and sample spacing and different starting distance. A processor sets a horizontal pixel skip value and a horizontal distance skip value for each waveform segment and calculates a horizontal distance per pixel value for the display area as a function of dividing the distance between the viewport start distance and the viewport end distance by the number of horizontal pixels in the display area. Each horizontal pixel is mapped to a distance by setting an initial pixel count to zero and sequentially adding the horizontal pixel skip value to the pervious pixel count and setting an initial horizontal distance value to the start distance of the viewport and sequentially adding the horizontal distance skip value to the previous horizontal distance value. The distance values for the horizontal pixels are correlated to amplitude values of the data points of the waveform segment using an index into the array of waveform data points related to distance. The amplitude values of the acquired data are mapped to appropriate vertical pixels associated with the horizontal pixels to produce a bit representation of the waveform trace, which is displayed on the display device.

16 Claims, 21 Drawing Sheets