

Discharge Measurement Instruments

Non-Contact Real Time Discharge Monitoring System

Installation site at Heena Bridge Uttarkashi



The RK-NDMS (Non-Contact Discharge Measurement System) has an integrated radar surface velocity and level meter for contactless measurements of surface flow velocity and water level comes with the river, stream, pipe any other water running structure cross section profile mapping configurator software. Contactless radar technology enables quick and simple sensor installation above the water surface with minimum maintenance. Calculation of the total flow discharge is internally implemented within the instrument by combining surface velocity measurement, water level measurement, and a configured cross-section of the river or channel. Defining the measurement parameters such as profile cross-section, material of the edges, location of the sensor above the water, and radar sensor settings can be easily setup with the RK-DL81 Datalogger, which will provide the facility to store the years of the data in the logger and transmitted to the real time data to the RKEC Server through WIFI, GPRS, IOT, VSAT etc. or the purchaser server (on purchaser request)

RKEC server giving the facility to analyzing the real time and stored data, with the help of the Graph and download data. User dashboard having the facility to the user set the SMS alert range for Flood Range the giving the Water Level, Dashboard viewing the Color code data for the different value of data such as warning, min, normal and alert. User can access the RKEC Discharge Android app after registered their mobile number into the dashboard mobile user tab. Map for showing the instrument location and hover effect show the current time data.

Notes

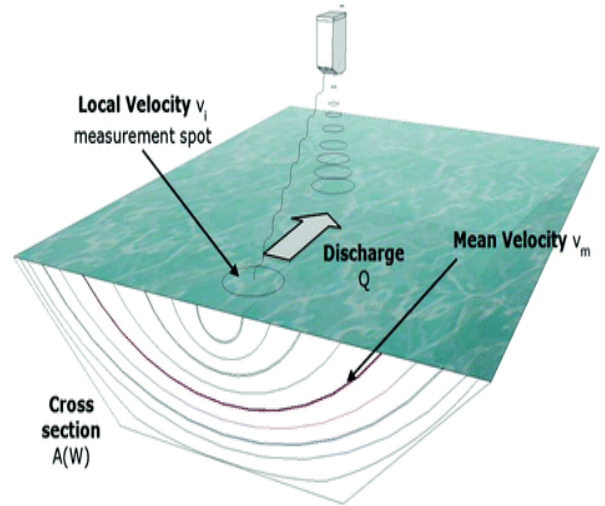


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Non-Contact Discharge Measurement System

Product Description

This is a non-contact flow meter for open water channels mounted above the water surface. It uses a radar velocity sensor and radar sensor for water level measurement. The two measurements and the dimensions of the cross-section profile are used to calculate the discharge from the continuity equation (velocity area method). The modular transmitter incorporates a flow computer with all required algorithms and software to ensure accuracy and repeatability of flow measurements. Parameterization of the measurement site, data logging, visualization and data transfer is possible by using the browser-based control and management user interface which can be run in any standard web browser via PC, notebook, tablet or smart phone, regardless of location, time and operating system.



RK Engineering Corporation having the world-class **Sommer, Geolux**, FCC & CE certified radar flowmeter can continuously measure the flow of water in rivers and open channels and obtain surface flow velocity and water level height by non-contact measurement. For the regular channel section, the flow results are calculated using conventional mathematical formulas. For the irregular channel section, the flow results are obtained by using the plot method and calculus calculation. The non-contact measurement method is not affected by impurities such as sediments and water plants, which reduces maintenance costs and increases reliability.

RKEC model [RK-DL81] data logger is a highly-integrated device used to read the data from the attached non-Contact discharge Sensor, store and deliver this data to the RKEC cloud base data management software. RKEC make **[RK-DL81]** datalogger having a **16X2 character LCD** display which shows the current data and time, water level, Water Velocity, Discharge and Battery Voltage. **4 X 1 Keypad** is provided at front panel of data logger for programming data logger and monitoring sensor reading at site without the help of computer. Data Logger contains **16 GB** internal flash memory which is used to provide a data storage backup in case that no GPRS communication is disable. Data stored inside the internal non-volatile memory can fetch through pen drive and upload into the PC with the help of Application software. **RKEC Integrated WIFI and GPRS modem** transmitted the data to **RKEC** cloud base server is highly secure place for data. **RKEC** cloud base server running a Data management Software, for the user can monitoring and analysing their data with help of the given Graph on the User Dashboard. Also fetch the Data from the server in the Excel format. One-year Webspace comes with the all units free of cost after that chargeable.



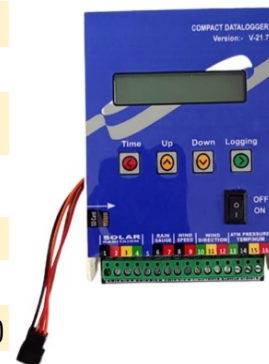
RKEC model [RK-BSC] an Intelligent microcontroller base Solar charging circuit specifically develop for charging the battery charging circuit having the feature as follows **Reverse polarity protection & over current fuse protection**, soft switch for Switch ON & OFF LED indications for Power-ON, Low Battery and charging indication, If the output is shut down due to low battery the system switches on output itself again when the battery is fully charged at 13.5V. Charging float voltage 14.2V, Output Voltage 12 volts DC with 10 to 60 watt solar Panel.

RKEC data logger comes with the IP 66 enclosure and having the feature battery management for the long life of the battery and backup at least 30 days in bad weather condition.

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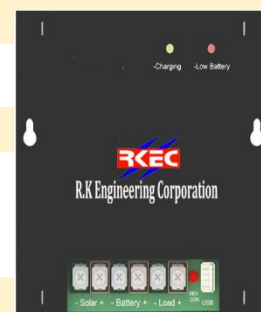
Data Logger Specification

Make and Brand	RK Engineering Corporation
Model	RK-DL81
Display	16 Characters x 2 Lines (Auto on LCD backlight when any button is press)
Measured Parameters	Date, Time, Water level (mtr), Water Velocity(mtr/sec), Water Discharge (cumes)
Real Time Clock accuracy	±2 second per year
Number of channels in Logger	16
Logging Interval	1 min to 60 min with the facility to program log start time within next 24 hours
Data Storage Capacity	16 GB Non-Volatile in build cyclic memory to store the data at least duration for minimum 5 year.
Operating Temperature	-40°C to 65°C
Operating Humidity	0 to 100%
Data Retrieval	Through SD card (Direct in Excel Format No Need of Software)
Data Transmission	Through Inbuild WIFI / GPRS 4G SIM Modem / VSAT
Sampling frequency	1 Hz
Response Time	Mili Seconds
Key Pad	4X1 Infront of the logger panel for programming
Encloser Box	IP 66 for fixing of datalogger, battery & solar charges, Fitted with all necessary connectors. Encloser dimension LXWXH (in mm) 590x280x965
Protection Cage for Encloser	Outer fencing of the encloser box for protection from Animals/Human Intervention Dimension L X W X H x D (in mm) 760x920x1820x405



Power Supply Unit Specification

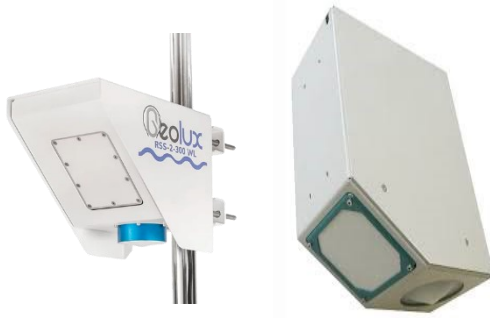

Battery	12 volts 100-Amp SMF
Power Backup	Calculation with for complete System taking the consideration 30 days of back up non-sunshine condition
Solar Panel	60W@ 12 V
Solar Charing	RK-BSC an intelligent with internal or External having over and under voltage protection Battery Charging Indicator LED (Yellow) Lower Battery Indicator LED (Red)
Battery back up	30 days comes with standard (for more day's backup cost extra)



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Sensor Specification to connected the logger

Combined Radar Water Level and Velocity Sensor

Make and Brand name	GEOLUX / SOMMER	
VELOCITY MEASUREMENT	RADAR TYPE	
Velocity Sensor Speed Range	0.02m/s - 15m/s	
Velocity Measurement Accuracy	±0.001m/s; ±1% FS	
Velocity Meter Frequency	24.125 GHz [K band]	
Velocity Resolution	0.001 m/sec	
Direction Recognition	Inward and outward	
Measured Duration	1 SPS to 240 SPS	
Velocity Radar Angle	12°	
Distance to Water Surface	0.50 35 m	
LEVEL MEASUREMENT	RADAR TYPE	
Radar Water Level Range	15 meter / 30 meter /35 meter	
Radar Water Level Resolution	0.5 mm	
Radar Water Level Accuracy	±2 mm	
Radar Water level Angle	5°	
Radar Water Level Meter Frequency	77 to 81GHz [W band]	
Sampling Frequency	1 sps to 10 sps	
Attitude Angle Intelligent Perception & Compensation	Horizontal angle, roll angle accuracy ±1°; resolution ±0.1°	
INTERFACE		
Serial Interface	1 X Serial RS-485 half duplex 1 X Serial RS-232 (Two wire Interface) 1 X SDI-12	
Analog Output	4-20 mA, programmable Velocity, level or Discharge	
Serial Baud Rate	9600-115200	
Output	Discharge, Flow Velocity, Water Level	
Operating Voltage	DC 9 ~ 27 V	
Power Consumption	Operating current < 140 mA, standby current < 1mA	
GENERAL		
Operating Temperature	-40°C ~ +70°C (without heating)	
Ambient Temperature Output (Optional)	Accuracy ±1°C; resolution 0.1°C	
Protection Level	IP68	
Product Size	150*200*250mm (length * width * height) 338 x 333 x 154 MM with pipe brackets	
Product Weight	5.4 kg	
Protection	Over Voltage, Over power protection, lighting Protection	
SOFTWARE		
River Cross-section Mapping	Provided	
Software Data Cable	Provided	

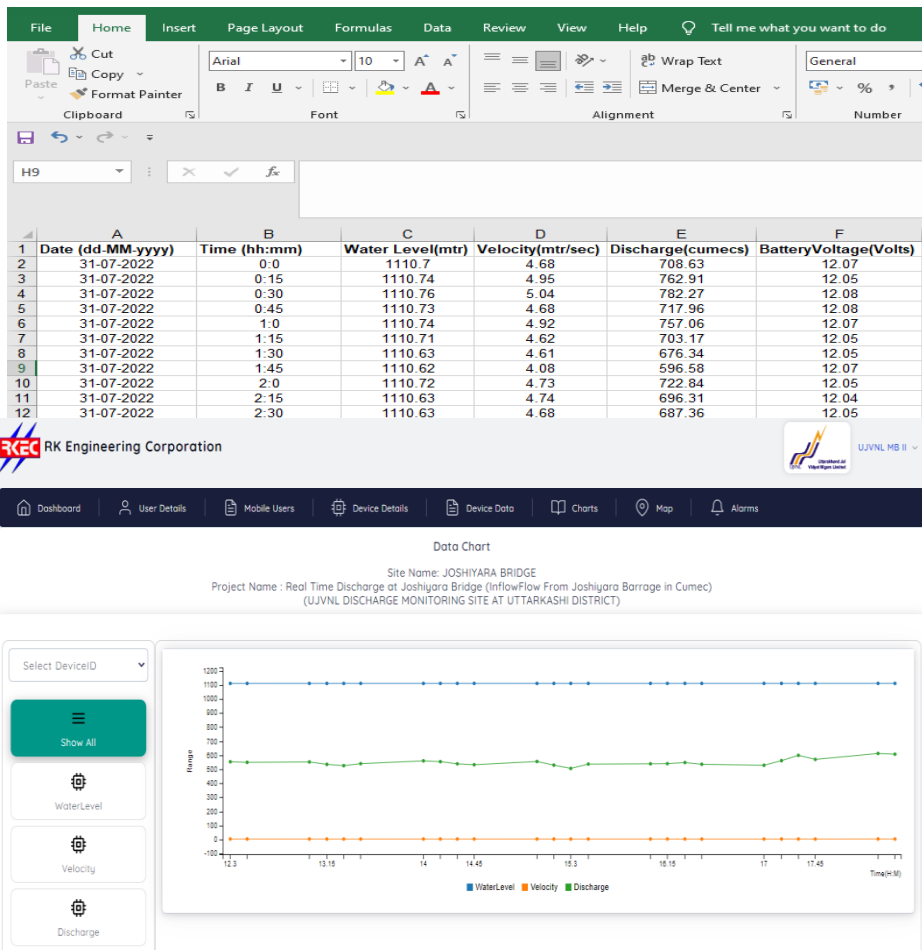
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Instruments comes with the facility

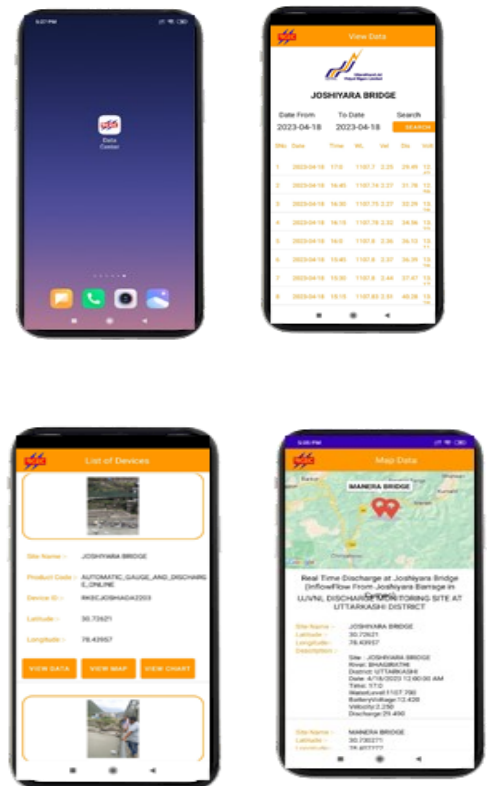
Above Instruments having the facility to check the Real time data to RKEC Cloud Server for Data Management, Storage and Analyzing.

Data Center Specification

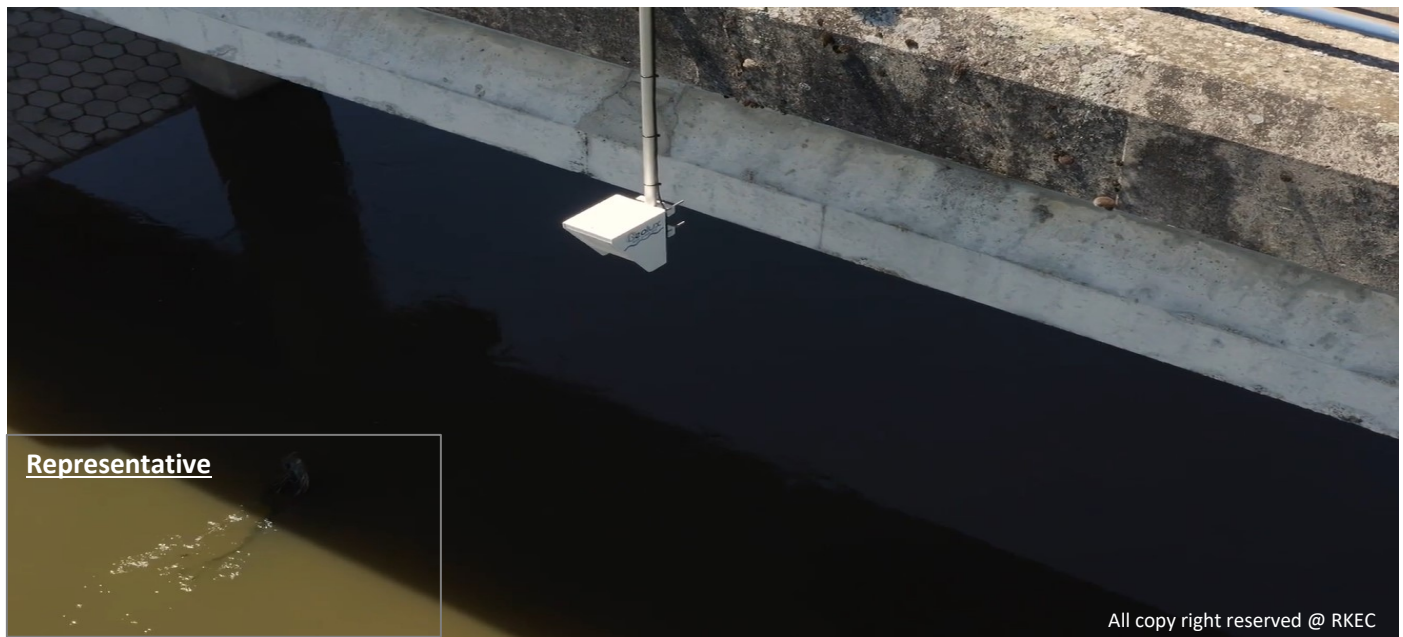
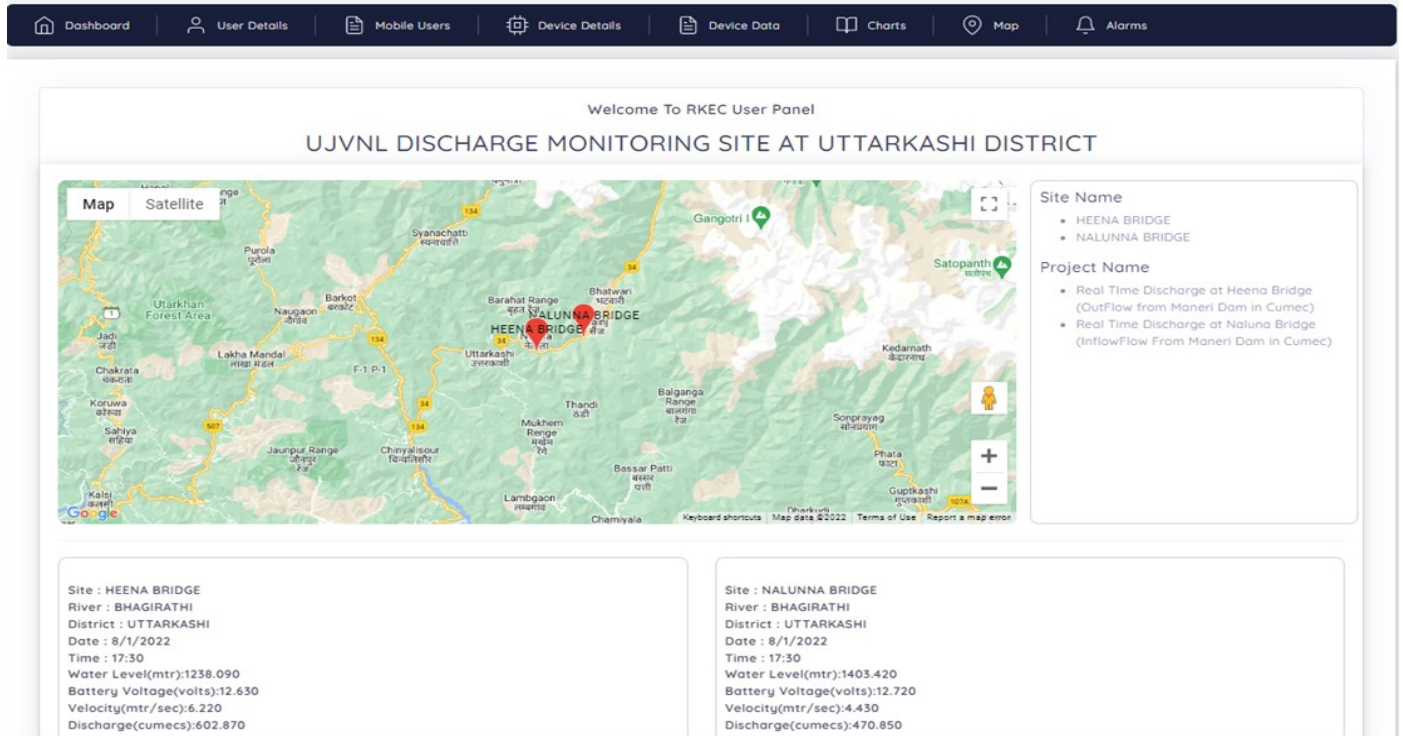
Server	RK Engineering Corporation
Dashboard	Having the User detail, Mobile user, Device Detail, Device Data, Chart, Map, Alarm
Unique Identify Name and password	Provided
DATA	
Data showing	In different colour for more understanding Minimum (Blue), Normal (Green), Warning (yellow), Alert (Red)
Data Graph/Chart	Individual for all Water Level, Velocity and Discharges Combined for all Water Level, Velocity and Discharges
Data SMS Alert	User can set the Alarm Range (for Flood) and (Discharge) And Registered SMS Alert maximum 5 mobile number through User dashboard.
Data Download	Set the Date, Month and Year and Download Data in Excel Format
Map	Location Indicator Map and Show the Live Data on Hover the Location Symbol
Android APP	Download the App from dashboard and Register the Mobile User App show the real time data, All Listed Device and location map
Site Detail	List of All Installation Site with their photo, longitude and latitude and all related details



Mobile Android APP



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R.K Engineering Corporation

1080, salempur Rajputana Industrial Area
 Roorkee- Haridwar Uttarakhand INDIA
 Email: rke_corp@rediffmail.com
 Contact No. +91-9412070690/9536392101