wash step having to be conducted at a precise flow rate and with a precise volume. Each channel may have a plurality of wash interface ports ((**26**) of FIG. **1**) over which a seal is made in order to ensure the correct delivery of the buffer/gas wash from the reservoir/reservoirs in the reader. A suitable fluidic management system may be made up of 3 main components (as shown in FIG. **14**), a fluidic pump/pumps (**113**), a buffer reservoir/reservoirs cartridge **111** (and FIG. **15**) and a reader/cartridge fluidic interface or seal (**105**).

[0101] The fluidic pump/pumps that is used to transport the fluid from the buffer reservoir/reservoirs cartridge to and throughout the cartridge, may be a stepper motor linear actuator (for example E21H4U-5-900 Haydon Kerk Motion Solutions), the features associated with a stepper motor linear actuator that make it a desirable solution include the fact that it locks in position when stopped (so that the fluid cannot push back against the buffer reservoir/reservoirs cartridge and linear actuator) and that stepper motors have movement of very fine resolution (e.g. 0.0015 mm/motor step).

[0102] The reader/cartridge fluidic interface may be achieved by using a soft rubber coated sealing head in the reader that co-locates with said wash inlet ports (**26**) of the cartridge. Alternatively a rubber gasket could be located on the disposable test cartridge, or there may be a rubber gasket present on both the sealing head and the disposable test cartridge. The sealing head will have an outlet (e.g. a hole in the rubber membrane containing the outlet from the fluidic management system) that lines up with each of the cartridge fluid input ports.

[0103] The reader may preferably include a buffer wash reservoir/reservoirs. The buffer wash reservoir/reservoirs may contain the buffer wash fluid for carrying out assays on a number of cartridges. Alternatively, in the case where the reservoir/reservoirs is filled with air, it could be a permanent feature of the reader design as it would not need to be replaced as has been explained previously.

[0104] In order to make the reader suitable for use by the user, such that replacing the buffer reservoir/reservoirs cartridge does not result in the fluid spilling out and over the reader or user, the buffer/gas wash reservoir/reservoirs cartridge and the reader may be designed to have self sealing interfaces, such that when the reservoir/reservoirs cartridge is removed from the reader any fluid is sealed within the confines of the reservoir/reservoirs and the instrument. The seal may be designed such that it only opens when the reservoir/reservoirs is inserted correctly into the appropriate interface point in the instrument, a feature may be incorporated to penetrate the self sealing buffer reservoir/reservoirs cartridge. To ensure that the buffer fluid inside the buffer wash reservoir/reservoirs cartridge does not evaporate, which would lead to the formation of air voids within the cartridge, the buffer reservoir/reservoirs cartridge may have foil seals at both ends, over a syringe plunger end, and over a self sealing seal end. These foil seals will be broken by the syringe pump driver and the meter cartridge interface feature respectively. An example of such an embodiment is shown in FIG. **15**, where the reader/sample cartridge fluidic interface is achieved by using a soft rubber coated sealing head in the reader that interfaces with the sample cartridge. The sealing head will have an outlet (i.e. a hole in the rubber membrane containing the outlet from the fluidic management system) that lines up with each of the strip inlet points.

[0105] The buffer/gas reservoir/reservoirs cartridge may have a singular chamber which drives the various wash steps associated with each test channel from a single source which is then split into multiple exit port points through various valves and tubing. Preferably the buffer/gas reservoir/reservoirs cartridge may have a separate chamber for each test channel such that the wash steps associated with each test channel are driven from individual sources. This type of design is also shown in FIG. **15**, and does not require any valves in the reader or test cartridge. Alternatively the reservoir/reservoirs cartridge may have a number of chambers which are associated with common sub set groups of test channels contained in the test cartridge.

[0106] As discussed above in order to keep the capture phase and bound analyte etc from getting washed away during the buffer wash and reagent wash steps, the magnetic beads in the disposable test strip require to be held by the reader. This function will be fulfilled through utilising either a permanent magnet or an electromagnet. It is possible to manipulate the magnetic beads in certain ways that could help improve the accuracy, sensitivity and range of the measurement. For example for lower assay fluorescent signals, it may be beneficial for the magnet to gather all of the magnetic beads into a tightly bound clump, increasing the density of the fluorophores present and so the intensity of the light emitted towards the detector. In contrast in cases where there are higher signals, and the light sensor and reader electronics are close to saturation it may be beneficial to remove or move the magnet so as to relax or spread the magnetic beads over a certain area, thus reducing the intensity of the light emitted towards the sensor. This could be seen as a novel way of using the magnet to influence both the sensitivity and the range of the assay or affecting the binding kinetics of the multi-step assays. Typically for a magnet, the points where the flux density is highest (and so where the magnetic beads will tend to gravitate toward are along the edge of the magnet as this is where the magnetic flux lines have the shortest travel path from the north to the south pole.

[0107] It is a physical feature of assay development that the ambient temperature can influence the magnitude of response. In the present invention, this temperature effect will primarily be driven through the effect of temperature on diffusion, whereby an increase in temperature can result in increased binding efficiency between the magnetic beads and the target analyte, and the subsequent binding to delivered reagents. The present system may be used, for example in a doctors office and home use, and the range of temperatures the system may be exposed to will be broad, from perhaps as low as 10 Celsius to as high as 35 Celsius. One method of removing this temperature effect is in the heating of the test strip to a pre determined temperature, for example 40 degrees, this would remove any variation associated with the assay due to temperature effects. Thus, the reader may also comprise temperature control means, such as a heater.

[0108] The temperature control of the cartridge can be implemented by utilising the top surface of the optical block (which will be in contact with the strip and may be made from a heat conducting metal, such as aluminium, which has good thermal conductivity properties) as a heater in order to maintain the temperature of the sample cartridge. Alternatively the support platform on which the disposable test cartridge rests within the reader could be utilized as the heated surface that contacts the strip. The heating of the heated surface can be performed using a high wattage, low value (e.g. 1 ohm) resistor, or though using a MOSFET with the heatsink tab of the MOSFET attached to the optical block top surface. The tem-