MOSERP

Data Loggers

Product information

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Contents

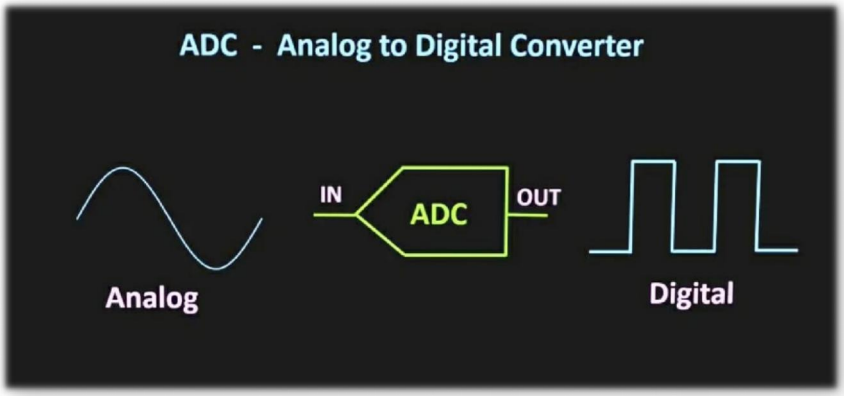
I Specification

The data logger is designed to operate within a wide range of ambient conditions, ensuring reliable performance across diverse environments. It can accurately record data in temperatures as low as -5°C and as high as +60°C, accommodating the chill of a frosty morning as well as the heat of a sun-drenched afternoon. The device is equally adept at handling humidity levels, from the dryness of an arid 5% relative humidity, all the way up to the saturation point at 100% relative humidity. This makes it suitable for use in environments ranging from dry deserts to moist tropical areas. Furthermore, the data logger is engineered to function at altitudes from sea level up to 2500 meters, allowing for deployment in a variety of topographies, from coastal plains to high-altitude locations. Such robustness in operational parameters makes this data logger an ideal choice for a multitude of applications, where accurate and consistent data logging is paramount.

2 Measurement Resolution

The data logger's analog-to-digital converter (ADC) boasts a resolution of 16-bit or higher, which translates to a remarkable level of precision in measurement. With a 18-bit ADC, the device can differentiate between 65,536 discrete levels of input signal, providing a detailed and nuanced representation of the analog world. This high-resolution conversion is crucial for applications where the accuracy of readings is paramount, such as in scientific research, quality control in manufacturing, or environmental monitoring. The ability to capture such fine-grained data ensures that even the slightest variations in the analog signal are faithfully represented in the digital output, enabling users to make well-informed decisions based on reliable and precise data.

18-Bit ADC



3 Measuring Interval

The water level measurement system is designed to monitor water levels at regular intervals. The system allows users to adjust the measurement frequency, with a pre-set range from 10 minutes to 24 hours. When configured, the system records water level readings at 'integer times,' aligning with the hour. For instance, if the measuring interval is set to 1 hour, readings occur at 00:00, 01:00, 02:00, and so on. The first reading after system initiation occurs precisely at the start of each hour (00 minutes). This flexibility ensures accurate and timely data collection for effective water level monitoring.

4 Measuring Time and Date

The data logger system not only allows users to adjust the measurement frequency but also ensures accurate data collection. Here are the key features:

1. Measuring Time:

- The instrument is capable of taking the arithmetic average of readings collected over a period of 20 seconds or more.

  Only the average value is recorded.

- This feature enhances precision by minimizing fluctuations due to transient disturbances.

2. Date Format:

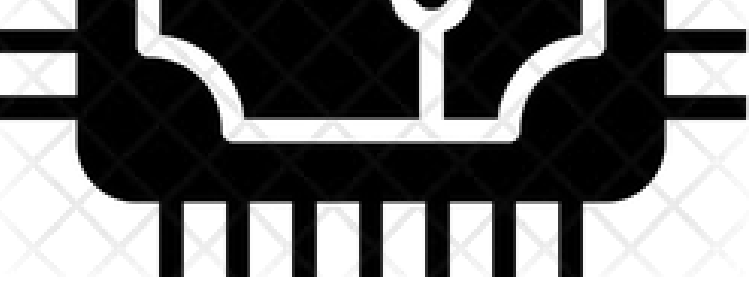
- The system records date information in the following format:

  DD/MM/YYYY (with leading zeros).

- For example, March 1, 2001, would be represented as

  01/03/2001.

By combining these features, the water level measurement system provides reliable and detailed data for effective monitoring and analysis.



5 Recording Capacity

1. Recording Capacity:

- The system can store a minimum of 10,000 water level readings. This extensive capacity allows for prolonged monitoring without frequent data retrieval.

- Each recorded dataset includes essential information: the instrument's serial number, station identification code, and precise date and time of water level readings.

2. Unique Identifiers:

- Serial Number: A distinct serial number is permanently attached to each data logger. This unique identifier ensures traceability and prevents confusion.

- Station Identification Code: During installation, the system receives a station identification code. Unlike post-retrieval modifications, this code remains fixed, maintaining data integrity.

3. Memory Organization:

- The system employs a ring organization for its memory—an endless loop that efficiently manages data storage.

- To safeguard against accidental erasure, a robust password or equivalent protection mechanism is in place.

In summary, this water level measurement system combines reliability, security, and user-friendly features, making it an indispensable tool for environmental monitoring and research.

6 Error Marking

An error code i.e -99.999 is used to unambiguously mark out-of-range data and other errors.

This value is intentionally impossible to generate under normal operating conditions.

Distinguishing Errors:

Errors are clearly marked and easily distinguishable from valid data.

Users can rely on this feature to identify and address any anomalies in the recorded water level readings or any reading from the sensor.

By incorporating this error marking approach, the system enhances reliability and facilitates accurate data interpretation.

7 Recording Resolution

The water level measurement system achieves exceptional precision with a recording resolution of **0.01 meters or better**. This high level of accuracy ensures that even subtle changes in water levels are reliably captured and recorded. Researchers and environmentalists can confidently rely on this system for detailed data analysis and informed decision-making.

8 Memory Type

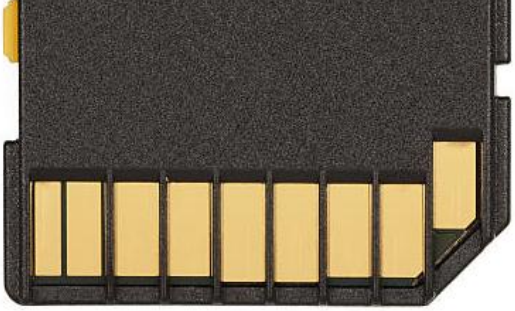
Memory Type:

The system features a minimum of 4MB nonvolatile memory. This ample storage capacity allows for extensive data logging without compromising performance.

Nonvolatile memory ensures that recorded data remains intact even during power interruptions or system shutdowns.

Volatile Memory (RAM) Protection:

To safeguard against data loss, the volatile memory (RAM) is shielded by a rechargeable battery.



The battery draws power from the solar panel, ensuring continuous operation and preventing loss of critical data.

Solar Panel and Battery Efficiency:

The integrated solar panel efficiently charges the rechargeable battery.

Under normal Indian weather conditions, the combined solar panel and battery system retains memory contents for over a year.

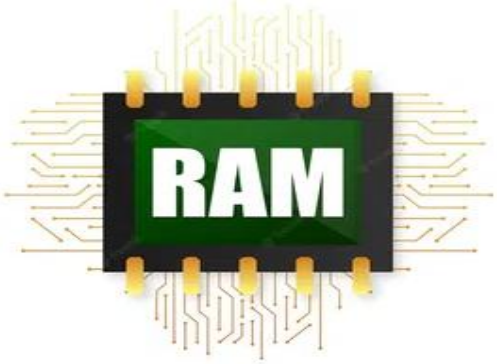
This reliability is maintained even with a recording interval of 1 hour and arithmetic average readings from 20-second data samples.

Monthly Access and Monitoring:

Users can access the loggers monthly for data retrieval and monitoring purposes.

The seamless combination of memory resilience and efficient power management makes this system ideal for long-term environmental studies.

In summary, the water level measurement system strikes a balance between data integrity and sustainable operation, empowering researchers and environmentalists alike.



9 Communication interface and Telemetry (Sensor Interface)

The water level measurement system seamlessly integrates with sensors, ensuring accurate data acquisition and efficient communication along with inbuilt signal condition. Here are the key features:

Analog Input Channels:

- The system provides four analog input channels, allowing for versatile sensor connectivity.
- These channels accommodate analog sensors, including those operating on the 4 to 20 mA scale with 100% accuracy.
- Over-range withstand capability ensures robust performance even during extreme conditions.

Dedicated Cable and Communication Protocols:

- A dedicated cable connects the radar sensor to the data logger, establishing reliable communication.
- The communication between the logger and the Data

Retrieval Station (DRS) can utilize various protocols:

- IrDA: Infrared Data Association for short-range wireless communication.
- Bluetooth: Wireless technology for seamless connections.
- USB 2.0 or Better: High-speed data transfer via USB.
- Serial Ports:
    - RS-232: Used for sensor interface communication.
    - RS-485:Provides robust communication over longer cable

Suitable Hardware and Cable Lengths:

- The communication hardware is carefully selected to match the cable lengths involved.
- This ensures signal integrity and minimizes data loss during transmission.

Online Monitoring via GSM/GPRS (Telemetry Unit):**

- The system supports GSM/GPRS interfaces, enabling real-time online monitoring.
- Researchers and operators can remotely access water level data, enhancing situational awareness.
- LTE Global- B1(2100), B2(1900), B3(1800), B4(AWS1700), B5(850), B8(900),B12 (700), B13(700), B18(800), B19(800), B20(800), B26(850), B28(700) 2GQuadband-B2(1900),B3(1800),B5(850),B8(900), and 5G bands.
- GPS option for detecting the location of the datalogger with accuracy of around 2m along with SMA connector for external antenna.

In summary, this water level measurement system combines precision, adaptability, and efficient communication, making it an indispensable tool for environmental monitoring and research.

10 Input-Output interface

Configuration Port:

- The system provides one Serial Port (RS-232/USB) for seamless communication with a laptop during programming and configuration.
- Users can conveniently adjust settings and parameters via this interface.

Display Port:

- An external display screen can be connected to the system using the dedicated display port.
- Real-time water level data is presented in running text format, ensuring easy monitoring and visualization.

Operating System Compatibility:

- The system's software is designed for Windows operating systems.
- Users can configure and communicate with the system using familiar Windows-based tools.

Language Version:

- The system supports an English language version, ensuring clear communication and ease of use.

Licenses:

- All necessary licenses are included, allowing users to operate the system without any additional hurdles.

Conversion Accuracy:

- The system achieves impressive accuracy, with a conversion accuracy of ±1 Least Significant Bit (LSB).
- This precision ensures reliable data representation and analysis.

Flexible Sampling Intervals:**

- Users can customize the sampling intervals according to their needs.
- The system accommodates intervals ranging from 1 second to 24 hours, providing flexibility for various monitoring scenarios.

In summary, this water level measurement system combines robust hardware interfaces, user-friendly software, and precise data handling, making it an indispensable tool for environmental monitoring and research.

11 General Features

- Recording Interval Individual recording intervals for each sensor/parameter
- Firmware Operating System Multi-tasking operating system-must log data and transmit at same time
- Power Supply Shall be powered by solar Power supply to be provided by bidder with DCP,
- low current drain (quiescent ≤10.0mA)
- Battery Voltage Monitoring of battery voltage level
- Internal battery internal battery backup for clock, lithium battery, storage 2 years
- Charge Controller Internal or External
- User Permissions Different user levels, system of user rights / passwords, access restricted to unauthorized personnel
- Internal clock internal clock with drift less than 1 second per week.
- Keypad For displaying or transferring data to memory stick, configuration of data logger and sensors
- Real time clock GPS synchronized & timing is required in IST format
- System integrity System integrity check procedures

- Enclosure for wall-mounting in a shelter / enclosure with IP68 (NEMA 4or equivalent) protection or better

- Ports to connect external display/ SCADA (optional).

- Latching relay can be fitted optionally along with encoders.

- Accessories Serial cable + adaptor (if required for notebook connection). All accessories (fixing units, etc.) as required

- Tools complete tool kit for installation and routine maintenance giving full detail (number of pieces and type)

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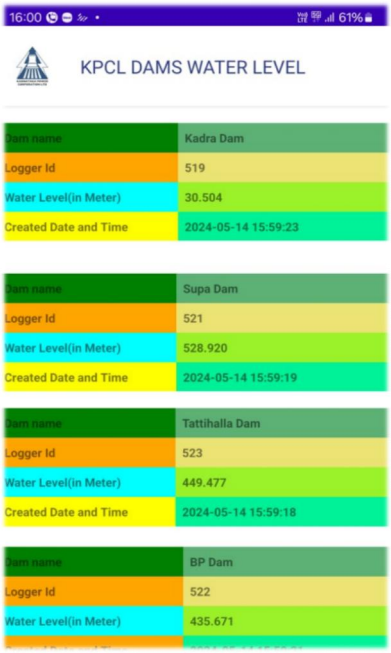
- Manuals Full documentation and maintenance instructions in English (1 copy per station).

- Barometric compensation with additional built in barometer with +/- 1 hpa.
- Additional compatibility for hooters if required.

12 Mobile Application

Imagine a world where data is not just confined to the display of a data logger. In this world, users have the power to carry their data in the palm of their hands. With a mobile application installed on their device, they can effortlessly access their data from anywhere, anytime. No more hustle, no more constraints. Just seamless access to data, right at their fingertips. This is not just convenience, this is the future of data accessibility.



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