

CLAIMS

What is claimed is:

5 1. A display screen (100), comprising a display layer (110) and a first light shielding layer (120), the display layer (110) having a display surface (111) towards a user, the first light shielding layer (120) being arranged on the display surface (111), the first light shielding layer (120) having a fingerprint recognition area (121), the fingerprint recognition area (121) comprising at least one first through hole (122), the first through hole (122) being configured so that sensing signals
10 emitted and received by a fingerprint unit (210) located below the display screen (100) can be transmitted through the first through hole (122);

 wherein the display screen (100) further comprises a second light shielding layer (130), the second light shielding layer (130) is disposed at a side of the display layer (110) away from the first light shielding layer (120), the second light shielding layer (130) is provided with a second
15 through hole (131), and the second through hole (131) and the first through hole (122) are configured so that the sensing signals emitted and received by the fingerprint unit (210) can be transmitted through the second through hole (131) and the first through hole (122); the display layer (110) comprises a light-reflecting layer (150), and the first light shielding layer (120) is configured to block a reflected light signal of the light-reflecting layer (150) from being emitted.

20 2. The display screen (100) according to claim 1, wherein the first light shielding layer (120) is selected from a group consisting of a light-filtering layer, a polarizing layer, a color microelectronic printed layer, and a flat layer.

 3. The display screen (100) according to claim 1 or 2, wherein the fingerprint unit (210) is selected from a group consisting of an optical fingerprint unit, a capacitive fingerprint unit, a radio
25 frequency fingerprint unit, and an ultrasonic fingerprint unit.

 4. The display screen (100) according to any one of claims 1 to 3, wherein the second light shielding layer (130) is selected from a group consisting of a light-shielding foam layer, a lightproof ink layer, and a reflective layer.

30 5. The display screen (100) according to any one of claims 1 to 4, wherein the first through hole (122) and the second through hole (131) are disposed to be right opposite to each other, and the first through hole (122) has the same size as the second through hole (131).

 6. The display screen (100) according to any one of claims 1 to 5, wherein the first through

hole (122) is filled with a light-transparent layer, the light-transparent layer is provided with a first surface away from the display layer (110), the first light shielding layer (120) is provided with a second surface away from the display layer (110), and the first surface is flush with the second surface.

7. The display screen (100) according to claim 6, wherein a shape and size of the light-transparent layer are same with a shape and size of the first through hole (122).

8. The display screen (100) according to claim 1, wherein the fingerprint recognition area (121) is provided with a plurality of first through holes (122) and light shielding portions (124) among the plurality of first through holes (122); an orthographic projection area of the fingerprint recognition area (121) on the second light shielding layer (130) coincides with an area of the second through hole (131), and an orthographic projection area of the light shielding portion (124) on the display layer (110) coincides with an area of the light-reflecting layer (150).

9. The display screen (100) according to claim 8, wherein the second through hole (131) is provided with a light-shielding sheet (160), the light-shielding sheet (160) comprises a light-shielding pigment (161) and a light-transparent material, a plurality of light-transparent passages (162) is formed of the light-transparent material, the plurality of light-transparent passages (162) is configured so that a light signal emitted and received by the fingerprint unit (210) can be transmitted through the plurality of light-transparent passages (162), and the light-shielding pigment (161) has the same color as the second light shielding layer (130).

10. The display screen (100) according to claim 9, wherein the light-transparent material is selected from a group consisting of resin particles, glass powders, and a mixture of resin particles and glass powders.

11. The display screen (100) according to claim 9 or 10, wherein an orthographic projection area of the plurality of first through holes (122) on the second light shielding layer (130) coincides with an area of the plurality of light-transparent passages (162).

12. The display screen (100) according to any one of claims 1 to 4 and 6 to 11, wherein the first through hole (122) and the second through hole (131) are disposed to be right opposite to each other.

13. The display screen according to any one of claims 1 to 4 and 6 to 11, wherein the first through hole (122) and the second through hole (131) have an equal diameter.

14. The display screen according to any one of claims 1 to 13, wherein the first through hole (122) is defined in the first light shielding layer (120).

15. The display screen according to any one of claims 9 to 11, wherein reflected light of the light-shielding sheet (160) has the same color with reflected light of the second light shielding layer (130).

16. The display screen according to any one of claims 9 to 11, wherein a size of a granule of the light-transparent material is 1~20 μ m.

17. The display screen according to any one of claims 9 to 11, wherein a mass percent of the light-transparent material to the light-shielding sheet is 1%~20%.

18. A display device, comprising a display screen (100) according to any one of claims 1 to 17, and further comprising a fingerprint unit (210) and a middle frame (211), the display screen (100) and the optical fingerprint unit (210) being fastened to the middle frame (211), the fingerprint unit (210) being disposed at a side of the display layer (110) away from the first light shielding layer (120) and located at a position corresponding to an optical fingerprint recognition area (121), the fingerprint unit (210) comprising a light emitter (212) and a light inductor (213), and fingerprint recognition being performed by a first light signal emitted by the light emitter (212) and a second light signal received by the light inductor (213) passing through the first through hole (122).

19. The display device according to claim 18, wherein the fingerprint unit (210) is selected from a group consisting of an optical fingerprint unit, a capacitive fingerprint unit, a radio frequency fingerprint unit, and an ultrasonic fingerprint unit.

20. A mobile terminal, comprising a display device according to claim 18 or 19.