CLAIMS

1. An electron microscope, comprising:

a sample table configured to place a sample to be detected;

an electron optical column configured to emit an electron beam, and converge the electron beam onto the sample to be detected;

a high-voltage detection unit configured to receive signal electrons generated by the electron beam acting on the sample to be detected, and output a voltage signal; and

a high-voltage power supply unit electrically connected to the high-voltage detection unit, and configured to control the high-voltage detection unit to reach a preset level,

wherein the high-voltage detection unit comprises a semiconductor detector, a preamplifier and an optical fiber emitter sequentially connected to each other through electrical signals;

wherein the electron microscope further comprises a high-voltage power transmission bracket and a driving power supply module which are electrically connected to the high-voltage power supply unit; and

wherein each of the semiconductor detector, the preamplifier, the optical fiber emitter, and the driving power supply module is electrically connected to the high-voltage power transmission bracket.

2. The electron microscope according to claim 1, further comprising:

a low-voltage power supply unit electrically connected to the driving power supply module, wherein the driving power supply module is electrically connected to the optical fiber emitter, the driving power supply module is electrically connected to the preamplifier, and the preamplifier is electrically connected to the semiconductor detector.

3. The electron microscope according to claim 2, wherein the high-voltage power transmission bracket is a rectangular frame with cross beams, the preamplifier is connected to an upper surface of the rectangular frame through conductive screws, and the optical fiber emitter is connected to the upper surface of the rectangular frame through conductive screws, and wherein the driving power supply module comprises a high-voltage unit and a low-voltage unit, the

high-voltage unit is connected to a lower surface of the rectangular frame by mating conductive screws with conductive pillars with threaded holes, and the low-voltage unit is connected to the lower surface of the rectangular frame through insulating pillars.

4. The electron microscope according to claim 3, wherein the high-voltage detection unit further comprises a support frame, the support frame is connected to the upper surface of the rectangular frame through conductive screws, and the semiconductor detector is connected to the support frame through conductive screws.

5. The electron microscope according to claim 3, wherein the high-voltage detection unit further comprises an insulating bottom plate, one end of the insulating bottom plate is connected to the lower surface of the rectangular frame through insulating pillars, and the other end of the insulating bottom plate is connected to a lower surface of the driving power supply module through insulating pillars.

6. The electron microscope according to claim 5, wherein the high-voltage detection unit further comprises a first shielding box, wherein the semiconductor detector, the preamplifier, the optical fiber emitter, the driving power supply module, the high-voltage power transmission bracket and the insulating bottom plate are arranged in the first shielding box; and

wherein the first shielding box comprises a first casing, a second casing, a front end cap, and a rear end cap, the front end cap is provided with an opening for entry of the signal electrons, an inner side of the opening corresponds to the semiconductor detector, an outer side of the opening corresponds to a screen mesh, and the screen mesh is connected to an outer side wall of the front end cap.

7. The electron microscope according to claim 6, wherein the high-voltage power transmission bracket is provided with a high-voltage wiring terminal, the low-voltage unit is provided with a low-voltage wiring terminal, and the optical fiber emitter is provided with an optical fiber emitting wiring terminal; and

wherein the rear end cap is provided with:

a first through hole corresponding to the high-voltage wiring terminal;

a second through hole corresponding to the low-voltage wiring terminal; and

a third through hole corresponding to the optical fiber emitting wiring terminal.

8. The electron microscope according to any one of claims 1 to 7, wherein the high-voltage detection unit further comprises:

an optical fiber receiver connected to the optical fiber emitter through optical signals; and

a second shielding box, wherein the optical fiber receiver is arranged in the second shielding box.

9. The electron microscope according to claim 8, further comprising:

a main amplifier connected to the optical fiber receiver through the electrical signals; and

a processor in communication connection with the main amplifier.