BIOCHEMICAL DEVICE

TECHNICAL FIELD

The present invention relates to the biochemical field, in particular to a biochemical device.

BACKGROUND

Conventionlly, a biochemical device usually includes biochemical reaction device, biochemical detection device, immune reaction device, immune detection device, molecular biological reaction device, and molecular biological detection device. These biochemical devices are closed structures, so that the operators cannot observe the internal operation status of the device and the use status of components in real time.

Therefore, the following developments need to be made for the conventional biochemical devices: (1) If the biological detection or reaction device has a vibration mechanism, it is necessary to monitor whether the installation position of each component in the device has fallen off or shifted after long-term use. (2) If the biological detection or reaction device has a heating mechanism, it is necessary to monitor the service life and aging degree of each component in the device. (3) It is necessary to monitor the real-time status inside the biological detection or reaction device, and it is necessary to monitor whether the internal process is normally executed according to the design.

SUMMARY

The present disclosure is completed in view of the above situation, and its purpose is to provide a biochemical device with a visual mechanism with high reliability and high practicality.

In one aspect, the present disclosure provides a biochemical device, wherein the biochemical device has a vibration function and/or a heating function, the biochemical device has a closed box, in which one or more visual mechanisms are correspondingly arranged in one or more key areas, the visual mechanism is flexibly supported in the box, and/or a heat insulation treatment and/or a vibration isolation treatment is applied to the visual mechanism, the visual mechanism captures data in the key area in real time, the data is a static or dynamic image or video, and is transmitted to a controller of the biochemical device or a cloud server by wire or wireless means, it is determined whether the biochemical device is about to fail through an algorithm, by an intelligent module of the controller or the cloud server, and the biochemical device is configured to be also capable of monitoring whether a detection or reaction process inside the biochemical device is normally executed according to the design parameters, and to be capable of calling back an operation process video inside the biochemical device for viewing and tracing. In order to achieve the above purpose, the biochemical device according to the present disclosure is a biochemical device with a vibration function and/or a heating function.

The biochemical device has a closed box, in which one or more visual mechanisms are correspondingly arranged in one or more key areas. The visual mechanism is flexibly supported in the box, and/or a heat insulation treatment and/or a vibration isolation treatment is applied to the visual mechanism. The visual mechanism intercepts the data in the key area in real time. The data is a static or dynamic image or video, and is transmitted to a controller of the biochemical device or a cloud server by wire or wireless means, it is determined whether the biochemical device (for example, the parts or regional components in the biochemical device) is about to fail via an algorithm, by an intelligent module of the controller or the cloud server. The biochemical device is configured to be also capable of monitoring whether a detection or reaction process inside the biochemical device is normally executed according to design parameters, and to be capable of calling back an operation process video inside the biochemical device for viewing and tracing.

Furthermore, in the biochemical device according to the present disclosure, the visual mechanism may be a camera with a fill light function, and the camera may be connected to the controller or the cloud server by wire or wireless means.

Furthermore, in the biochemical device according to the present disclosure, the camera may be connected to a suspension mechanism via a cable, and the suspension mechanism may be connected to the box.

Furthermore, in the biochemical device according to the present disclosure, the cable may be a high-temperature resistant and high-strength flexible cable.

Furthermore, in the biochemical device according to the present disclosure, the camera may have a heat-insulating package surrounding the camera.

Furthermore, in the biochemical device according to the present disclosure, the controller may be connected to the cloud server by wire or wireless means.

Furthermore, in the biochemical device according to the present disclosure, the

intelligent module and the algorithm may be built into the controller or the cloud server, or connected to the outside of the biochemical device by a signal line.

Furthermore, in the biochemical device according to the present disclosure, the biochemical device may also include biochemical reaction device, biochemical detection device, immune reaction device, immune detection device, molecular biological reaction device and molecular biological detection device. However, the biochemical device includes but is not limited to biochemical reaction device, biochemical detection device, immune reaction device, immune detection device, molecular biological reaction device and molecular biological detection device, and may also be any other device in the biochemical field.

According to the present disclosure, a biochemical device having a visual mechanism with high reliability and high practicality and capable of real-time or delayed monitoring can be provided.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic diagram showing the general structure of the biochemical detection device according to this embodiment.

FIG. 2 is a block diagram showing the principle of the biochemical detection device according to this embodiment.

DETAILED DESCRIPTION

Hereinafter, with reference to the accompanying drawings, a preferred embodiment of the present invention will be described in detail. Here, in the description of the accompanying drawings, the same symbols are marked for the same or equivalent elements, and repeated descriptions are omitted.

In this embodiment, the biochemical detection device 1 is used as an example to describe the biochemical device. FIG. 1 is a schematic diagram showing the general structure