receiving bay. In another embodiment, the handle and lid assembly are fitted with a mechanical latch that does not permit the handle to be raised when an analysis is in progress.

[0098] A further configuration of system **2000** is shown in FIG. **6**D, wherein a door **2012** is in an open position. Door **2012** is shown in a closed position in FIGS. **6**A-C. The door is an optional component that permits a user to access a heater module **2020**, and also a computer-readable medium input tray **2022**. System **2000** can function without a door that covers heater module **2020** and medium input **2022**, but such a door has convenience attached to it. Although the door **2012** is shown hinged at the bottom, it may also be hinged at one of its sides, or at its upper edge. Door **2012** may alternatively be a removable cover, instead of being hinged. Door **2012**, may also be situated at the rear, or side of system **2000** for example, if access to the heater module and/or computer readable medium input is desired on a different face of the system. It is also consistent with the system herein that the heater module, and the computer readable medium input are accessed by separate doors on the same or different sides of the device, and wherein such separate doors may be independently hinged or removable.

[0099] Heater module **2020** is preferably removable, and is further described hereinbelow.

[0100] Computer readable medium input **2022** may accept one or more of a variety of media. Shown in FIG. **2**D is an exemplary form of input **2022**, a CD-Rom tray for accepting a CD, DVD, or mini-CD, or mini-DVD, in any of the commonly used readable, read-writable, and writable formats. Also consistent with the description herein is an input that can accept another form of medium, such as a floppy disc, flash memory such as memory stick, compact flash, smart datacard, or secure-data card, a pen-drive, portable USB-drive, zip-disk, and others. Such an input can also be configured to accept several different forms of media. Such an input **2022** is in communication with a processor (as described in connection with FIG. **3**, though not shown in FIGS. **6**A-E), that can read data from a computer-readable medium when properly inserted into the input.

[0101] FIG. **6**E shows a plan view of a rear of system **2000**. Shown are an air vent **2024**, or letting surplus heat escape during an analysis. Typically, on the inside of system **2000**, and by air vent **2024** and not shown in FIG. **6**E, is a fan. Other ports shown in FIG. **6**E are as follows: a power socket **2026** for accepting a power cord that will connect system **2000** to a supply of electricity; an ethernet connection **2028** for linking system **2000** to a computer network such as a local area network; an phone-jack connection **2032** for linking system **2000** to a communication network such as a telephone network; one or more USB ports **2030**, for connecting system **2000** to one or more peripheral devices such as a printer, or a computer hard drive; an infra-red port for communicating with, e.g., a remote controller (not shown), to permit a user to control the system without using a touch-screen interface. For example, a user could remotely issue scheduling commands to system **2000** to cause it to start an analysis at a specific time in the future.

[0102] Features shown on the rear of system **2000** may be arranged in any different manner, depending upon an internal configuration of various components. Additionally, features shown as being on the rear of system **2000**, may be optionally presented on another face of system **2000**, depending on design preference. Shown in FIG. **6**E are exemplary connections. It would be understood that various other features, including inputs, outputs, sockets, and connections, may be present on the rear face of system **2000**, though not shown, or on other faces of system **2000**.

[0103] An exploded view of an exemplary embodiment of the apparatus is shown in FIG. **7**, particularly showing internal features of apparatus **2000**. Apparatus **2000** can comprise a computer readable medium configured with hardware/firmware that can be employed to drive and monitor the operations on a cartridge used therewith, as well as software to interpret, communicate and store the results of a diagnostic test performed on a sample processed in the cartridge. Referring to FIG. **7**, typical components of the apparatus **2000** are shown and include, for example, control electronics **2005**, removable heater/sensor module **2020**, detector **2009** such as a fluorescent detection module, display screen or optionally combined display and user interface **2006** (e.g., a medical grade touch sensitive liquid crystal display (LCD)). In some embodiments, lid **2010**, detector **2009**, and handle **2008** can be collectively referred to as slider module **2007**. Additional components of apparatus **2000** may include one or more mechanical fixtures such as frame **2019** to hold the various modules (e.g., the heater/sensor module **2020**, and/or the slider module **2007**) in alignment, and for providing structural rigidity. Detector module **2009** can be placed in rails to facilitate opening and placement of cartridge **2060** in the apparatus **2000**, and to facilitate alignment of the optics upon closing. Heater/sensor module **2020** can be also placed on rails for easy removal and insertion of the assembly.

[0104] Embodiments of apparatus **2000** also include software (e.g., for interfacing with users, conducting analysis and/or analyzing test results), firmware (e.g., for controlling the hardware during tests on the cartridge **812**), and one or more peripheral communication interfaces shown collectively as **2031** for peripherals (e.g., communication ports such as USB/Serial/Ethernet to connect to storage such as compact disc or hard disk, to connect input devices such as a bar code reader and/or a keyboard, to connect to other computers or storage via a network, and the like).

[0105] Control electronics **840**, shown schematically in the block diagram in FIG. **8**, can include one or more functions in various embodiments, for example for, main control **900**, multiplexing **902**, display control **904**, detector control **906**, and the like. The main control function may serve as the hub of control electronics **840** in apparatus **2000** and can manage communication and control of the various electronic functions. The main control function can also support electrical and communications interface **908** with a user or an output device such as a printer **920**, as well as optional diagnostic and safety functions. In conjunction with main control function **900**, multiplexer function **902** can control sensor data **914** and output current **916** to help control heater/sensor module **2020**. The display control function **904** can control output to and, if applicable, interpret input from touch screen LCD **846**, which can thereby provide a graphical interface to the user in certain embodiments. The detector function **906** can be implemented in control electronics **840** using typical control and processing circuitry to collect, digitize, filter, and/or transmit the data from a detector **2009** such as one or more fluorescence detection modules.

Microfluidic Cartridge

[0106] The present technology comprises a microfluidic cartridge that is configured to carry out an amplification, such as by PCR, of one or more polynucleotides from one or more