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Drake et al.

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[54] **MICROCONTROLLER WITH DUAL PORT RAM FOR LCD DISPLAY AND SHARING OF SLAVE PORTS**

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[52] **U.S. Cl.** **345/51**; 345/34

[58] **Field of Search** 345/33, 34, 38, 345/50, 51, 87, 100, 98, 99, 204, 507, 508, 511; 365/149, 154, 189.05, 476, 496

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[57] **ABSTRACT**

A single semiconductor chip device is utilized for controlling an external system which has a liquid crystal display (LCD) associated therewith. A dual port random access memory (RAM) stores data representative of information to be displayed on the LCD. The RAM includes a plurality of master data storage latches and a single slave data storage latch shared by all of the plurality of master storage latches. A microcontroller has a central processing unit (CPU) for communicating with the master storage latches via one of the RAM ports to periodically change the data stored therein. An LCD control module successively updates the data in the single slave storage latch with data from each of the master storage latches and downloads the updated data from the single slave storage latch to a temporary store associated with the LCD after each update from a master storage latch and before the update of data from the next master storage latch. Consequently, data in each master storage latch may be changed periodically by the CPU without interference with downloading of updated data from the single slave storage unit.

14 Claims, 10 Drawing Sheets

