

Approval Date: 11 August 1999

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Version: 2

Purpose

The Data Retrieval System and related software will be used for operations with Digital Water Level Recorders. Major operations are DWLR set-up, control, monitoring and data retrieval. Further, the retrieved data will be transferred from the DRS to PC.

Conditions & Requirements

- The Data Retrieval System (DRS) for communication with the DWLR shall be portable, handy and lightweight (e.g. a palmtop computer or a Hand Held Terminal).
- The DRS shall be supplied with the accessories as needed for effective deployment.
- The DRS shall have an expected technical lifetime of not less than 10 years.
- The delivery shall include cables for connecting the DRS to the DWLR and to a serial port of a PC.
- The DRS shall communicate by a serial protocol.
- If required for use with the DRS and/or PC, e.g. to cope with long cable lengths, suitable adapters shall be part of the delivery.
- The DRS shall support the communication protocol as specified for the DWLR under Data logger, item Communications.
- The communication between DRS and DWLR and PC shall be suitable for the cable lengths involved.
- An error monitoring communication protocol shall be used. The protocol shall ascertain error free data exchange between DRS and DWLR /PC. The protocol shall function in both directions. Commands, programs, water level records and all other data are exchanged under control of the protocol and data may only be accepted if they are error free.
- The communication protocol shall be based on packet wise data exchange; the packets shall be accompanied by a CRC code for checking at the receiving end. Defective or not received packets shall be retransmitted upon request by the receiving end.
- The data exchange between DWLR and DRS as well as between DRS and PC shall be protected by similar error-free protocols.
- All batteries associated with the DRS, i.e. the batteries for normal operation and the backup batteries, shall be easily replaceable.
- During battery replacement, the DRS settings and data shall be retained.
- Operator's and software manuals, related to the type and model of the DRS, shall be part of the delivery.
- The proper functioning of each DRS shall be demonstrated at delivery.
- All hardware, firmware, software and data shall be fully Y2K compliant.

The DRS shall have the following features:

Palmtop computer data handling

capable of programming, controlling, data downloading and monitoring the DWLR

capacity

sufficient to offload all data of 10 entirely filled DWLR recorders

ports

at least one serial RS232 port to connect a DWLR or a PC

baud rate

9600 or more, matching the DWLR

entry and display

keyboard and LCD screen for efficient control of the DWLR

readability

the display shall be easily readable under field conditions

software functions	DWLR control functions, display of historical data, battery voltage, present water level reading and instrument time
operating system	capable of running MS-Windows CE (preferably), MS-Windows95 or MS-DOS operating system with matching software for instrument control and tabular and graphical presentation of time series of collected data on the LCD screen. (See Item 6: DRS Software)
power supply	operative with standard Alkaline batteries, easily available in India, or a rechargeable battery pack
power autonomy	at least 12 hours continuous operation on a single battery charge
supply backup	all volatile data have to be protected by a back-up battery of sufficient capacity to retain all data for at least one year of failure of main batteries
mass	less than 0.5 kg
operating temperature	0 to 50°C
humidity	95%
robustness	the Palmtop PC should be capable to survive a few drops on stone.

OR

Hand Held Terminal

data handling	capable of programming, controlling and monitoring the DWLR
capacity	sufficient to offload all data of 10 entirely filled DWLR recorders
ports	at least one serial RS232 port to connect a DWLR or a PC
baud rate	9600 or more, matching the DWLR
entry and display	keyboard and LCD screen for efficient control of the DWLR
readability	the display shall be easily readable under field conditions
software functions	in addition to DWLR control functions, the software shall support display of historical data, battery voltage, current water level reading and instrument time
power supply	operative with standard Alkaline batteries, easily available in India, or with a rechargeable battery pack
power autonomy	at least 12 hours continuous operation on a single battery charge
supply backup	all volatile data shall be protected by a back-up battery of sufficient capacity to retain all data for at least one year of failure of main batteries
mass	less than 0.75 kg
enclosure	compliant with IP65
operating temperature	0 to 50°C
humidity	100%
robustness	the HHT should be capable to survive a few drops on stone.

Accessories

- tools and spares
- signal, power and communication cables as required for all normal user operations
- 220 VAC ±25%, 47 to 53 Hz, charger for the DRS battery pack

Consumables

- batteries

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