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DRIVING METHOD THEREOF****Publication Classification**(71) Applicant: **Samsung Display Co., Ltd.,**
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CPC **G09G 3/3216** (2013.01)
USPC **345/82**(73) Assignee: **Samsung Display Co., Ltd.,**
Yongin-City (KR)(57) **ABSTRACT**

An organic light emitting display includes first sub-pixels, second sub-pixels and third sub-pixels at an area defined by scan lines and data lines; a data driver configured to supply an initialization voltage and data signals to output lines; demultiplexers coupled to respective ones of the output lines, each demultiplexer being configured to supply a plurality of the data signals to a plurality of the data lines; and a demultiplexer controller configured to control the demultiplexer so that data signals are concurrently supplied to at least one of the first sub-pixels, the second sub-pixels or the third sub-pixels.

(21) Appl. No.: **14/066,649**(22) Filed: **Oct. 29, 2013**(30) **Foreign Application Priority Data**

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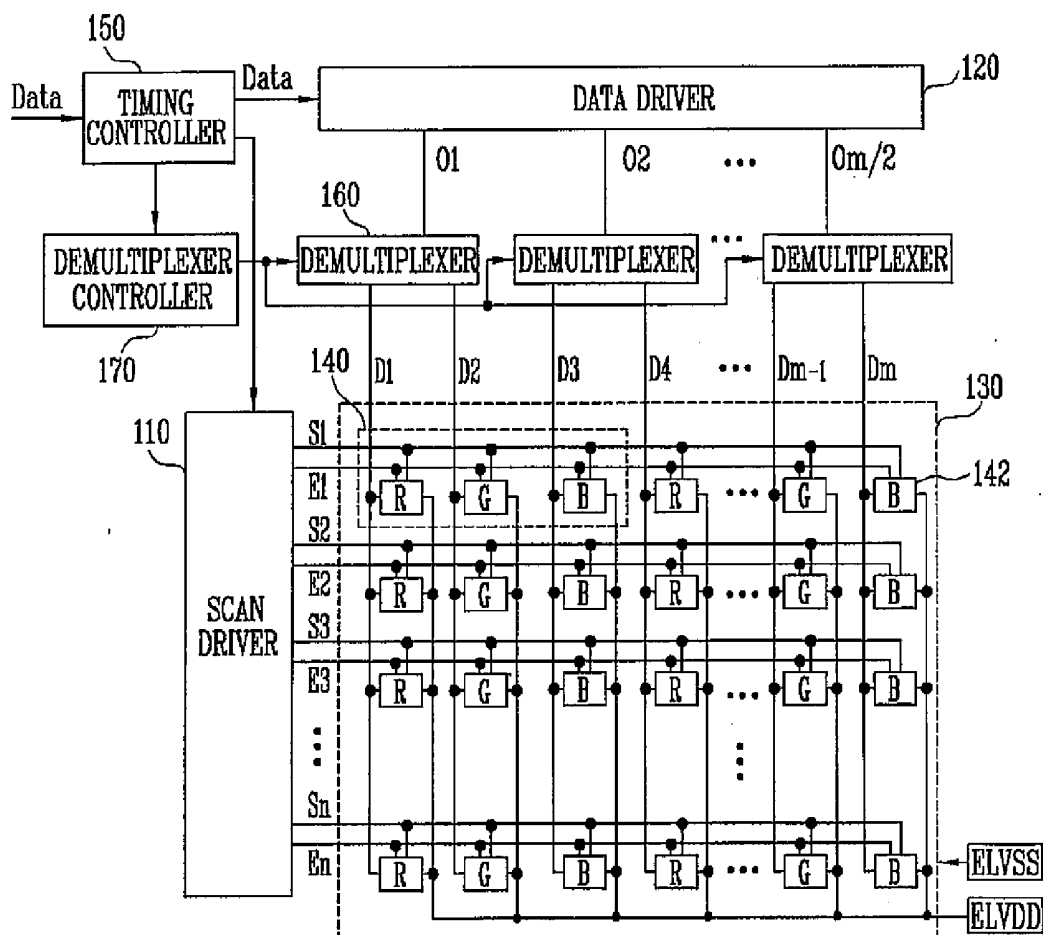


FIG. 1

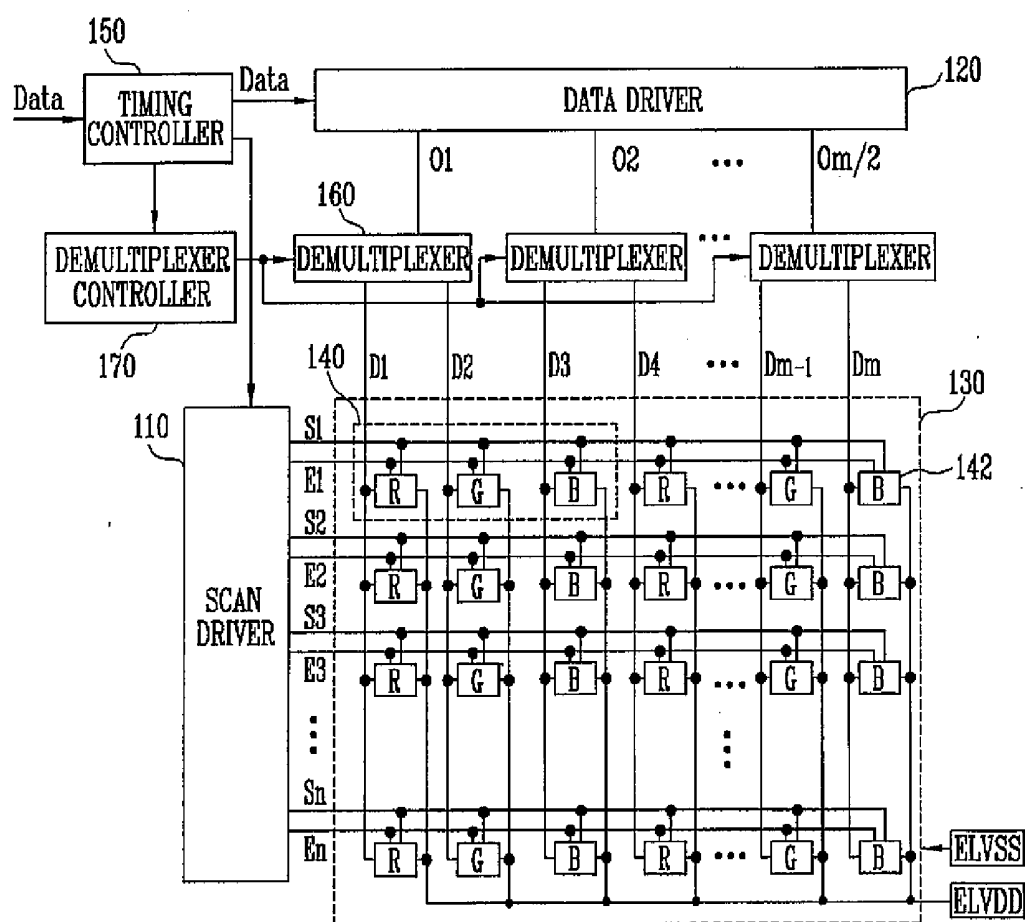


FIG. 2

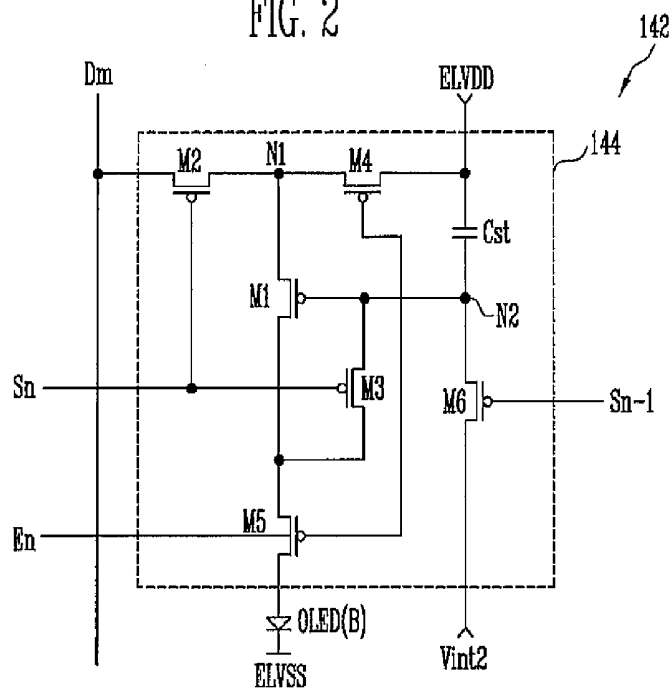


FIG. 3

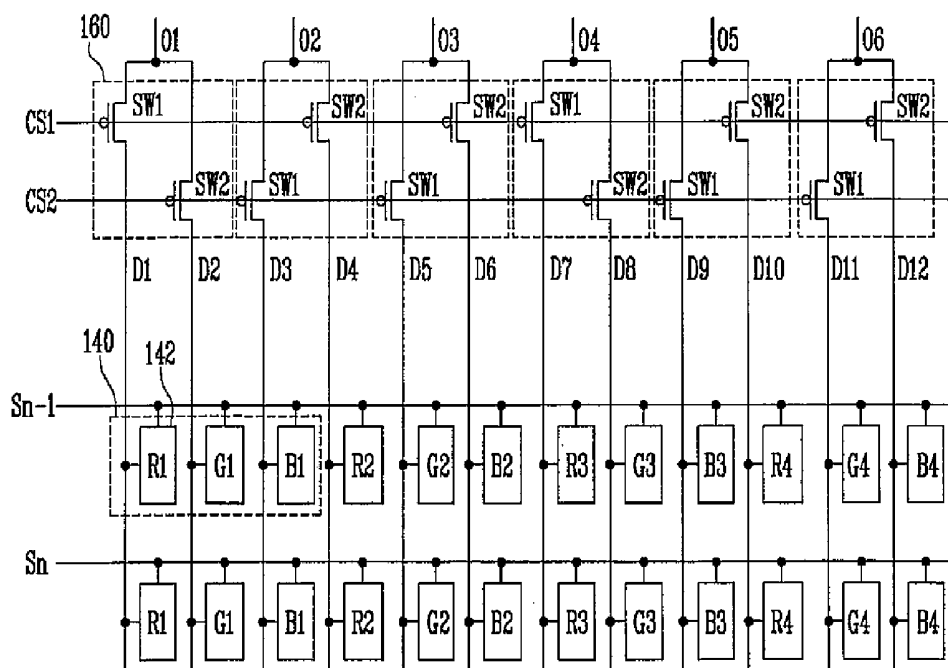
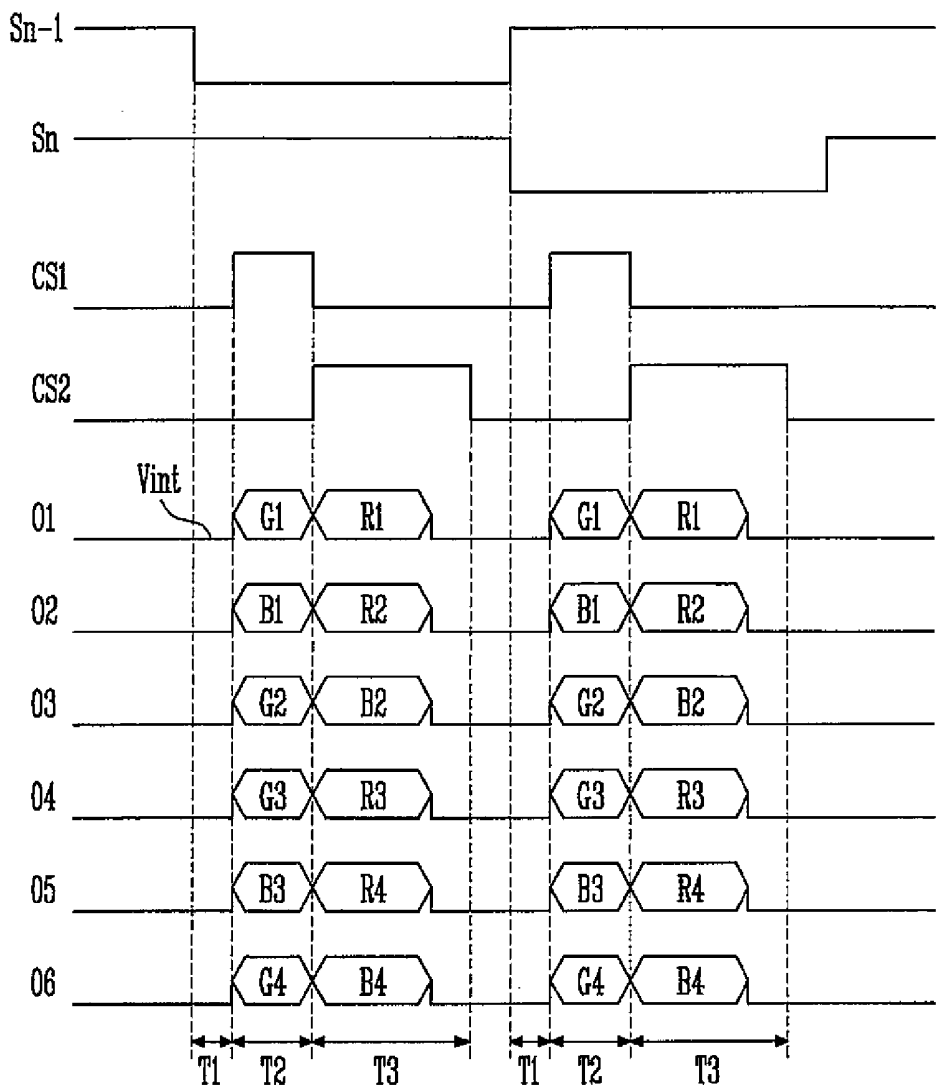


FIG. 4



ORGANIC LIGHT EMITTING DISPLAY AND DRIVING METHOD THEREOF

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to and the benefit of Korean Patent Application No. 10-2013-0073425, filed on Jun. 26, 2013, in the Korean Intellectual Property Office, the entire contents of which are incorporated herein by reference in their entirety.

BACKGROUND

[0002] 1. Field

[0003] Embodiments of the present invention relate to an organic light emitting display and a driving method thereof.

[0004] 2. Description of the Related Art

[0005] With the development of information technologies, the importance of a display that is a connection medium between information has increased. Accordingly, flat panel displays (FPDs) such as a liquid crystal display (LCD), an organic light emitting display and a plasma display panel (PDP) have been increasingly used.

[0006] Among these FPDs, the organic light emitting display displays images using organic light emitting diodes (OLEDs) that emit light through recombination of electrons and holes. The organic light emitting display has a fast response speed and may be driven with low power consumption.

SUMMARY

[0007] Embodiments provide an organic light emitting display and a driving method thereof, which may increase (or improve) display quality.

[0008] According to an embodiment of the present invention, there is provided an organic light emitting display including: first sub-pixels, second sub-pixels and third sub-pixels at an area defined by scan lines and data lines; a data driver configured to supply an initialization voltage and data signals to output lines; demultiplexers coupled to respective ones of the output lines, each demultiplexer being configured to supply a plurality of the data signals to a plurality of the data lines; and a demultiplexer controller configured to control the demultiplexer so that data signals are concurrently supplied to at least one of the first sub-pixels, the second sub-pixels or the third sub-pixels.

[0009] The demultiplexer controller may be configured to control the demultiplexer so that the initialization voltage is supplied to the data lines during a first period in a horizontal period, one of the data signals is supplied to the first sub-pixels during a second period in the horizontal period, and another one of the data signals is supplied to the second sub-pixels during a third period in the horizontal period.

[0010] The first sub-pixels may be green sub-pixels configured to generate green light.

[0011] The second sub-pixels may be red sub-pixels configured to generate red light.

[0012] One of the data signals supplied to the third sub-pixels may be supplied during the second and third periods.

[0013] The organic light emitting display may further include a timing controller configured to rearrange external data, corresponding to an order of the data signals supplied to

the first sub-pixels, the second sub-pixels and the third sub-pixels, and configured to supply the rearranged data to the data driver.

[0014] Each of the demultiplexers may include a first switch and a second switch, wherein the first switch coupled to an i -th (i is 1, 4, 7, . . .) output line may be turned on when a first control signal is supplied from the demultiplexer controller, and the second switch coupled to the i -th output line may be turned on when a second control signal is supplied from the demultiplexer controller, and wherein the first switch coupled to $(i+1)$ -th and $(i+2)$ -th output lines may be turned on when the second control signal is supplied from the demultiplexer controller, and the second switch coupled to the $(i+1)$ -th and $(i+2)$ -th output lines may be turned on when the first control signal is supplied from the demultiplexer controller.

[0015] The demultiplexer controller may be configured to supply the first and second control signals during the first period, supply the second control signal during the second period, and supply the first control signal during the third period.

[0016] The first switch may be coupled to one of the data lines at one side of the demultiplexer, wherein the second switch may be coupled to one of the data lines at an other side of the demultiplexer.

[0017] The initialization voltage may be a voltage lower than a voltage of the data signals.

[0018] According to another embodiment of the present invention, there is provided a method of driving an organic light emitting display, the method including: supplying an initialization voltage to data lines via a demultiplexer during a first period in a horizontal period; supplying a first data signal to first sub-pixels via the demultiplexer during a second period in the horizontal period; and supplying a second data signal to second sub-pixels via the demultiplexer during a third period in the horizontal period.

[0019] The initialization voltage may be a voltage lower than a voltage of the data signals.

[0020] The first sub-pixels may be green sub-pixels configured to generate green light.

[0021] The second sub-pixels may be red sub-pixels configured to generate red light.

[0022] A third data signal may be supplied to some of third sub-pixels during the second period, and a fourth data signal may be supplied to others of the third sub-pixels during the third period.

BRIEF DESCRIPTION OF THE DRAWINGS

[0023] Example embodiments will now be described more fully hereinafter with reference to the accompanying drawings; however, they may be embodied in different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the example embodiments to those skilled in the art.

[0024] In the drawing figures, dimensions may be exaggerated for clarity of illustration. It will be understood that when an element is referred to as being "between" two elements, it can be the only element between the two elements, or one or more intervening elements may also be present. Like reference numerals refer to like elements throughout.

[0025] FIG. 1 is a diagram illustrating an organic light emitting display according to an embodiment of the present invention.

[0026] FIG. 2 is a circuit diagram illustrating a sub-pixel according to an embodiment of the present invention.

[0027] FIG. 3 is a diagram illustrating demultiplexers according to an embodiment of the present invention.

[0028] FIG. 4 is a waveform diagram illustrating an embodiment of an operating process of the demultiplexers shown in FIG. 3.

DETAILED DESCRIPTION

[0029] Hereinafter, certain exemplary embodiments according to the present invention will be described with reference to the accompanying drawings. Here, when a first element is described as being coupled to a second element, the first element may be not only directly coupled to the second element but may also be indirectly coupled to the second element via a third element. Further, some of the elements that are not essential to the complete understanding of the invention may be omitted for clarity. Also, like reference numerals refer to like elements throughout.

[0030] FIG. 1 is a block diagram illustrating an organic light emitting display according to an embodiment of the present invention.

[0031] Referring to FIG. 1, the organic light emitting display according to this embodiment includes a scan driver 110, a data driver 120, a display unit 130, a timing controller 150, demultiplexers 160 and a demultiplexer controller 170.

[0032] The display unit 130 includes sub-pixels 142 positioned at crossing regions of scan lines S1 to Sn and data lines D1 to Dm. The sub-pixels 142 are divided into red sub-pixels R configured to generate red light, green sub-pixels G configured to generate green light, and blue sub-pixels B configured to generate blue light. Red, green and blue sub-pixels R, G and B that are adjacent to one another constitute a pixel 140.

[0033] Each sub-pixel 142 receives first and second power sources ELVDD and ELVSS supplied from the outside of the organic light emitting display. Sub-pixels 142 receive a data signal while being selected for each horizontal line, corresponding to a scan signal supplied to the scan lines S1 to Sn. Each sub-pixel 142 receiving the data signal generates light with a specific luminance (e.g., a predetermined luminance) while controlling the amount of current flowing from the first power source ELVDD to the second power source ELVSS via an organic light emitting diode.

[0034] The scan driver 110 generates a scan signal under the control of the timing controller 150, and supplies the generated scan signal to the scan lines S1 to Sn. For example, the scan driver 110 may progressively (e.g., sequentially) supply the scan signal to the scan lines S1 to Sn. The scan driver 110 generates an emission control signal under the control of the timing controller 150, and supplies the generated emission control signal to emission control lines E1 to En. For example, the scan driver 110 may supply the emission control signal to a j-th (j is a natural number) emission control line Ej so that the emission control signal is overlapped with the scan signal supplied to (j-1)-th and j-th scan lines Sj-1 and Sj. Additionally, in some embodiments, the emission control lines E1 to En may be eliminated corresponding to the circuit structure of the sub-pixel 142.

[0035] The data driver 120 progressively (e.g., sequentially) supplies an initialization voltage and a plurality of data signals to output lines O1 to Om/2. For example, the data

driver 120 may progressively (e.g., sequentially) supply the initialization voltage and two data signals to each of the output lines O1 to Om/2 for each horizontal period in which the scan signal is supplied. Here, the initialization voltage may be set to a voltage lower than the data signal.

[0036] The demultiplexers 160 are respectively coupled to the output lines O1 to Om/2. The demultiplexer 160 is coupled to a plurality of data lines D. For example, each demultiplexer 160 may be coupled to two data lines D. The demultiplexer 160 supplies the initialization voltage to the plurality of data lines D for each horizontal period. The demultiplexer 160 progressively (e.g., sequentially) supplies a plurality of data signals to the data lines D coupled thereto for each horizontal period.

[0037] The demultiplexer controller 170 supplies a plurality of control signals to each demultiplexer 160. For example, the demultiplexer controller 170 supplies a plurality of control signals to each demultiplexer 160 so that the initialization voltage is commonly supplied to the data lines D for each horizontal period, and the plurality of data signals are time-divisionally supplied to the plurality of data lines.

[0038] Additionally, the demultiplexer controller 170 controls the demultiplexer 160 so that the data signal is concurrently (e.g., simultaneously) supplied to the green sub-pixels G during a second period and is concurrently (e.g., simultaneously) supplied to the red sub-pixels R during a third period, except a first period in which the initialization voltage is supplied during the horizontal period. In this case, some of the blue sub-pixels B receive the data signal during the second period, and the others of the blue sub-pixels B receive the data signal during the third period.

[0039] The timing controller 150 controls the scan driver 110, the data driver 120 and the demultiplexer controller 170, corresponding to synchronization signals supplied from the outside of the organic light emitting display. The timing controller 150 rearranges data Data supplied from the outside, corresponding to a control signal supplied from the demultiplexer controller 170, and supplies the rearranged data to the data driver 120.

[0040] Specifically, the timing controller 150 rearranges the data Data so that the data signal can be supplied to the green sub-pixels G during the second period in the horizontal period, corresponding to the control signal. The timing controller 150 also rearranges the data Data so that the data signal can be supplied to the red sub-pixels R during the third period in the horizontal period, corresponding to the control signal.

[0041] Although it has been illustrated in FIG. 1 that the demultiplexer 160 is coupled to two data lines, embodiments of the present invention are not limited thereto. According to embodiments of the present invention, each demultiplexer 160 may be coupled to two or more data lines. The demultiplexer controller 170 may be provided inside the timing controller 150.

[0042] FIG. 2 is a circuit diagram illustrating a sub-pixel according to an embodiment of the present invention. For convenience of illustration, a sub-pixel coupled to an n-th scan line Sn and an m-th data line Dm will be shown in FIG. 2.

[0043] Referring to FIG. 2, the sub-pixel 142 according to this embodiment includes an organic light emitting diode OLED(B) and a pixel circuit 144 configured to control the amount of current supplied to the organic light emitting diode OLED(B).

[0044] An anode electrode of the organic light emitting diode OLED(B) is coupled to the pixel circuit **144**, and a cathode electrode of the organic light emitting diode OLED (B) is coupled to the second power source ELVSS. The organic light emitting diode OLED(B) generates light with a luminance (e.g., a predetermined luminance) corresponding to the amount of current supplied from the pixel circuit **144**.

[0045] The pixel circuit **144** stores a voltage corresponding to a data signal and the threshold voltage of a first transistor (e.g., the driving transistor) M1, and controls the amount of the current supplied to the organic light emitting diode OLED (B), corresponding to the stored voltage. To this end, the pixel circuit **144** includes first to sixth transistors M1 to M6, and a storage capacitor Cst.

[0046] A first electrode of the first transistor M1 is coupled to a first node N1, and a second electrode of the first transistor M1 is coupled to a first electrode of the fifth transistor M5. A gate electrode of the first transistor M1 is coupled to a second node N2. The first transistor M1 controls the amount of the current supplied to the organic light emitting diode OLED (B), corresponding to a voltage stored in the storage capacitor Cst.

[0047] A first electrode of the second transistor M2 is coupled to the data line Dm, and a second electrode of the second transistor M2 is coupled to the first node N1. A gate electrode of the second transistor M2 is coupled to the n-th scan line Sn. The second transistor M2 is turned on when a scan signal is supplied to the n-th scan line, to supply a data signal from the data line Dm to the first node N1.

[0048] A first electrode of the third transistor M3 is coupled to the second electrode of the first transistor M1, and a second electrode of the third transistor M3 is coupled to the second node N2. A gate electrode of the third transistor M3 is coupled to the n-th scan line Sn. The third transistor M3 is turned on when the scan signal is supplied to the n-th scan line Sn, to allow the first transistor M1 to be diode-coupled.

[0049] A first electrode of the fourth transistor M4 is coupled to the first power source ELVDD, and a second electrode of the fourth transistor M4 is coupled to the first node N1. A gate electrode of the fourth transistor M4 is coupled to an emission control line En. The fourth transistor M4 is turned off when an emission control signal is supplied to the emission control line En, and is turned on otherwise. For example, the emission control signal is a logic high signal in this embodiment.

[0050] The first electrode of the fifth transistor M5 is coupled to the second electrode of the first transistor M1, and a second electrode of the fifth transistor M5 is coupled to the anode electrode of the organic light emitting diode OLED(B). A gate electrode of the fifth transistor M5 is coupled to the emission control line En. The fifth transistor M5 is turned off when the emission control signal is supplied to the emission control line En, and is turned on otherwise.

[0051] A first electrode of the sixth transistor M6 is coupled to the second node N2, and a second electrode of the sixth transistor M6 is coupled to a second initialization power source Vint2. A gate electrode of the sixth transistor M6 is coupled to an (n-1)-th scan line Sn-1. The sixth transistor M6 is turned on when the scan signal is supplied to the (n-1)-th scan line Sn-1, to supply the voltage of the second initialization power source Vint2 to the second node N2. Here, the second initialization power source Vint2 may be set to a voltage lower than the data signal, e.g., a voltage equal to the initialization voltage supplied to the output lines O1 to Om/2.

[0052] The storage capacitor Cst is coupled between the first power source ELVDD and the second node N2. The storage capacitor Cst stores a voltage corresponding to the data signal and the threshold voltage of the first transistor M1.

[0053] An operating process of the sub-pixel **142** according to an embodiment of the present invention will be briefly described. First, the emission control signal is supplied to the emission control line En so that the fourth and fifth transistors M4 and M5 are turned off. When the fourth and fifth transistors M4 and M5 are turned off, the sub-pixel **142** is set in a non-emission state.

[0054] Subsequently, the scan signal is supplied to the (n-1)-th scan line Sn-1 so that the sixth transistor M6 is turned on. When the sixth transistor M6 is turned on, the voltage of the second initialization power source Vint2 is supplied to the second node N2, and accordingly, the second node N2 is initialized with the voltage of the second initialization power source Vint2.

[0055] Subsequently, the scan signal is supplied to the n-th scan line Sn so that the second and third transistors M2 and M3 are turned on. When the third transistor M3 is turned on, the first transistor M1 is diode-coupled. When the second transistor M2 is turned on, the data line Dm and the first node N1 are electrically coupled to each other.

[0056] In a case where an initialization voltage Vint is supplied to the data line Dm, the first transistor M1 is set in a turn-off state. Subsequently, when the data signal is supplied to the data line Dm, the first transistor M1 is turned on. When the first transistor M1 is turned on, the voltage corresponding to the data signal and the threshold voltage of the first transistor M1 is applied to the second node N2.

[0057] Subsequently, the supply of the emission control signal to the emission control line En is stopped so that the fourth and fifth transistors M4 and M5 are turned on. Then, the first transistor M1 controls the amount of current flowing from the first power source ELVDD to the second power source ELVSS via the organic light emitting diode OLED(B), corresponding to the voltage applied to the second node N2. In this case, the organic light emitting diode OLED(B) generates light with a luminance (e.g., a predetermined luminance) corresponding to the amount of the current.

[0058] In embodiments of the present invention, the pixel circuit **144** may be implemented as various types of circuits currently known in the art.

[0059] FIG. 3 is a diagram illustrating demultiplexers according to an embodiment of the present invention. For convenience of illustration, a demultiplexer coupled to first to sixth output lines O1 to O6 will be shown in FIG. 3.

[0060] Referring to FIG. 3, each demultiplexer **160** according to this embodiment includes a first switch SW1 and a second switch SW2. The first and second switches SW1 and SW2 are coupled between the same output line O and different data lines D. The first switch SW1 is coupled to a data line positioned at one side of the demultiplexer **160**, and the second switch SW2 is coupled to a data line positioned at the other side of the demultiplexer **160**. For example, the first switch SW1 included in a first demultiplexer **160** is coupled between a first output line O1 and a first data line D1, and the second switch SW2 included in the first demultiplexer **160** is coupled between the first output line O1 and a second data line D2. The first and second switches SW1 and SW2 are turned on corresponding to first and second control signals CS1 and CS2, respectively, to control the coupling between the output lines O and the data lines D.

[0061] The first switch SW1 included in a demultiplexer 160 coupled to an i -th (i is 1, 4, 7, ...) output line O_i is turned on when the first control signal CS1 is supplied, and the second switch SW2 included in the demultiplexer 160 is turned on when the second control signal CS2 is supplied. The first switch SW1 included in a demultiplexer 160 coupled to $(i+1)$ -th and $(i+2)$ -th output lines O_{i+1} and O_{i+2} is turned on when the second control signal CS2 is supplied, and the second switch SW2 included in the demultiplexer 160 is turned on when the first control signal CS1 is supplied.

[0062] The sub-pixels 142 are positioned at the crossing regions of the scan lines S_1 to S_n and the data lines D_1 to D_m . For convenience of illustration, sub-pixels 142 included in the same pixel 140 are designated by like reference numerals R_1 , G_1 , B_1 , ..., and sub-pixels 142 included in different pixels 140 are designated by different reference numerals R_1 , R_2 , R_3 , ...

[0063] FIG. 4 is a waveform diagram illustrating an embodiment of an operating process of the demultiplexers shown in FIG. 3.

[0064] Referring to FIG. 4, one period in which the scan signal is supplied, i.e., one horizontal period, is divided into a first period T1, a second period T2 and a third period T3.

[0065] The first and second control signals CS1 and CS2 are concurrently (e.g., simultaneously) supplied during the first period T1. The second control signal CS2 is supplied during the second period T2, and the first control signal CS1 is supplied during the third period T3.

[0066] The operating process of the demultiplexers will be described in more detail. First, during the first period T1, the first and second control signals CS1 and CS2 are supplied, and concurrently (e.g., simultaneously), the initialization voltage V_{int} is supplied to the output lines O_1 to O_6 .

[0067] When the first and second control signals CS1 and CS2 are supplied, the first and second switches SW1 and SW2 included in each demultiplexer 160 are turned on. Then, the initialization voltage V_{int} supplied to the output lines O_1 to O_6 is supplied to data lines D_1 to D_{12} , and accordingly, the data lines D_1 to D_{12} are initialized with the initialization voltage V_{int} .

[0068] When the data lines D_1 to D_{12} are initialized with the initialization voltage V_{int} , the driving transistor M1 maintains the turn-off state even though the driving transistor M1 is diode-coupled corresponding to the scan signal supplied to the scan lines S_{n-1} and S_n .

[0069] Subsequently, the second control signal CS2 is supplied during the second period T2. When the second control signal CS2 is supplied, the second switch SW2 coupled to the i -th output line O_i and the first switch SW1 coupled to the $(i+1)$ -th and $(i+2)$ -th output lines O_{i+1} and O_{i+2} are turned on.

[0070] Then, the data signal is supplied to green sub-pixels G_1 to G_4 and blue sub-pixels B_1 and B_3 . Here, the green sub-pixels G_1 to G_4 concurrently (e.g., simultaneously) receive the data signal during the second period T2. That is, in embodiments of the present invention, the data signal is first of all applied to the green sub-pixels G_1 to G_4 . When the data signal is first of all applied to the green sub-pixels G_1 to G_4 , the charging time of the green sub-pixels G_1 to G_4 increases, and accordingly, it is possible to reduce (or prevent) a luminance difference from occurring due to inequality of the charging times.

[0071] Subsequently, the first control signal CS1 is supplied during the third period T3. When the first control signal

CS1 is supplied, the first switch SW1 coupled to the i -th output line O_i and the second switch SW2 coupled to the $(i+1)$ -th and $(i+2)$ -th output lines O_{i+1} and O_{i+2} are turned on.

[0072] Then, the data signal is supplied to red sub-pixels R_1 to R_4 and blue sub-pixels B_2 and B_4 . Here, the red sub-pixels R_1 to R_4 concurrently (e.g., simultaneously) receive the data signal during the third period T3. When the data signal is concurrently (e.g., simultaneously) supplied to the red sub-pixels R_1 to R_4 , it is possible to reduce (or prevent) a luminance difference from occurring due to inequality of the charging times.

[0073] Generally, the green sub-pixel G contributes to luminance by about 60%, the red sub-pixel R contributes to luminance by about 30%, and the blue sub-pixel B contributes to luminance by about 10%. In embodiments of the present invention, the data signal is concurrently (e.g., simultaneously) supplied to the green sub-pixels G during the second period T2. Then, the charging time of the green sub-pixels G increases, and the luminance difference may not occur due to the inequality of the charging times. Similarly, in embodiments of the present invention, the data signal is concurrently (e.g., simultaneously) supplied to the red sub-pixels R during the third period T3, so that it is possible to reduce (or prevent) a luminance difference from occurring due to the inequality of the charging times.

[0074] The data signal supplied to the blue sub-pixels B is divided and supplied during the second and third periods T2 and T3. However, the blue sub-pixels B may not (or hardly) contribute to luminance, and hence the inequality phenomenon caused by the luminance may not be observed.

[0075] By way of summation and review, an organic light emitting display according to embodiments of the present invention includes a plurality of sub-pixels arranged in a matrix form at crossing regions of data lines, scan lines and power lines. Each sub-pixel generally includes two or more transistors. In embodiments of the present invention, each sub-pixel includes an organic light emitting diode and a driving transistor, and one or more capacitors.

[0076] In order to reduce manufacturing costs of the organic light emitting display, there has been proposed a structure in which demultiplexers are respectively added to output lines of a data driver. The demultiplexer time-divisionally supplies, to a plurality of data lines, a plurality of data signals supplied to each output line. However, in a case where the data signals are time-divisionally supplied, an unequal image may be displayed due to a difference in charging time amongst sub-pixels.

[0077] Practically, the data signal is supplied to the green sub-pixels that highly contribute luminance for different times, the voltage is changed (e.g., the luminance difference occurs) corresponding to the charging time, and accordingly, a defect may occur, such as a blurry shape.

[0078] In the organic light emitting display and the driving method thereof according to embodiments of the present invention, the data signal is first of all supplied to the green sub-pixels that highly contribute luminance when the demultiplexer is used. Then, the charging time of the green sub-pixels increases, thereby increasing (or improving) display quality. Further, when the demultiplexer is used, the data signal is concurrently (e.g., simultaneously) supplied to the red sub-pixels, thereby reducing (or preventing) the occurrence of a luminance difference.

[0079] Example embodiments have been disclosed herein, and although specific terms are employed, they are used and are to be interpreted in a generic and descriptive sense only and not for purpose of limitation. In some instances, as would be apparent to one of ordinary skill in the art as of the filing of the present application, features, characteristics, and/or elements described in connection with a particular embodiment may be used singly or in combination with features, characteristics, and/or elements described in connection with other embodiments unless otherwise specifically indicated. Accordingly, it will be understood by those of skill in the art that various changes in form and details may be made without departing from the spirit and scope of the present invention as set forth in the following claims, and equivalents thereof.

What is claimed is:

1. An organic light emitting display comprising:
first sub-pixels, second sub-pixels and third sub-pixels at an area defined by scan lines and data lines;
a data driver configured to supply an initialization voltage and data signals to output lines;
demultiplexers coupled to respective ones of the output lines, each demultiplexer being configured to supply a plurality of the data signals to a plurality of the data lines; and
a demultiplexer controller configured to control the demultiplexers so that data signals are concurrently supplied to at least one of the first sub-pixels, the second sub-pixels or the third sub-pixels.
2. The organic light emitting display of claim 1, wherein the demultiplexer controller is configured to control the demultiplexer so that the initialization voltage is supplied to the data lines during a first period in a horizontal period, one of the data signals is supplied to the first sub-pixels during a second period in the horizontal period, and another one of the data signals is supplied to the second sub-pixels during a third period in the horizontal period.
3. The organic light emitting display of claim 2, wherein the first sub-pixels are green sub-pixels configured to generate green light.
4. The organic light emitting display of claim 2, wherein the second sub-pixels are red sub-pixels configured to generate red light.
5. The organic light emitting display of claim 2, wherein one of the data signals supplied to the third sub-pixels is supplied during the second and third periods.
6. The organic light emitting display of claim 2, further comprising a timing controller configured to rearrange external data, corresponding to an order of the data signals supplied to the first sub-pixels, the second sub-pixels and the third sub-pixels, and configured to supply the rearranged data to the data driver.

7. The organic light emitting display of claim 2, wherein each of the demultiplexers comprises a first switch and a second switch,

wherein the first switch coupled to an i-th (i is 1, 4, 7, . . .) output line is turned on when a first control signal is supplied from the demultiplexer controller, and the second switch coupled to the i-th output line is turned on when a second control signal is supplied from the demultiplexer controller, and

wherein the first switch coupled to (i+1)-th and (i+2)-th output lines is turned on when the second control signal is supplied from the demultiplexer controller, and the second switch coupled to the (i+1)-th and (i+2)-th output lines is turned on when the first control signal is supplied from the demultiplexer controller.

8. The organic light emitting display of claim 7, wherein the demultiplexer controller is configured to supply the first and second control signals during the first period, supply the second control signal during the second period, and supply the first control signal during the third period.

9. The organic light emitting display of claim 7, wherein the first switch is coupled to one of the data lines at one side of the demultiplexer, and

wherein the second switch is coupled to one of the data lines at an other side of the demultiplexer.

10. The organic light emitting display of claim 1, wherein the initialization voltage is a voltage lower than a voltage of the data signals.

11. A method of driving an organic light emitting display, the method comprising:

supplying an initialization voltage to data lines via a demultiplexer during a first period in a horizontal period;
supplying a first data signal to first sub-pixels via the demultiplexer during a second period in the horizontal period; and

supplying a second data signal to second sub-pixels via the demultiplexer during a third period in the horizontal period.

12. The method of claim 11, wherein the initialization voltage is a voltage lower than a voltage of the data signals.

13. The method of claim 11, wherein the first sub-pixels are green sub-pixels configured to generate green light.

14. The method of claim 11, wherein the second sub-pixels are red sub-pixels configured to generate red light.

15. The method of claim 11, wherein a third data signal is supplied to some of third sub-pixels during the second period, and a fourth data signal is supplied to others of the third sub-pixels during the third period.

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专利名称(译)	有机发光显示器及其驱动方法		
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摘要(译)

有机发光显示器包括在由扫描线和数据线限定的区域处的第一子像素，第二子像素和第三子像素;数据驱动器，被配置为向输出线提供初始化电压和数据信号;多路分配器耦合到相应的输出线，每个多路分配器被配置为将多个数据信号提供给多个数据线;多路分配器控制器，被配置为控制多路分解器，使得数据信号被同时提供给第一子像素，第二子像素或第三子像素中的至少一个。

