

(19) (KR)
(12) (A)

(51) 。 Int. Cl.⁷ (11) 10-2004-0071958
G09G 3/36 (43) 2004 08 16

(21) 10-2003-0007880
(22) 2003 02 07

(71) . 20

(72) 1 1027-31

(74) :

(54) _____

가 (G
) (D) ,
(R*, G*, B*) (RO*, GO*, BO*, WO*)
/ , .

6
(LUT)

1
2
3 2
4a 4c

5
6 5 /
7 /
* *
51 : 51a :
51b : 52 :
53 : 54 :
55 : 56 : DC/DC
57 : LCM 58 :
59 : 60 : /
61 : 62 :
63 : Data 64 :
65 : WO 66 : Min/Max
67 : LUT 68 : 1 LUT
69 : 2 LUT 70 : 3 LUT
71 : 4

가
LCD
(Lipuid Crystal Display Device), PDP(Plasma Display Panel), ELD(Electro Luminescent Display), VFD(Vacuum Fluorescent Display) 가 가
CRT(Cathode Ray Tube) LCD가 가
가

() ,

가 가

가 가

가

CCFL(Cold Cathode Fluorescent Lamp)

가

가

가 (Normally white) 가

가

1

(G) (D)

(1) (1) (8)

(2) (1)

b) (2) (1) 가 (1a) (1)

(1) (R, G, B) (Vsync, Hsync) (1b) (1)

a)가 (DCLK) (DTEN) (1) (4) (4)

(3) 가 (1b) (5) (4) (1)

(V_{DD}), (V_{GH}), (V_{GL}), (V_{ref}) (Vcom)

DC/DC (6) (8) (9)

(3)가 (PC) (R, G, B)

(Vsync, Hsync) (DCLK) (DTEN) (1)

(1b) (1a)가 (1b)가 (1) (1)

(Control signal) 가 (1a)가 (1b)가 (1) (1)

(8)

가

가

가

RGB (white) 가 RGB 가

(10)

(10) 2 (R,G,B) (3)

(RI,GI,BI) (RO,GO,BO,WO)

(10) 3 (RI,GI,BI)

(Ylmin, Ylmax) (31) , (31)

(WO) (LUT:Loof Up Table)(32) ,

(RO) (GO) (BO) 1 3 (33,34,35)

RO, GO, BO, WO

4a, 4b (RI, GI, BI) 240, 160, 120

RGB 120

4c 120 (WO) (RO)

(GO) (BO) 240, 120, 60

(RO) (GO) (BO)

$$RO = ((Ylmax(RI,GI,BI) + Ylmin(RI,GI,BI)) \times YI(RI) / Ylmax(RI,GI,BI) - Ylmin(RI,GI,BI)$$

$$GO = ((Ylmax(RI,GI,BI) + Ylmin(RI,GI,BI)) \times YI(GI)) / Ylmax(RI,GI,BI) - Ylmin(RI,GI,BI)$$

$$BO = ((Ylmax(RI,GI,BI) + Ylmin(RI,GI,BI)) \times YI(BI)) / Ylmax(RI,GI,BI) - Ylmin(RI,GI,BI)$$

가

(RO) (GO) (BO) 가

가

(G) (D)

(R*, G*, B*) (RO*, GO*, BO*, WO*)

/

/ (R,G,B) (R*, G*, B*) (R,G,B)

(RO, GO, BO, WO) (encoder

(RO, GO, BO, WO) RO, GO, BO (RO, GO, BO, WO) WO

(WO*)
(WO)

(R,G,B) / (Max(R,G,B),Min(R,G,B)) / (Min/M
(Max(R,G,B)) (Min(R,G,B))

(LUT) , 1, 2, 3 (LUT) , 1, 2, 3 (R,G,B)
(LUT) (R,G,B)

(RO, GO, BO, WO)

(R,G,B) $Y = 255 \times (L/255)^\gamma$ (R*, G*, B*)

(R,G,B) , L (R*,G*,B*) , γ

2.5

가
(RO*, GO*, BO*, WO*)

가

가

(V_{GL}), (V_{ref}) (Vcom) DC/DC (V_{DD}), (V_{GH}),

5 , 6 5 /

5 (G) (D)
(52) , (51) (51) (5

8)

(51b) , (52) (51) 가 (51a) ,
(51) (R*, G*, B*) (RO*, GO*, B

O*, WO*) / (60) , (57) / (60)
(RO*, GO*, BO*, WO*) (DCLK) (DE) (Vsync, Hsync)
(51a)가 (51) (51b)

(54) (53) , (51) (54) ,
(54) 가

(51) (51b) (54)
(Vcom) DC/DC (V_{DD}), (56) , (V_{GH}), (58) (V_{GL}), (59) (V_{ref})

/ (60) 6 (R*, G*, B*) (R,
(61) , (R,G,B)
(encoder)(62) , (62) (RO, GO, BO, WO)
(RO, GO, BO, WO) (RO, GO, BO, WO) RO,
(RO*, GO*, BO*) (63) ,
(WO*) (WO) (65)
(WO) (64)

$$(61) \quad Y = 255 \times (L/255)^{\gamma}$$

Y (R,G,B) , L (R*,G*,B*) , γ LCD 2.5

$$(63) \quad Y = 255 \times (L/255)^{\gamma}$$

(64) Digital - TV, TV,

(R,G,B) (RO, GO, BO, WO) (encoder)(62)
 6 (R,G,B) / (Min/Max) (66) ,
 (max(R,G,B)) (min(R,G,B)) (L
 UT)(67) , (67) (R,G,B)
 1, 2, 3 (LUT)(68, 69, 70) , LUT
 (R,G,B) (R,G,B) (RO, GO, BO, WO)
 4 (71)

(62)

$$RO = \min(R,G,B)/\max(R,G,B) \times R + R - \min(R,G,B)$$

$$GO = \min(R,G,B)/\max(R,G,B) \times G + G - \min(R,G,B)$$

$$BO = \min(R,G,B)/\max(R,G,B) \times B + B - \min(R,G,B)$$

$$WO = \min(R,G,B)$$

(62)

(LUT)

(0~255) (result[7..0]) 0~1 가
 , LUT(67) 8 (Min[7..0],Max[7..0])
 , 256(0~255) 1

, LUT(67) (result[7..0]) (R,G,B)
 256(0~255)

LSB 1

(61) 8 가 , (62) 7 8 가
 가 가 (63) 8 가
 (Gray)
 / 2 가 (62) 7 8
 (Gray)
 (62) LSB 4 가 7 (Gray)
 , (62) 가 , 가

가 (61) 가 , (62) 가 LSB

/ (60)가 (R*, G*, B*)
 (RO*, GO*, BO*, WO*) .
 , (53)가 / (60) (RO*, GO*, BO*,
 WO*) , (Vsync, Hsync) (DCLK) (DTEN)
 (51) (51b) (51a)가
 (Control signal) , (51a)가 (51b)가
 1) 가 (51) .
 , (58) .
 가

(57)

1.

(G) (D)

,

(R*, G*, B*) (RO*, GO*, BO*, WO

*) / ,

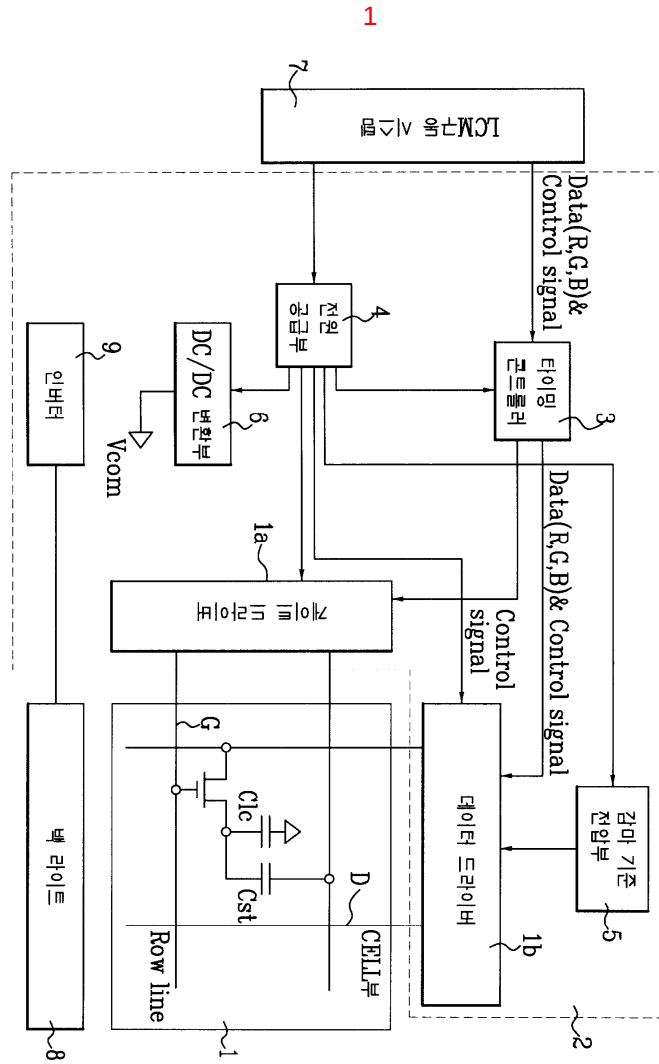
,

1. (R, G, B) is the input image, (R^*, G^*, B^*) is the output image, (R_O, G_O, B_O, W_O) is the output of the encoder, (R^*, G^*, B^*) is the output of the decoder, (R_O, G_O, B_O, W_O) is the output of the encoder, (R^*, G^*, B^*) is the output of the decoder.

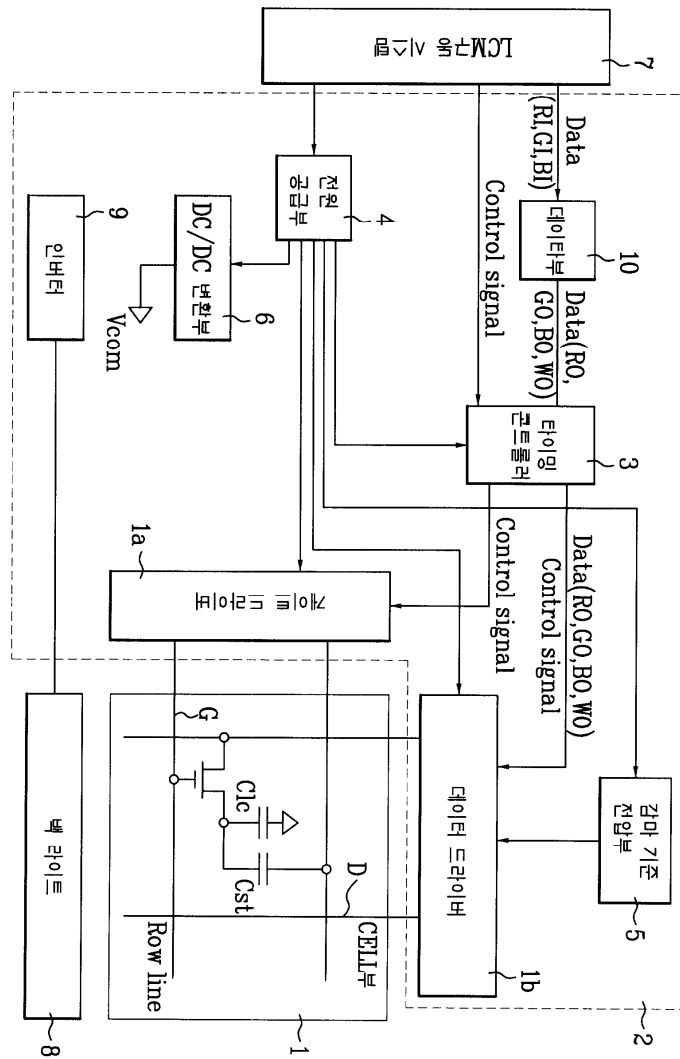
Figure 1 is a block diagram illustrating a color calibration method. The diagram shows a sequence of steps 1 through 6, each involving a color calibration method for a display device.

- Step 1:** Input (R, G, B) is processed by a LUT to produce (R*, G*, B*).
- Step 2:** (R*, G*, B*) is processed by a LUT to produce (R, G, B).
- Step 3:** (R, G, B) is processed by a LUT to produce (R, G, B).
- Step 4:** (R, G, B) is processed by a LUT to produce (R*, G*, B*).
- Step 5:** (R*, G*, B*) is processed by a LUT to produce (R, G, B).
- Step 6:** (R, G, B) is processed by a LUT to produce (R*, G*, B*).

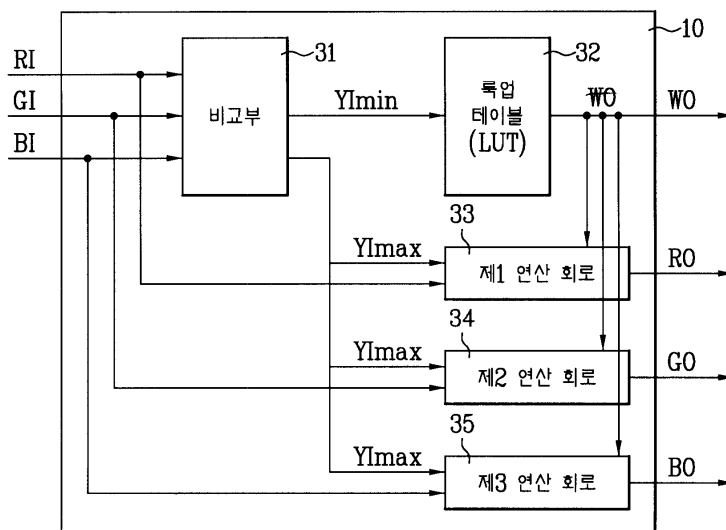
The diagram also shows a color calibration method for a display device, including a color calibration method for a display device, a color calibration method for a display device, and a color calibration method for a display device.



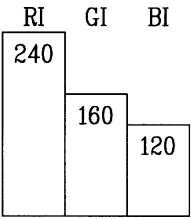
2



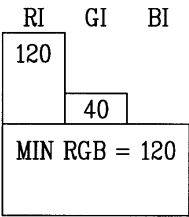
3



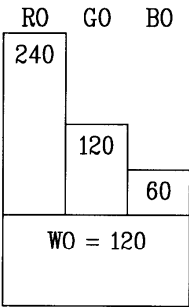
4a

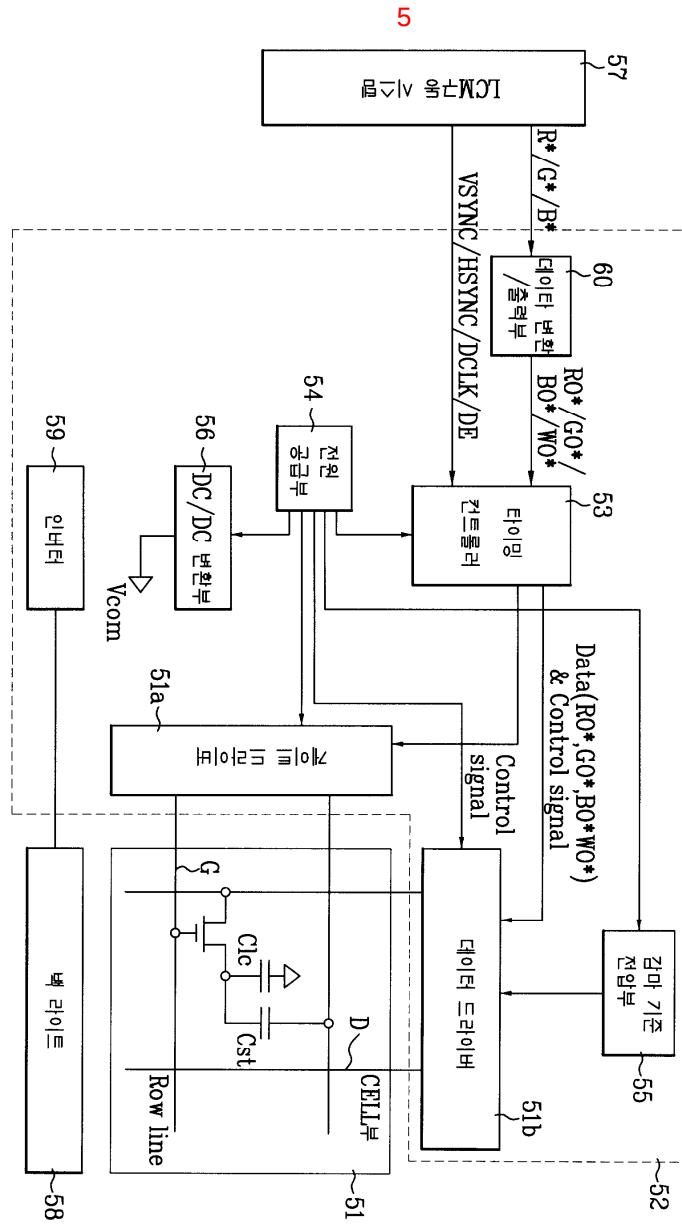


4b

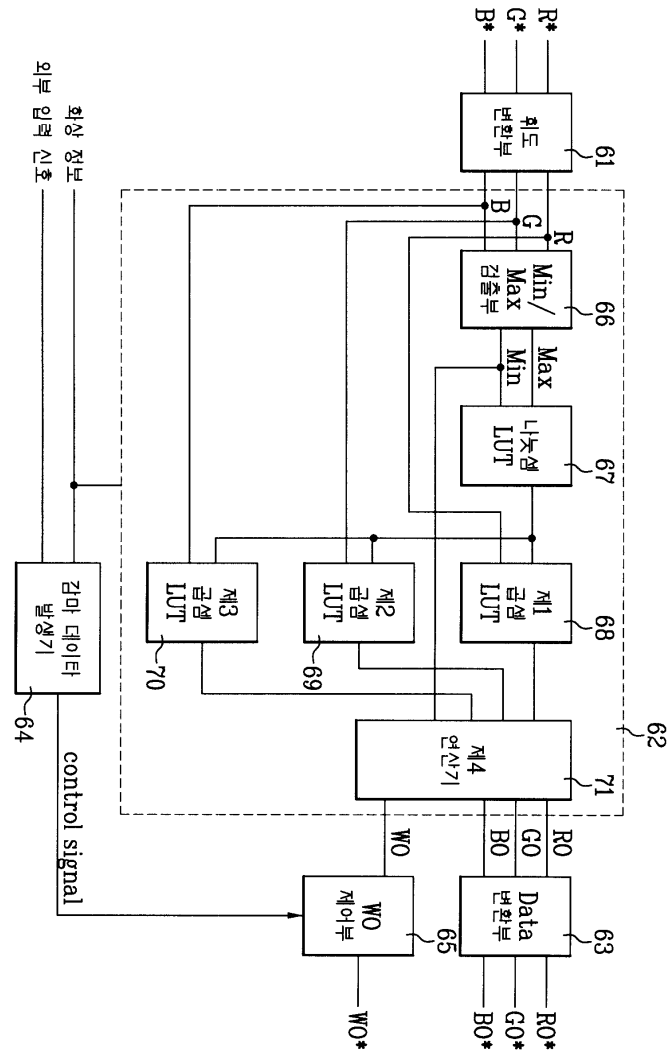


4c

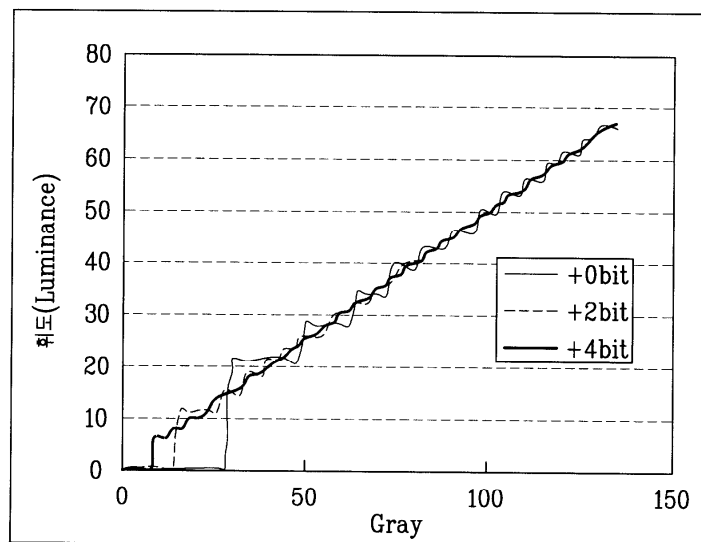




6



7



本发明的液晶显示装置的驱动电路，用于实现这种用途，用于提供包括分割和乘法查找表的液晶显示装置的驱动电路，并且可以比计算模式提高工作速度包括数据转换/输出单元，其中多条栅极线（G）和数据线（D）转换具有矩阵形式的像素区域的LCD面板，它们彼此垂直排列，并且显示输入数据（R*，G*，B*）从驱动系统输入到显示输出数据（RO*，GO*，BO*，WO*）并输出。并且包括驱动电路部分和将固定光源提供给LCD面板的背光。驱动电路部分在LCD面板中提供驱动信号和数据信号。查找表（LUT）。

