

Ground Water Monitors

The instrument is primarily developed for water management applications.

It is used to **record the water level and temperature** of ground water monitoring wells, surface streams, production wells and reservoirs using its own power supply independent from any electric grid and, together with the pertinent **data retriever and processing software**, to process and archive the measured data by computer.

The **level and temperature sensing probe** of the field unit immersed in water at the monitoring point converts the parameters to be measured into digital electric signals. The **probe** is connected by a special **vented cable** compensating the barometric pressure to the **data logger (MDU)** being hung over the water surface. The data logger is used to time measurements, to calculate and store the exact measured data, and to supply the data for data retrieval.

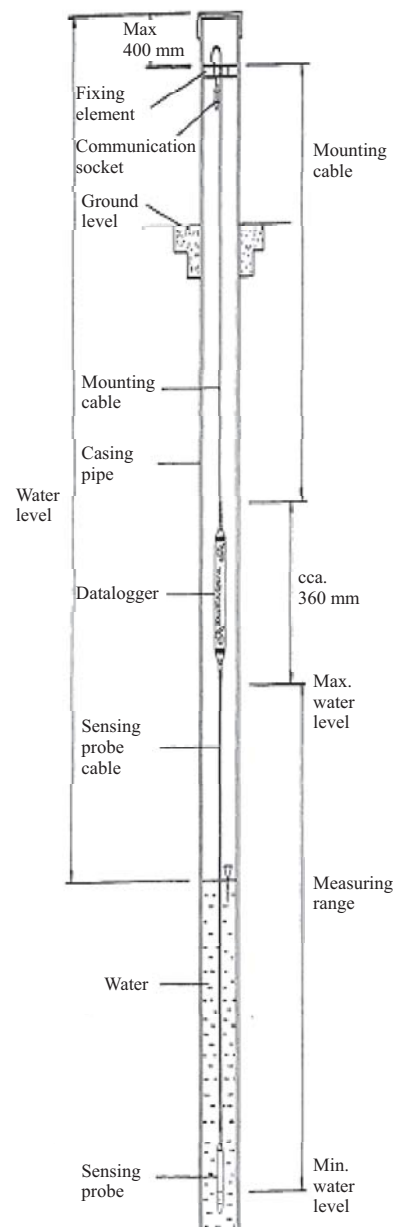
The measuring units are programmed and the data are retrieved through a standard interface RS 232 C by a **data retriever (PSION data terminal or Note Book + plus our proprietary WAquaCom software)**.

The memory of the data logger receives the manufacturing identification data of the instrument (the **Ident** of the instrument) and the calibration tables during manufacturing and calibration. The user shall enter the name of the monitoring point and the initial data during the installation, and the date and time are automatically set. The data set during installation are named **Head**. The **Ident** and **Head**, together with the measured data, form a **single file** when the data are retrieved and this way the instrument itself, the monitoring point and the measuring data can be unambiguously identified.

When the installation is done, the clock of the data logger „wakes up” the microprocessor according to the programmed measuring intervals and the processor executes the measurement, calculates the exact values using the calibration table and

stores them in the memory below the **Head**. This is a special circuit which can store the data even for decades after switch-off (that is if the battery is discharged or when it is changed). The data retrieval does not delete the data but they are placed continuously. When the memory is full placing restarts from the beginning, and hence the **memory always contains the last measuring data**, even if the instrument was reinstalled meanwhile (the initial data were changed). Thus, if the data are injured during retrieval or processing or the instrument fails (or get damaged but the memory remains intact), **the data can be retrieved again anytime.**

The measuring intervals can be programmed in a wide range, from 1 minute to 10 days, **but it is also possible to set one or two measuring times a day** (one a.m. from 0:00 to 12:00 and one p.m. from 12:00 to 24:00). **The time of the first measurement** can also be set in



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advance (45 days before).

During the measurement, the microprocessor also reads the voltage of the battery, and the battery status is indicated with data retrieval (in percentage of energy) and a warning is given when replacement is needed. With the employed lithium battery **the instrument is able to work for 5 to 10 years without battery replacement** because significant energy consumption is needed only during the time of measurement thanks to the use of the modern circuits.

The user-friendly **WAquaCom software** running under Windows is suitable for programming the field unit (installation, measurement, data retrieval) and to read and process data retrieved by the **PSION data terminal** or by the **HNS Miniterminal** from DATAQUA instruments made earlier.

Processing generates the **Ident** identifying the instrument, the **Head** identifying the monitoring point, the data set with the important operating parameters and with any error messages, a **Table** with the measuring time of the read data, and a **Diagram** of the data can be viewed. The data can be converted to text, Excel, DBF, HTML, HAFTER or graphic formats. The data set of a selected time or the daily average can also be generated. The use of the program is facilitated by detailed explanations and on-line help.

Technical data:

Water level measurement:

Measuring range:	0 ... 5; 10; 15 m WC <i>Other measuring ranges are optionally available</i>
Measuring accuracy:	± 1 cm or $\pm 0,1$ %
Measuring resolution:	1 mm WC

Temperature measurement:

Measuring range:	- 20 ... + 50 °C
Measuring accuracy:	$\pm 0,1$ °C (between 0 ... + 30 °C)
Measuring resolution:	0,01 °C

Data logger:

Storage capacity:	128 000 measured data <i>Memory is retained even in case of switch-off or failure, any data can be retrieved any time later</i>
Programmable measuring intervals:	1 minute to 10 days or one measurement a day or two measurements a day (a.m. and p.m.)

Programmable starting time:	maximum 45 days before
Baud rate:	19 200 Baud
Power supply:	3,6 V lithium battery
Operation without battery replacement:	5 to 10 years (depending on the measuring intervals)
Operating temperature:	- 20 ... + 50 °C

Physical dimensions

Level and temperature sensing probe

Material:	stainless steel KO-36, polyamide plastic
Diameter:	27 mm
Length:	145 mm
Protection:	IP 68

Data logger

Material:	polypropylene tube with die cast ABS cap
Diameter:	50 mm
Length:	330 mm
Protection:	IP 65