

member detected by the sensing member causes the MCU to switch the lighting member from the on-state to the off-state; or

when the lighting member is in the off-state, an expiration of the off-state time period or a remote instruction to turn on the lighting member detected by the sensing member causes the MCU to switch the lighting member from the off-state to the on-state.

4. The germicidal device of claim 1, wherein the UV light has a narrow band with a wavelength range of about 10-400 nm, preferably in a ranges of about 150-280 nm.
5. The germicidal device of claim 4, wherein the UV light has a wavelength of about 185 nm, 222 nm, 253.7 nm, or a combination of them.
6. The germicidal device of claim 1, wherein the light source comprises one or more UV light-emitting diodes (LEDs), or a low-pressure mercury lamp.
7. The germicidal device of claim 1, wherein the sensing member comprises a built-in sensor unit comprising at least one radar sensor for detecting a moving or stationary object in the area, at least one motion sensor for detecting a movement in the area, at least one acoustic sensor for detecting an acoustic wave in the area, at least one timer for timing the operation state of the lighting member, at least one temperature sensor for detecting temperature and/or temperature change of the area, or a combination of them.
8. The germicidal device of claim 7, wherein the at least one motion sensor comprises one or more microwave sensors, and/or one or more passive infrared (PIR) sensors.
9. The germicidal device of claim 7, wherein the built-in sensor unit further comprises a radio frequency (RF) receiver coupled with the MCU for operably detecting the instruction from the remote operation of the remote control, and/or a wireless networking module coupled with the MCU for operably detecting the instruction from the remote operation of the APP of the mobile device.
10. The germicidal device of claim 9, wherein the wireless networking module comprises

a Bluetooth[®] module, and/or a Wi-Fi module.

11. The germicidal device of claim 7, wherein the sensing member further comprises a remote sensor unit including an entrance sensor, a photo eye system, or an electric fencing system for detecting an intrusion into the area.
12. The germicidal device of claim 1, further comprising a power module for providing power to the lighting member, the sensing member and the MCU.
13. The germicidal device of claim 1, further a housing surrounding the lighting member.
14. The germicidal device of claim 13, wherein the housing has a plurality of openings for allowing the UV light emitted from the lighting member to pass through the plurality of openings to illuminate the area.
15. The germicidal device of claim 13, wherein the housing comprises at least one air inlet, at least one air outlet, and at least one air pass-through channel defined between the at least one air inlet and the at least one air outlet, such that when air in the area is operably circulated through the at least one air pass-through channel, the UV light emitted from the light member kills the microorganisms in the circulated air.
16. The germicidal device of claim 15, further comprising a circulating member in fluid communication with the at least one air pass-through channel for operably circulating the air through the at least one air pass-through channel.
17. The germicidal device of claim 16, wherein the circulating member comprises one or more fans.
18. The germicidal device of claim 16, wherein the housing is formed with a plurality of shutter boards that are movably jointed to each other.
19. The germicidal device of claim 18, being configured to selectively operate in an illuminating mode, or in an air sterilizer mode, wherein
when the germicidal device operates in an illuminating mode, the shutter

boards are moved to define a plurality of windows for allowing the UV light emitted from the lighting member to pass through the plurality of windows to illuminate the area; and

when the germicidal device operates in an air sterilizer mode, the shutter boards are moved to close the plurality of windows for circulating the air through the at least one air pass-through channel.

20. A method for killing microorganisms in an area with the germicidal device of claim 1, comprising:

detecting, by the sensing member, at least one event occurred in the area, wherein the at least one event includes a movement in the area, an acoustic wave in the area, an intrusion into the area, an expiration of an on-state time period in which the lighting member is in the on-state, an expiration of an off-state time period in which the lighting member is in the off-state, and/or an instruction from a remote operation; and

operating, by the MCU, the lighting member in a respective state in accordance with the detected at least one event occurred in the area.

21. The method of claim 20, wherein the operating step comprises:

when the lighting member is in the on-state, switching the lighting member from the on-state to the off-state if one of a movement in the area, an expiration of the on-state time period and a remote instruction to turn off the lighting member is detected; or

when the lighting member is in the off-state, switching the lighting member from the off-state to the on-state if an expiration of the off-state time period or a remote instruction to turn on the lighting member is detected.

22. The method of claim 20, further comprising:

selectively operating the germicidal device in an illuminating mode in which the germicidal device is adapted such that the emitted UV light directly illuminates the area so as to kill the microorganisms in the illuminated area, or in an air sterilizer mode in which the germicidal device is adapted such that air in the area is circulated to pass through the emitted UV light so as to kill the microorganisms in the circulated air.

23. A non-transitory tangible computer-readable medium storing instructions which, when executed by one or more processors, cause a germicidal device to perform a method for killing microorganisms in an area, the method comprising:
- detecting, by the sensing member, at least one event occurred in the area, wherein the at least one event includes a movement in the area, an acoustic wave in the area, an intrusion into the area, an expiration of an on-state time period in which the lighting member is in the on-state, an expiration of an off-state time period in which the lighting member is in the off-state, and/or an instruction from a remote operation; and
 - operating, by the MCU, the lighting member in a respective state in accordance with the detected at least one event occurred in the area.
24. The non-transitory tangible computer-readable medium of claim 23, wherein the operating step comprises:
- when the lighting member is in the on-state, switching the lighting member from the on-state to the off-state if one of a movement in the area, an expiration of the on-state time period and a remote instruction to turn off the lighting member is detected; or
 - when the lighting member is in the off-state, switching the lighting member from the off-state to the on-state if an expiration of the off-state time period or a remote instruction to turn on the lighting member is detected.
25. The non-transitory tangible computer-readable medium of claim 23, wherein the method further comprises selectively operating the germicidal device in an illuminating mode in which the germicidal device is adapted such that the emitted UV light directly illuminates the area so as to kill the microorganisms in the illuminated area, or in an air sterilizer mode in which the germicidal device is adapted such that air in the area is circulated to pass through the emitted UV light so as to kill the microorganisms in the circulated air.