WHAT IS CLAIMED IS:

1. An apparatus for processing a substrate, the apparatus comprising:

an equipment front end module;

a processing module configured to process the substrate; and

a controller,

wherein the equipment front end module comprises:

a load port on which a container having the substrate inside is placed; and

a transfer frame having an index robot configured to transfer the substrate between the load port and the processing module,

wherein the processing module comprises:

a clamping buffer disposed adjacent to the equipment front end module;

a process chamber configured to process the substrate; and

a transfer chamber having a transfer robot configured to transfer the substrate between the process chamber and the clamping buffer, and

wherein the clamping buffer comprises:

a substrate support member configured to support the substrate;

an edge clamp support member having a support end configured to support an edge clamp that is transferred to the process chamber in a state of being located at an edge of a top side of the substrate;

a detection sensor configured to detect a presence or absence of the substrate on the substrate support member; and

an actuator configured to move the support end of the clamping buffer between the second position, which is higher than the first position at which the substrate is supported on the substrate support member, and the third position higher than the second position,

wherein the controller is configured to:

control the actuator to locate the support end at the third position, based on information about an absence of the substrate on the substrate support member, wherein the detection sensor detects the information about the absence of the substrate; or

control the actuator to locate the support end at the second position, based on information about a presence of the substrate on the substrate support member, wherein the detection sensor detects the information about the presence of the substrate.

2. An apparatus for processing a substrate, the apparatus comprising:

an equipment front end module;

a processing module configured to process the substrate; and

a controller,

wherein the equipment front end module comprises:

a load port on which a container having the substrate inside is placed; and

a transfer frame having an index robot configured to transfer the substrate between the load port and the processing module,

wherein the processing module comprises:

a clamping buffer disposed adjacent to the equipment front end module;

a process chamber configured to process the substrate; and

a transfer chamber having a transfer robot configured to transfer the substrate between the process chamber and the clamping buffer,

wherein the clamping buffer comprises:

a substrate support member configured to support the substrate; and

an edge clamp support member having a support end configured to support an edge clamp that is transferred to the process chamber in a state of being located at an edge of a top side of the substrate,

wherein the support end is provided to movable between a second position and a third position which is higher than the second position,

wherein the process chamber comprises:

a susceptor on which the substrate is placed; and

a guide ring configured to surround the susceptor and having a protrusion that further protrudes upward beyond a top side of the susceptor and has an inclined side surface that faces the substrate,

wherein the edge clamp has an inclined portion that corresponds to a slope of the protrusion.

3. An apparatus for processing a substrate, the apparatus comprising:

an equipment front end module;

a processing module configured to process the substrate; and

a controller,

wherein the equipment front end module comprises:

a load port on which a container having the substrate inside is placed; and

a transfer frame having an index robot configured to transfer the substrate between the load port and the processing module,

wherein the processing module comprises:

a clamping buffer disposed adjacent to the equipment front end module;

a process chamber configured to process the substrate; and

a transfer chamber having a transfer robot configured to transfer the substrate between the process chamber and the clamping buffer,

wherein the clamping buffer comprises:

a substrate support member configured to support the substrate; and

an edge clamp support member having a support end configured to support an edge clamp that is transferred to the process chamber in a state of being located at an edge of a top side of the substrate,

wherein the support end is provided to movable between a second position and a third position which is higher than the second position,

wherein the process chamber comprises:

a susceptor on which the substrate is placed;

a guide ring configured to surround the susceptor and guide a position of the substrate; and

a detection sensor configured to detect the edge clamp that further protrudes beyond a boundary of the guide ring by a preset value or more.

4. The apparatus of claim 3, further comprising:

a controller,

wherein the controller is configured to stop operating the apparatus or activate an alarm when the detection sensor detects that the edge clamp further protrudes beyond the boundary of the guide ring by the preset value or more.

5. The apparatus of claim 1, wherein a plurality of clamping buffers are provided to form a clamping buffer unit.

6. The apparatus of claim 1, wherein the processing module further comprises:

a pass buffer disposed in parallel to the clamping butter between the equipment front end module and the transfer chamber.

7. The apparatus of claim 6, wherein a plurality of pass buffers are provided to form a pass buffer unit.

8. The apparatus of claim 6, wherein the clamping buffer and the pass buffer are vertically stacked to form a buffer unit.

9. An apparatus for processing a substrate, the apparatus comprising:

an equipment front end module;

a processing module configured to process the substrate; and

a controller,

wherein the equipment front end module comprises:

a load port on which a container having the substrate inside is placed; and

a transfer frame having an index robot configured to transfer the substrate between the load port and the processing module,

wherein the processing module comprises:

a clamping buffer unit disposed adjacent to the equipment front end module;

a process chamber configured to process the substrate; and

a transfer chamber having a transfer robot that has two hands configured to simultaneously extend and retract and transfers the substrate between the process chamber and the clamping buffer unit,

wherein the clamping buffer unit comprises two clamping buffers arranged side by side, and

wherein each of the clamping buffers comprises:

a substrate support member configured to support the substrate;

an edge clamp support member including a support end configured to support an edge clamp that is transferred to the process chamber in a state of being located at an edge of a top side of the substrate;

a detection sensor configured to detect a presence or absence of the substrate on the substrate support member; and

an actuator configured to move the support end of the clamping buffer between the second position, which is higher than the first position at which the substrate is supported on the substrate support member, and the third position higher than the second position,

wherein the controller is configured to:

control the actuator to locate the edge clamp at the third position, based on information about an absence of the substrate on the substrate support member, wherein the detection sensor detects the information about the absence of the substrate; or

control the actuator to locate the edge clamp at the second position, based on information about a presence of the substrate on the substrate support member, wherein the detection sensor detects the information about the presence of the substrate.

10. The apparatus of claim 9, wherein the processing module further comprises:

a pass buffer unit vertically stacked on the clamping buffer unit between the equipment front end module and the transfer chamber and including a plurality of pass buffers.

11. A method for processing a substrate by using a substrate processing apparatus, the substrate processing apparatus comprising:

an equipment front end module; and

a processing module configured to process the substrate; and

wherein the equipment front end module comprises:

a load port on which a container having the substrate inside is placed; and

a transfer frame having an index robot configured to transfer the substrate between the load port and the processing module,

wherein the processing module comprises:

a clamping buffer disposed adjacent to the equipment front end module;

a process chamber configured to process the substrate; and

a transfer chamber having a transfer robot configured to transfer the substrate between the process chamber and the clamping buffer,

wherein the clamping buffer comprises:

a substrate support member configured to support the substrate; and

an edge clamp support member having a support end configured to support an edge clamp that is transferred to the process chamber in a state of being located at an edge of a top side of the substrate; and

a detection sensor configured to detect a presence or absence of the substrate on the substrate support member,

the method comprising:

locating the edge clamp on the support end of the clamping buffer;

transferring, into the clamping buffer, the substrate to be processed;

detecting a presence or absence of the substrate on the substrate support member of the clamping buffer;

controlling the actuator to locate the edge clamp at a specific position, based on information detected by the detection sensor;

entering a hand of the transfer robot into the clamping buffer; and transferring the edge clamp and the substrate from the clamping buffer to the process chamber.

12. A method for processing a substrate by using a substrate processing apparatus, the substrate processing apparatus comprising:

an equipment front end module;

a processing module configured to process the substrate; and

a controller,

wherein the equipment front end module comprises:

a load port on which a container having the substrate inside is placed; and

a transfer frame having an index robot configured to transfer the substrate between the load port and the processing module,

wherein the processing module comprises:

a clamping buffer unit disposed adjacent to the equipment front end module;

a process chamber configured to process the substrate; and

a transfer chamber having a transfer robot that has two hands configured to simultaneously extend and retract and transfers the substrate between the process chamber and the clamping buffer unit,

wherein the clamping buffer unit comprises two clamping buffers arranged side by side, and

wherein each of the clamping buffers comprises:

a substrate support member configured to support the substrate;

an edge clamp support member including a support end configured to support an edge clamp that is transferred to the process chamber in a state of being located at an edge of a top side of the substrate; and

a detection sensor configured to detect a presence or absence of the substrate on the substrate support member, and

the method comprising:

locating the edge clamp on the support end of the clamping buffer;

transferring, into the clamping buffer, the substrate to be processed; detecting a presence or absence of the substrate on the substrate support member of the clamping buffer;

controlling the actuator to locate the edge clamp at a specific position, based on information detected by the detection sensor;

entering the two hands of the transfer robot into the clamping buffer simultaneously; and

picking up the substrate in the clamping buffer and transferring the substrate into the process chamber by the transfer robot.

13. A method for processing a substrate by using the apparatus of claim 10 , the method comprising:

locating the edge clamp on the support end of the clamping buffer;

controlling the index robot by the controller to selectively transfer the substrate into the pass buffer or the clamping buffer, based on information about the substrate that is transferred to the load port and is to be processed;

detecting a presence or absence of the substrate on the substrate support member of the clamping buffer;

controlling the actuator by the controller, based on information detected by the detection sensor;

entering the two hands of the transfer robot into the clamping buffer simultaneously; and

picking up the substrate in the selected pass buffer or the selected clamping buffer and transferring the substrate into the process chamber by the transfer robot.