

power means for supplying power to each element of said apparatus;

said fluid sampling assembly, said control means and said power means comprising an integral operating unit disposed within a single case, said case being sufficiently compact so as to be receivable in a manhole;

said integral operating unit further including at least one input connection for receiving a detected signal related to fluid flow in said channel, and means for conditioning said signal for input to said control means; and

said control means comprising a microprocessor; program memory and data memory, wherein:

said program memory stores a plurality of equations for computing values of said fluid flow-related variable;

said data memory stores user-selected input parameters including operating mode selection data, at least one fluid flow-related parameter and sampling times;

said microprocessor receives said signal related to fluid flow from said conditioning means and calculates values of said fluid flow-related variable based on said signal, said at least one user-selected fluid flow-related parameter and a selected one of said stored equations;

said microprocessor controls said fluid sampling assembly according to at least one of said modes of operation selected by the user, based on said user input sampling times and/or computed values of said fluid flow-related variable; and

said data memory stores fluid sampling data and fluid flow-related data.

2. An apparatus according to claim 1, wherein: said at least one user-selected fluid flow-related parameter comprises data relating to the size and type of fluid channel from which fluid samples are collected.

3. An apparatus according to claim 2, wherein: said fluid flow-related variable comprises the fluid depth in said channel.

4. An apparatus according to claim 3, wherein: said fluid flow-related variable further comprises the fluid flow rate in said channel, which is computed by said microprocessor on the basis of said fluid depth.

5. An apparatus according to claim 1, further comprising:

means for selectively transferring said stored data to an external output device; and

said transfer means being controlled by said microprocessor.

6. An apparatus according to claim 1, wherein: said integral operating unit further comprises means for displaying said stored fluid sampling data and fluid flow-related data.

7. An apparatus according to claim 6, wherein: said display means comprises an alphanumeric display mounted to said case so as to be visible to a user; and

said apparatus further comprises user keypad means, mounted to said case and communicating with said data memory, for entering said user-selected input parameters and for retrieving said fluid sampling data and fluid flow-related data stored in said data storage memory by a user command to display said data on said alphanumeric display.

8. An apparatus according to claim 5, wherein: said integral operating unit further includes an output connection for transferring said fluid sampling data and said fluid flow-related data stored in said data memory;

said transfer means comprises an external portable data transfer unit selectively connectable to said output connection for retrieving said fluid sampling data and fluid flow-related data stored in said data memory; and

said portable data transfer unit is selectively connectable to an external output device for transferring said data to said output device.

9. An apparatus according to claim 7, wherein: said user-selected input parameters entered via said user keypad means further comprise fluid sample collection flow intervals, program start and stop criteria, fluid sample size, sample container selection, and intervals and units for storing fluid flow-related data.

10. An apparatus according to claim 2, further comprising:

sensor means for producing said signal related to fluid flow in said channel when said sensor is mounted in a detecting position relative to said channel, said sensor means being selectively connectable to said at least one input connection of said integral operating unit; and

said at least one user-selected fluid flow-related parameter further comprising calibration data for said sensor means.

11. An apparatus according to claim 10, further comprising:

a fluid sample intake conduit which extends to fluid in said channel, said sample intake conduit being selectively connectable to said fluid sampling assembly inlet; and

said user-selected input parameters further comprising data relating to the volume of said sample intake conduit and purging thereof.

12. An apparatus according to claim 1, wherein: said data memory is provided with back-up battery power means for permitting said stored fluid sampling data and fluid flow-related data to remain stored in memory when said power means for supplying power to said apparatus is turned off.

13. An apparatus according to claim 1, wherein said fluid sampling assembly comprises:

a pump provided with said inlet for receiving fluid from said channel;

a plurality of sample containers; and

distributor means connected by a conduit with an outlet of said pump for selectively distributing fluid samples to said sample containers.

14. An apparatus according to claim 1, wherein said fluid sampling assembly comprises:

a single fluid sample container disposed in a lower portion of said case.

15. An apparatus for automatically collecting samples from a fluid channel and for measuring fluid flow, according to modes of operation selected by a user, said modes of operation including sampling on the basis of time and/or the fluid flow rate, comprising:

means for controlling said apparatus;

a fluid sampling assembly having an inlet for receiving fluid from said channel;

power means for supplying power to each element of said apparatus;