



“Water Gauge-CK104”

Prepared by

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Sunray has their own products related to Water Gauge. There are different types of sensors available considering the specific climatic conditions. In India, we suggest radar and bubble gauge can be most suitable considering the hot and humid conditions. However, the other products can be available on demand. The key factor of data transmission to DPC (Data Processing Centre) is through GPRS link only.

Cellular Telemetry Overview

Sunray uses GPRS based transmission system to transfer data from the data logger attached with the device. This transmission system is similar to the phone system. This transmission system is based on packet-switched network. In this type of transmission system, the user only needs to have a MODEM and establish an account with the provider to use the existing system. The transmitter must be active to send the data packet, but the receiver is not required to be active to receive the packet. If both the receiver and transmitter are active then the data packet can be delivered immediately. This type of scenario is called as "GPRS link up". However, if the GPRS link is not up, the data has to be saved at data logger until the GPRS link is up.

Advantages of using Cellular Telemetry

- Easy to set up
- Low implementation cost
- Low maintenance cost
- Non directional antenna
- Two-way communications (DPC can configure the data transmission frequency and the sensor can send data to DPC – this satisfy both way communication)
- Event notification through SMS or through GPRS Link,
- Socket connection to accept the message at web server.

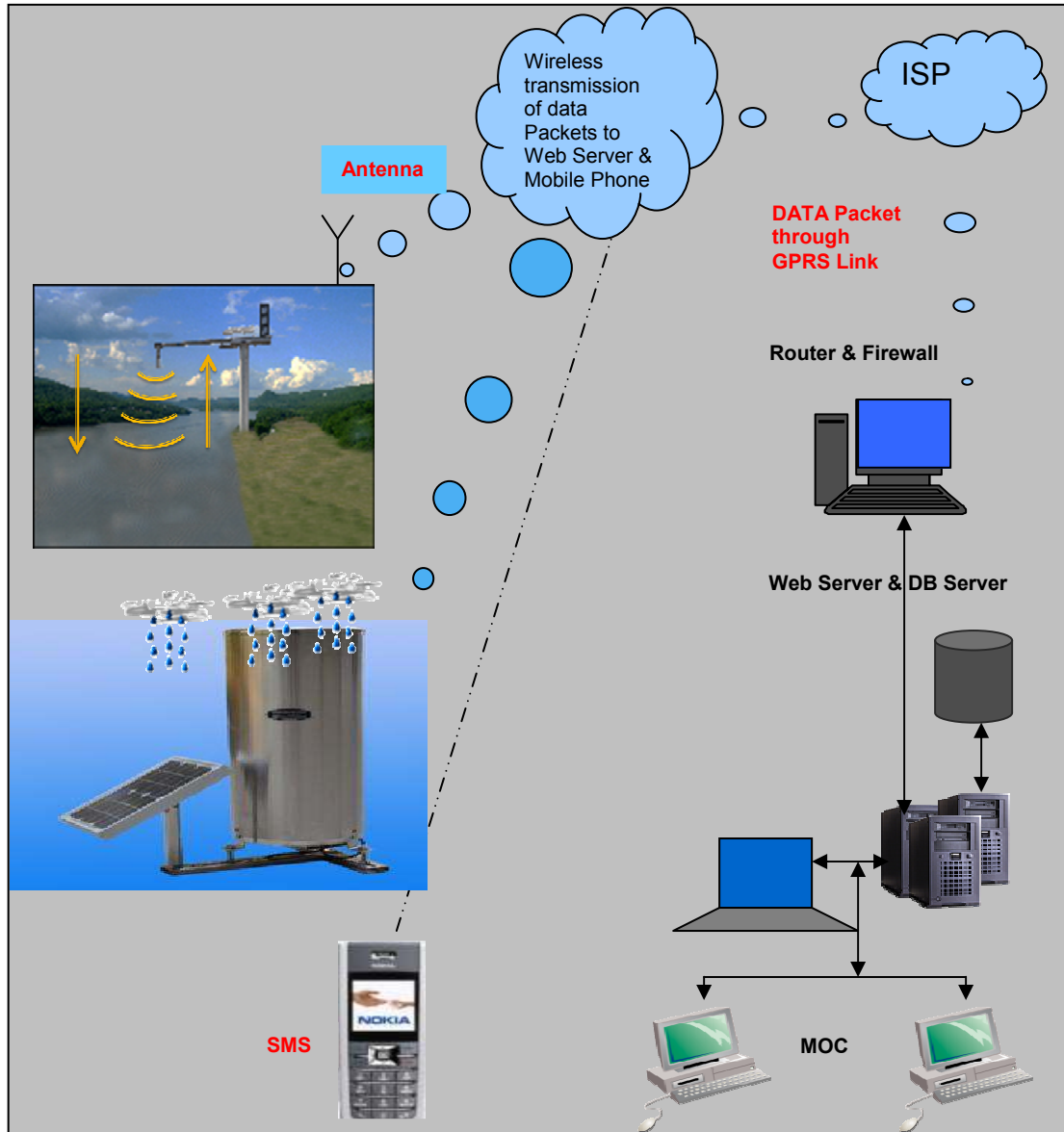
Disadvantages of using Cellular Telemetry

- It will not work if the GPRS coverage is not supported by service provider (But India I well covered by different GPRS service providers such as BSNL and Airtel)
- Monthly service fee (may vary depending on local area cell phone service provider)
- Connection may be dropped during pick time but it is not for a long time period.

Considering the advantages over disadvantages, Sunray develops their product ranges using GPRS based cellular Telemetry for transmitting the data from data logger to the dedicated web server.

Brief Operation using GPRS link

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The above figure shows the communication between DPC and rainfall and water gauge placed at different sites to capture the data using the basic sensor technology. The data saves in a data logger. This process is similar to all the existing rainfall and water gauge available in market currently. Once the data is available, the data transmission takes place. The data passes to the DPC through any nearby BTS to the nearest service provider (The BSNL Server or Airtel Server). The data transmission device of both rainfall and water gauge are attached with a SIM card to connect to a nearest BTS for data transmission through GPRS link.

The data transmission device (through GPRS link) sends periodic data over GPRS link to the DPC. In this scenario, we emphasize on each device data that has been sent at a certain time period from the data



transmission device to avoid the congestion. The time slot has been configured as 24 hours during off peak time. Hence, a certain device data will be transmitted by the data transmission device at a certain time on everyday. Similarly, during the peak period (flood or rainy season) the data transmission can be configured to each hour as well.

The data transmission device also sends all critical alarms and events to the DPC over GPRS link such as critical water level, battery low, heavy rain, low voltage due to cloud covering more than 30 days etc,

In case of GPRS link failure, the data transmission device sends the critical alarms and events over SMS link. The data size reduces in case of SMS transmission allowing only the device that generates the critical alarms. Data transmission device sends all critical alarms and events to DPC and also to Field Engineers mobile phone as well.

Similarly, MOC has also the facility to sends request to data transmission device over GPRS and SMS link to get the data and configuration data from different sensors placed in different locations. However, response to all the requests from DPC will be answered by data transmission device through GPRS link only.

DPC is a high end web server to receive the data from different rainfall and water gauges through TCP connection. The data arrives at DPC can also be viewed by different users as per their privilege globally. User can create reports automatically upon receiving the data.

For further information please contact Sunjray.