Title (en)

Method for driving LCD modules with scale of greys by PWM technique and reduced power consumption

Title (de)

Steuerverfahren für Flüssigkristallanzeigemodule mit durch PWM-Technik ausgeführter Grautonanzeige und reduziertem Leistungsverbrauch

Title (fr)

Méthode d'attaque pour modules d'affichage à cristaux liquides avec niveaux de gris obtenus par techniques PWM et consommation d'énergie réduite

Publication

EP 1341150 A1 20030903 (EN)

Application

EP 02425109 A 20020228

Priority

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Abstract (en)

Herein described is a driving method for LCD modules having a multiplicity of display elements placed in the intersections of a matrix having a plurality of row electrodes and a plurality of column electrodes. The method comprises a first phase for scanning all the row electrodes of said matrix in an interval of scanning time (NT). The first phase comprises a second phase comprising the generation of a first signal suited to energizing at least one row electrode of the matrix for a first preset interval of time (T), the generation of second signals (C3(t), C5(t)) suited to energizing respectively each column electrode of said matrix simultaneously with the energizing of at least one row electrode. The second signals (C3(t), C5(t)) are suited to determining the grey level of each display element of at least one row electrode energized by means of an alternance of corresponding values distinct signal levels (Von, Voff, V1-V3) for intervals of time (T1on, T1off) comprised in the first preset interval of time (T) by means of a first PWM modulation. The first preset interval of time (T) is lower than the interval of scanning time (NT). The first phase comprises a third phase successive to the second phase and comprising the generation of another first signal suited to energizing at least another row electrode of said matrix for a second preset period of time (T) equal and successive to the first preset interval of time, the generation of third signals (C3(t), C5(t)) suited to energizing each column electrode of the matrix simultaneously to said at least another row electrode; the third signals are suited to determining the grey level of each display element of at least another row electrode energized by means of an altemance of values corresponding to said distinct signal levels (Von, Voff, V1-V3) for intervals of time (T2on, T2off) comprised in said second preset interval of time (T) by means of a second PWM modulation. The second PWM modulation is such to ensure the continuity of the signal level of said second signals (C3(t), C5(t)) and third signals (C3(t), C5(t)) in the passage from the first preset period of time (T) to the second preset period of time (T). (Figure 5). <IMAGE>

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IPC 8 full level

G09G 3/36 (2006.01); G09G 3/20 (2006.01)

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G09G 3/3622 (2013.01); **G09G 3/3625** (2013.01); G09G 3/2014 (2013.01); G09G 2330/021 (2013.01)

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