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(71) Applicant: **SAMSUNG ELECTRONICS CO., LTD.**
Suwon-City, Kyungki-do (KR)

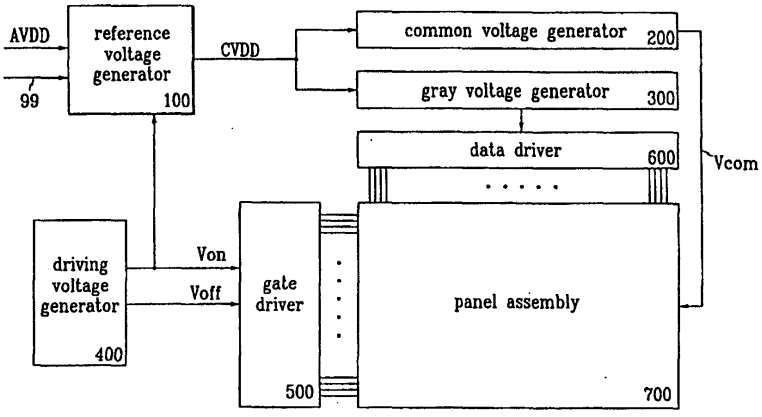
(72) Inventor: **Hwam, Moon Seung**
Seocho-ku, Seoul (KR)

(74) Representative: **Modiano, Guido, Dr.-Ing. et al**
Modiano, Josif, Pisanty & Staub,
Baaderstrasse 3
80469 München (DE)

(54) Liquid crystal display having gray voltages with varying magnitudes and driving method thereof

(57) A liquid crystal display ("LCD") having a plurality of gray voltages with varying magnitudes and a driving method thereof. An LCD includes a reference voltage generator changing level of a supply voltage based on a first signal to generate a reference voltage. The first signal varies depending on the surrounding brightness of the LCD, the brightness of the on-screen images of the LCD, and user's manipulation. The LCD also includes a gray voltage generator generating a plurality of gray voltages with magnitudes varying dependent on the magnitude of the reference voltage and a predetermined voltage such as a ground voltage. The LCD further includes a plurality of gate lines transmitting a plurality of gate signals, a plurality of data lines transmitting the gray voltages, and a plurality of pixels. Each pixel has a switching element connected to one of the gate lines and one of the data lines and transmitting the gray voltages to the pixels under the control of the gate signal. The LCD includes a gate driver supplying the gate signals to the gate lines and a data driver selecting the gray voltages based on gray data from an external source to supply to the pixels via the data lines.

FIG. 1



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EUROPEAN SEARCH REPORT

Application Number
EP 02 02 1782

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
P,X	EP 1 220 193 A (VISTEON GLOBAL TECH INC) 3 July 2002 (2002-07-03) * abstract * * paragraphs [0005]-[0010] * * paragraphs [0012]-[0015] * * the whole document * ---	1-18,23, 24	G09G3/36
P,X P,A	EP 1 217 599 A (VISTEON GLOBAL TECH INC) 26 June 2002 (2002-06-26) * abstract * * the whole document * ---	1-6, 8-15,17, 18,23,24 7,16	
P,X	US 6 359 389 B1 (EVANICKY DANIEL E ET AL) 19 March 2002 (2002-03-19) * abstract * * column 3, line 57 - column 4, line 8; claims 1-22; figures 2,3,5,6 * * column 6, line 22-64 * * column 8, line 65 - column 9, line 48 * ---	1-8,10, 12, 15-17, 23,24	TECHNICAL FIELDS SEARCHED (Int.Cl.7) G09G H04N
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
MUNICH	15 October 2003	Wolff, L

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 02 02 1782

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	具有变化幅度的灰度电压的液晶显示器及其驱动方法		
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[标]申请(专利权)人(译)	三星电子株式会社		
申请(专利权)人(译)	SAMSUNG ELECTRONICS CO.，LTD.		
当前申请(专利权)人(译)	SAMSUNG ELECTRONICS CO.，LTD.		
[标]发明人	HWAM MOON SEUNG		
发明人	HWAM, MOON SEUNG		
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外部链接	Espacenet		

摘要(译)

一种具有多个具有不同幅度的灰度电压的液晶显示器（“LCD”）及其驱动方法。 LCD包括参考电压发生器，其基于第一信号改变电源电压的电平，以产生参考电压。第一个信号根据LCD的周围亮度，LCD的屏幕图像亮度和用户操作而变化。 LCD还包括灰度电压发生器，其产生多个灰度电压，其幅度根据参考电压的大小和诸如地电压的预定电压而变化。 LCD还包括传输多个栅极信号的多条栅极线，传输灰度电压的多条数据线，以及多个像素。每个像素具有连接到栅极线之一和数据线之一的开关元件，并且在栅极信号的控制下将灰度电压传输到像素。 LCD包括将栅极信号提供给栅极线的栅极驱动器和基于来自外部源的灰度数据选择灰度电压的数据驱动器，以经由数据线提供给像素。

FIG.1