

transferring said sample, said means for driving, said rotatable fill means including a multiple container multiplex selector for selecting a predetermined number of samples from said sample chamber to be deposited individually into a like number of storage containers for each input signal.

35. A method of measuring fluid flow through a conduit having a known cross section comprising the steps of sensing the height of the fluid flow upper surface to provide an indication of fluid head, controlling a servo motor relative to the fluid surface height, adjusting the gain of the servo control to provide for a predetermined servo motor rotation for a predetermined maximum relative fluid flow height, converting fluid head to flow, controlling the output of a pulse generator with the flow conversion, accumulating the output of the pulse generator to provide an indication of total flow through the conduit, and feeding back the flow conversion output to the servo motor control for providing a stable servo loop.

36. A method of measuring fluid flow as in claim 35 together with the steps of indicating visually instantaneous relative fluid flow height and flow rate, and recording indication of the total flow.

37. A method of measuring fluid flow as in claim 35 together with the steps of providing a plurality of head to flow conversion selections corresponding to a plurality of general flow conduit cross section shapes, selecting one head to flow conversion according to the specific conduit cross section in use.

38. A method of measuring fluid flow through a flow conduit having a known cross section comprising the steps of sensing the height of the fluid flow upper surface to provide an indication of fluid head, controlling a servo motor relative to the fluid surface height, adjusting the gain of the servo control to provide for a predetermined servo motor rotation for a predetermined maximum relative fluid flow height, converting fluid head to flow, controlling the output of a pulse generator with the flow conversion, accumulating the output of the pulse generator to provide an indication of total flow through the conduit, feeding back the flow conversion output to the servo motor control for providing a stable servo loop, selecting predetermined increments of flow volume through the conduit, initiating a sampling sequence at the predetermined increments of flow volume, communicating a sample chamber with a source of positive and negative pressure at the beginning of the sampling sequence, purging the sample chamber by introducing the positive pressure therein for a predetermined purge period, filling the sample chamber by introducing the negative pressure therein for a predetermined fill period, sensing the upper surface of the sample in the sample chamber when the upper surface reaches a predetermined fill level exceeding that required for a predetermined sample volume, terminating the negative pressure, purging the sample chamber by introducing positive pressure for reducing the fill to a predetermined level to obtain a predetermined sample volume, and storing the sample volume.

39. A method of measuring fluid flow as in claim 38 including the steps of purging the sample chamber for the predetermined purge period if the predetermined fill level is not sensed prior to completion of the fill period, and refilling the sample chamber by introducing the negative pressure for the predetermined fill period.

40. A method of measuring fluid flow as in claim 38 wherein the step of storing the predetermined sample volume includes conducting the sample volume obtained in each sampling sequence to one of a plurality of storage containers, controlling the number of sample volumes directed to the one storage container, conducting the subsequent sample volume to an adjacent storage container after the one container has received the control number of sample volumes, counting the number of storage containers receiving sample volumes, and inhibiting the sampling sequence after a predetermined number of storage containers have received the control number of sample volumes.

41. A method of measuring fluid flow as in claim 38 wherein the step of storing the predetermined sample volume includes the steps of providing a plurality of storage containers, selecting a number of the plurality of storage containers to receive a sample volume for each predetermined increment of flow volume, conducting the sample volumes to the selected number of storage containers, stopping the sampling sequence after the selected number of storage containers have received sample volumes, and inhibiting initiation of the sampling sequence after a predetermined number of storage containers have received sample volumes.

42. A fluid flow measuring system comprising means for detecting a fluid head in a flow conduit, means for providing an output signal related to said fluid head, a servo control for receiving said signal related to fluid head, a servo motor driven by said servo control, a plurality of mechanical head to flow converters driven by said servo motor for converting head to flow for a flow conduit having one of a plurality of given general cross section shapes, means driven by one of said head to flow converters for providing indication of total flow through the conduit, and means for selecting a predetermined one of said plurality of head to flow converters for measuring flow in a flow conduit having a corresponding known cross section shape, whereby flow may be measured in a plurality of known flow conduit cross section shapes.

43. A fluid flow measuring system as in claim 42 together with a sample interval selector whereby an output signal is generated after a predetermined flow quantity has been sensed by said fluid flow meter.

44. A fluid flow measuring system as in claim 42 together with a visual level indicator driven by said means for sensing a fluid head, and a time record of flow driven by said mechanical head to flow converter.

45. A fluid flow measuring system as in claim 42 together with a percent flow indicator connected to said mechanical head to flow converter.

46. A system for communication with a fluid comprising a fluid sampler, a sample chamber in said fluid sampler, means cooperating between said sample chamber and said fluid providing for transfer of fluid therethrough, said means cooperating including a tube disposed in said sample chamber having a lower end fixed in close relative position with the bottom of said sample chamber to deposit sample influx as close to the bottom as possible to reduce sample aeration, means for actuating said fluid sampler so that a sample of the fluid is drawn therein, a probe extending into said sample chamber for contacting the fluid drawn into said fluid sampler, said probe being sensitive to and providing a signal output indicative of predetermined substances added to the fluid, so that a substance added to the fluid which has a characteristic such that its pres-