Spatika

Varsha

TRG-GPRS

Telemetric Rain gauge

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Spatika

VARSHA-TRG-GPRS is an innovative product for automatic recording and transmission of rainfall data. It uses GSM/GPRS technology for data transmission.

VARSHA-TRG-GPRS is integrated product consisting of rain gauge sensor unit and data logger unit

The sensor unit works on Tipping Bucket principle. Here water falls on one half of tipping bucket that tips over when a certain volume of water is collected, bringing the other half to collect the water. This process continues as long as it rains. The tipping mechanism causes momentary closure of a switch. Because of tipping bucket mechanism, water automatically flows out of rain gauge thus ruling out need for manual emptying.

The data logger connected to the sensor counts each tip and calculates the rainfall. The data recorded is stored in local storage of data logger and can be accessed through its LCD display.
Additionally, the data is also sent to a central server through GPRS data communication.
The Data Logger unit is an integrated microprocessor based data acquisition and storage system to serve as an interface between sensors and the communication link.

Features:

- Near real time rainfalldata availability at user end.
- Rainfall recording at user configured interval
- Measurement with resolution of 0.25 and 0.5mm
- Rainfall data storage of 15 min recording up to a year in device
- Early warning SMS alert when rainfall reaches a threshold value
- GSM/GPRS interface to transmit data to central server.
- Flexibility to accommodate different GSM Service providers
- Battery and solar powered operation
- Remote configuration of data logger for various parameters.
- Easy calibration check facility
- Certified by Indian Meteorological Department (IMD)

Applications:

- Climatology and Meteorological studies/research
- Drought monitoring
- Weather based Crop Insurance applications
- Weather forecasting and Early warning systems
- Watershed management Application
- Water management
- Urban flood management

Specifications

Sensor:

Type:	Tipping Bucket based
Resolution:	0.25 and 0.5
Accuracy:	Within acceptable limits specified by IMD

Data Logger: Microprocessor based data acquisition and storage system

Power:

Battery:	Recharageable lithium Batteries with suitable backup
Solar Panel:	10W/20W/Suitable Backup capacity

Our Meteorological and Hydrology related Products

1. Automatic Rain gauge
2. Automatic Weather Station
3. Digital Water Level Recorder
4. Ultrasonic Level sensor
5. Sensors – Rain gauge, Temperature, Humidity, Wind speed, Wind direction, solar radiation, water level

Varsha-TRG
Data logger

Spatika

General Description

The data logger Varsha-DL-TRG is a product developed by Spatika primarily for Telemetric Rain gauge. It can also be used for applications where more sensors are required to be interfaced.

Features

- User friendly simple menu operation
- 2 Line LCD Display with backlight
- Analog and Digital I/O for sensor Interface
- Large data storage
- Internal GSM/GPRS Modem Interface for data Transfer to cloud/central server
- Key-board and display assisted field calibration procedure for rain gauge sensor
- Ideal for Battery and Solar Powered Operation

The product is designed to operate in extreme weather conditions and is suitable for hydrological and weather monitoring applications.

Basic power source is rechargeable Lithium Batteries with solar panel.

The lower power consumption allows usage of the unit for longer durations in field. With suitable capacity of battery and solar panel the unit can operate for around 3 weeks even in the absence of any solar power.

For field Installations, the unit comes with following setup.

1. Data logger with Industrial Grade/IP-65 Plastic Enclosure
2. Battery Pack
3. Solar Panel
4. IP-65 Protection Housing
5. GSM, GSM Antenna
6. Mounting accessories

Applications

1. Telemetric rain gauge
2. Water/Flood level Monitoring Equipment
3. Any data acquisition and transmission unit with 1-2 sensors.

Features

- Integrated microprocessor-based data acquisition , storage and Transmission System
- Unique Station Identification of device and sensor identification for sensors
- Stand-alone system with keypad and display
- Keyboard and display assisted calibration procedure for Rain gauge sensor.
- Multitasking Real-time OS based
- Simple menu-based operation for the user
- Firmware update via OTA.

Specifications:

Operating Conditions	
Temperature	-10 to +55
Humidity Range	0 to 100%Rh
Inputs	Pulse Input,ADC,I2C,Serial
Data Transmission	GSM/GPRS Based
Real Time Clock	GPS Synchronized
Sample Interval	15 Minutes (Configurable)
Data Storage	Sufficient storage to store data up to 5 years
Display	Alphanumeric Display 16 Characters

Internal GSM/GPRS Modem

Specifications: **Model: VARSHA-GPRS**

Communication (GSM/GPRS Modem):

Feature	**Specification**
Technology	2G/3G/4G
Frequency	900MHz and 1800MHz
Operating Temperature	From -30 to +85
Communication	Two way TCP/IP connection using GPRS
Transmission trigger	Transmission triggered by remote site
Power Saving	Power down mode available for non-Transmission duration
Communication Protocol	Data Transmission by HTTP Post and FTP File upload to Data Centre
Functionality	Multi level Alarm dial out, preprogrammed dial out, remote interrogation facilities
Remote Management	Configurable parameters through SMS
Accessories	GSM Antenna, cable are provided
Antenna Features	
Frequency range	800-960 MHz , 1880-1930 MHz
Impedance	50 ohms
Connector	SMA Male
Cable length	3 meter


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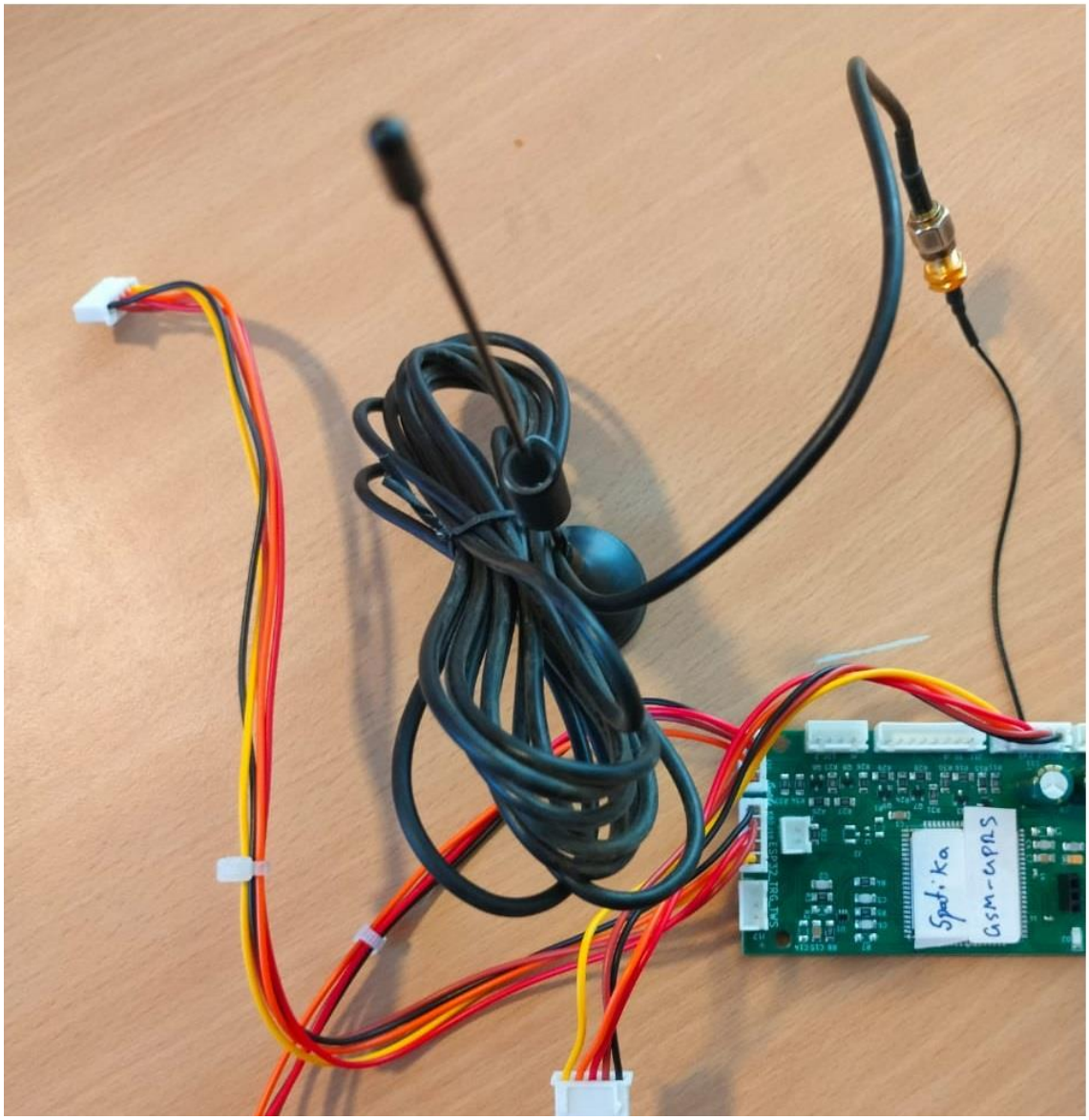
GSM-GPRS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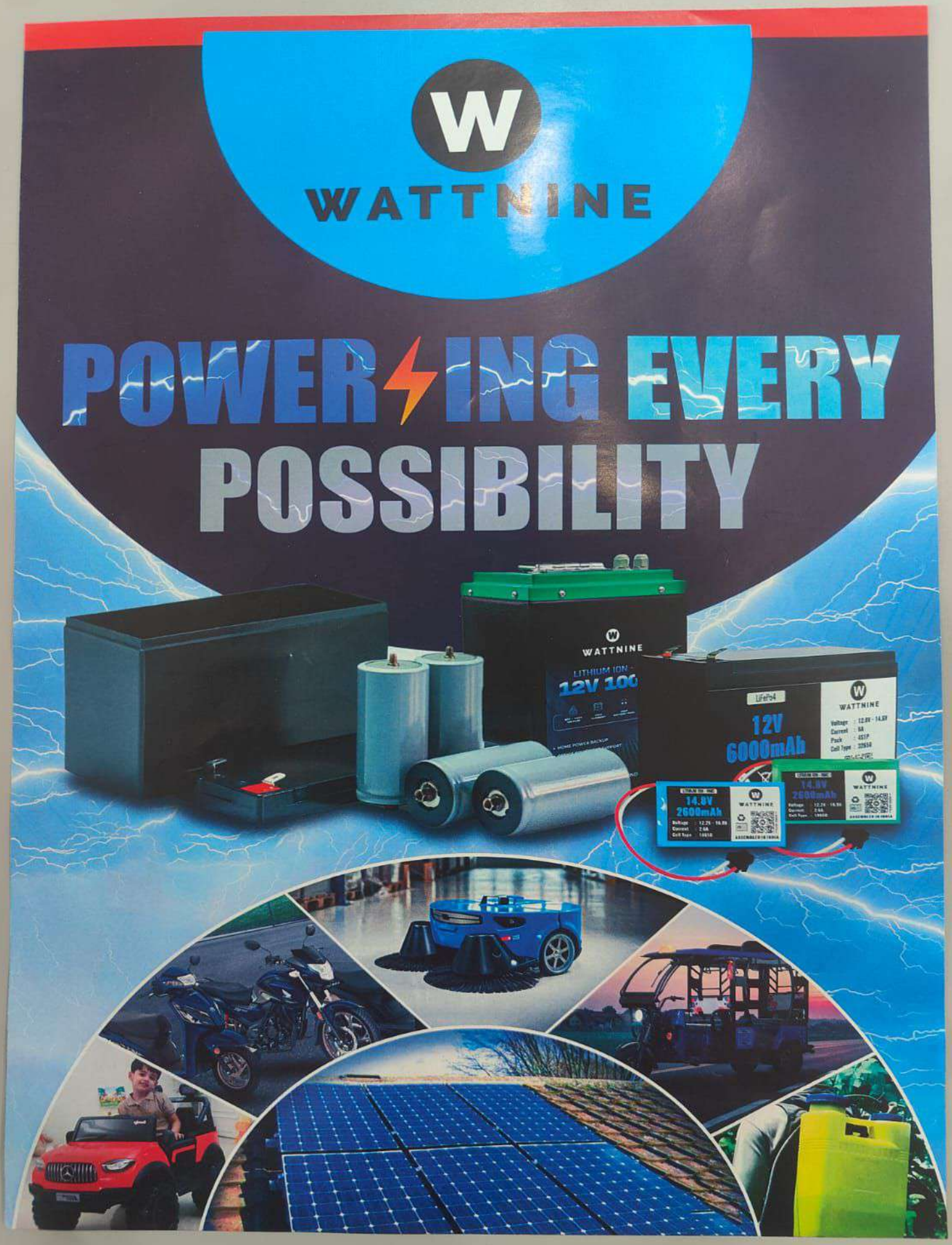
GSM-GPRS


WATTNINE
POWERING EVERY
POSSIBILITY
WATTNINE
LITHIUM ION
12V 100
LiFePo4
12V
6000mAh
WATTNINE
14.8V
2600mAh
WATTNINE
14.8V
2600mAh

CURRENT 100A
VOLTAGE 40V - 59.2V
CELL TYPE PRISMATIC

51.2V 100,000 mAh

CURRENT 100A
VOLTAGE 14.6V
CELL TYPE PRISMATIC

12.8V 100,000 mAh

3.7V 1200 mAh

VOLTAGE	CURRENT	CELL TYPE
3V - 4.2V	1.2A	18650

3.7V 5200 mAh

VOLTAGE	CURRENT	CELL TYPE
3V - 4.2V	5.2A	18650

12V 1200 mAh

VOLTAGE	CURRENT	CELL TYPE
9V - 12.6V	1.2A	18650

12.8V 12000 mAh

VOLTAGE	CURRENT	CELL TYPE
10V - 14.6V	12A	32700

12V 4400 mAh

VOLTAGE	CURRENT	CELL TYPE
9V - 12.6V	4.4A	18650

3.2V 6000 mAh

VOLTAGE	CURRENT	CELL TYPE
2.5V - 3.7V	6A	32700

14.8V 2600 mAh

VOLTAGE	CURRENT	CELL TYPE
12.2V - 16.8V	2.6A	18650

6V 6000 mAh

VOLTAGE	CURRENT	CELL TYPE
5V - 7.4V	6A	32700

12V 6000 mAh

VOLTAGE	CURRENT	CELL TYPE
10V - 14.6V	6A	32700

WATTNINE

Wattnine, Plot No. 39, 200 Feet SEZ Road, Near Malot Hospital, Mahapura, Jaipur - 302026

0141-4946677

contact@wattnine.in

Overview

The 3.2V 12000mAh Rechargeable lithium-ion LiFePO4 battery from Wattnine is designed to provide high energy density.

Features

- High Energy Density.
- Equipped with a high quality Smart Battery Management System.
- Long Life Cycle.
- Excellent Safety & Performance.

Battery Specifications

Nominal Characteristics	
Nominal Voltage /V	3.2V
Nominal Capacity /Ah (25°C, 0.5C)	12000mAh
Power	38.4 W
Operating Voltage Range	2.5V-3.65V
Gross Stored Energy	37.45 Wh
Ageing / Safety Margin	1500 Cycle
Pack Characteristics	
Design	1S2P
Cell type / Chemistry	Li-Ion LiFePO4
Mechanical Characteristics	
Weight	**Approx. 250g**
Dimension **(L x W x H)**	**72 x 65 x 34 mm (Can be modified)**
Charging Connector	**As per requirement**
Discharging Connector	**As per requirement**
Charging Characteristics	
Charge voltage	3.7V
Max. Continues Charge current	3A
Charging Duration	240 Min
Discharging Characteristics	
Max. Voltage	3.65
Min. Voltage	2.5
Nominal Discharge current	6A
Maximum Depth of Discharge	90%-95%
Charge-Discharge Efficiency	80% - 90%

BMS – Battery Management System

Protection		**Range**	**Units**
Single Cell Over Charge Voltage Protection	Trigger voltage	3.65 ± 0.05	V
	Release voltage	3.55 ± 0.05	V
	Delay Time	1000	ms
Single Cell Over Discharge Voltage Protection	Trigger voltage	2.5± 0.05	V
	Release voltage	2.7 ± 0.05	V
	Delay Time	1000	ms
Over Current Protection	Trigger Current	7	A
	Delay Time	200	ms
Balancing Function	YES		
Short circuit	Delay Time	250-500	µs
	Manual reset	Disconnect The Load to Reset	
Thermal protection	High Temperature	70°C	
	Low Temperature	-20 °C	
Temperature Derating	-20°C to 70°C		
Derating Factor	0.7		

Overview

The 3.7V 10000mAh Rechargeable lithium-ion NMC battery from Wattnine is designed to provide high energy density.

Features

- High Energy Density.
- Equipped with a high quality Smart Battery Management System.
- Long Life Cycle.
- Excellent Safety & Performance.

Battery Specifications

Nominal Characteristics	
Nominal Voltage /V	3.7V
Nominal Capacity /Ah (25°C, 0.5C)	10000mAh
Power	37W
Operating Voltage Range	2.75V-4.2V
Gross Stored Energy	35.89 Wh
Ageing / Safety Margin	1500 Cycle
Pack Characteristics	
Design	1S2P
Cell type / Chemistry	Li-Ion NMC
Mechanical Characteristics	
Weight	**Approx. 150g**
Dimension **(L x W x H)**	**73 x 55 x 27 mm**
Charging Connector	**As per requirement**
Discharging Connector	**As per requirement**
Charging Characteristics	
Charge voltage	4.2V
Max. Continues Charge current	5A
Charging Duration	120 Min
Discharging Characteristics	
Max. Voltage	4.2V
Min. Voltage	2.75V
Nominal Discharge current	3A
Maximum Depth of Discharge	90%-95%
Charge–Discharge Efficiency	80% - 90%

BMS – Battery Management System

Protection		**Range**	**Units**
Single Cell Over Charge Voltage Protection	Trigger voltage	4.2 ± 0.05	V
	Release voltage	4.15 ± 0.05	V
	Delay Time	1000	ms
Single Cell Over Discharge Voltage Protection	Trigger voltage	2.75± 0.05	V
	Release voltage	3.0 ± 0.05	V
	Delay Time	1000	ms
Over Current Protection	Trigger Current	3.5	A
	Delay Time	200	ms
Balancing Function	YES		
Short circuit	Delay Time	250-500	µs
	Manual reset	Disconnect The Load to Reset	
Thermal protection	High Temperature	60°C	
	Low Temperature	-20 °C	
Temperature Derating	-20°C to 60°C		
Derating Factor	0.9		

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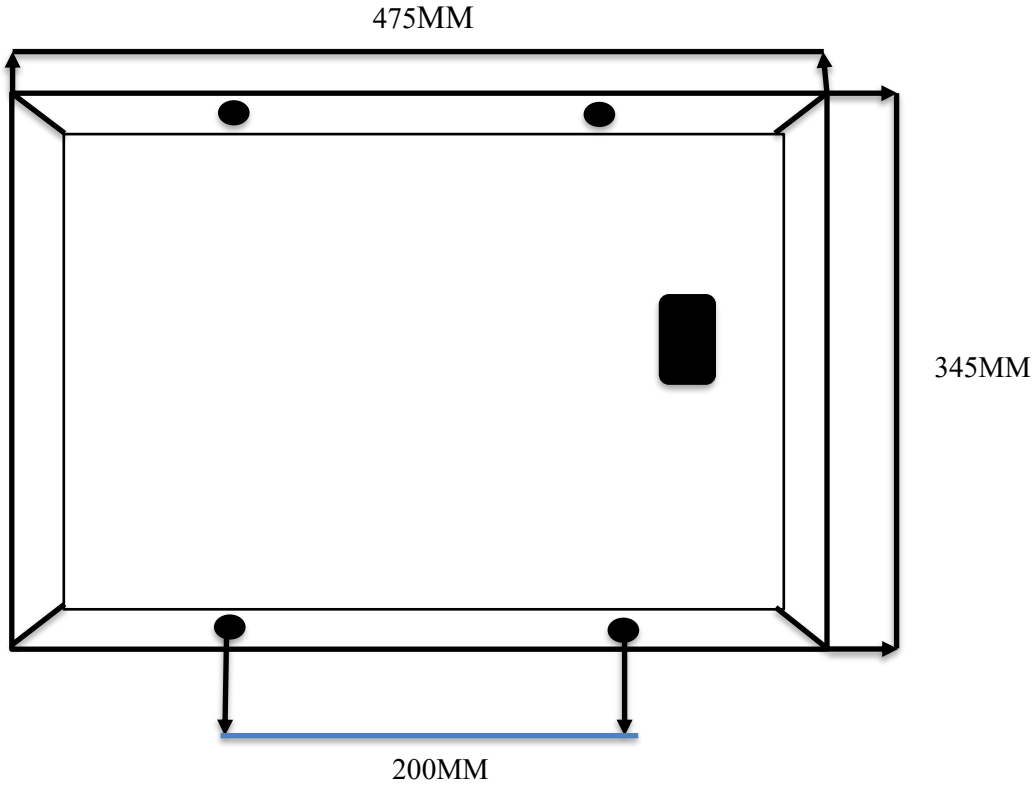
GSTN: 29AGZPN7927L1Z4

N KSOLAR
AN ISO 9001:2015

20W SOLAR MODULE DRAWING



1. Wattage: 20WP/12V
2. Module size: 475X345X18MM
3. Cell wattage, cut cell size and pattern may vary depending on the cell size.
4. Gap Between cells and cell edge to frame Edge may vary depending on the cell size.

5. **Characteristics:Model No NK-20-WP**
No of cells: 36cells
Peak power (W) 20±3%
Open circuit voltage (V):21.1V
Short circuit current (A):1.56A
Max. Power voltage (V):18.1V
Max. Power current (A):1.11A
STC: Irradiance 1000W/ m², Cell temperature 25° C, AM 1.5,

6.Temperature and coefficient: NOCT 45±2°C Limits, Coefficient current TK 0.1%/ °C Operating temperature limits -40°C to +85°C Coefficient

7. Due to continuous development and Product improvement, Company reserves the right to change / Alter without prior notice.

8. This Drawing is Property of N K SOLAR and may not be copied (in Whole or in Part Used for manufacturing Part) or Disclosed without Prior Consent of NK SOLAR.

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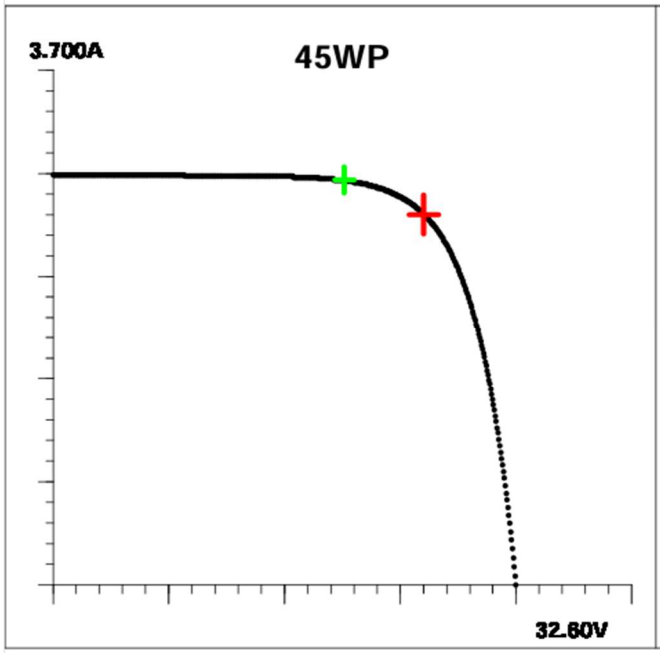

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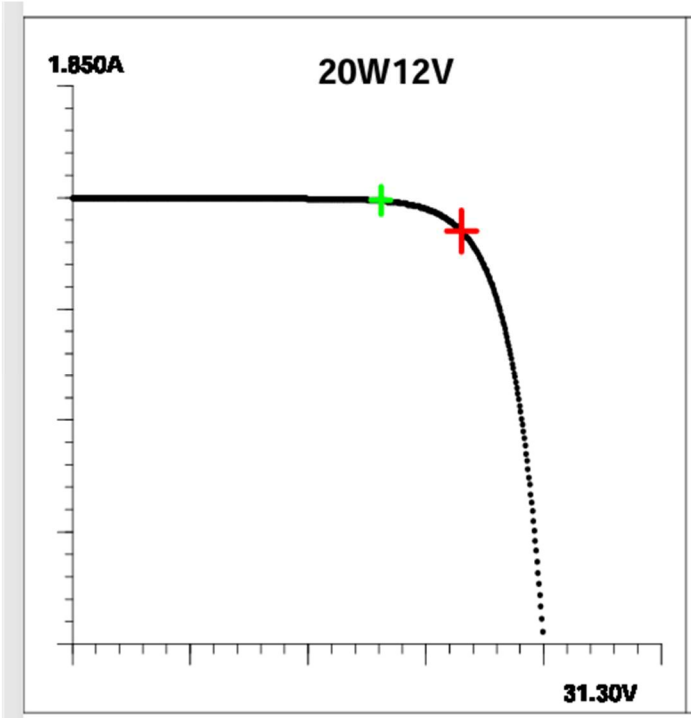
Type	M10_MONO
Id No	45W0234
Operator	NKSOLAR
CapVoltage	620.000
Insol W/M2	1000.0
Temp Test	021 DegC
Temp Corr	025 DegC
Voc(V)	26.08
Isc(A)	2.9467
Pmax(W)	55.71
Vmax(V)	20.89
Imax(A)	2.6674
FF (%)	72.49
V_Id (V)	16.40
I_Id (A)	2.9110
P_Id (W)	47.60
Cell_Eff (%)	28.7
Module_Eff (%)	19.9



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Id No	20W0419
Operator	NKSOLAR
CapVoltage	630.000
Insol W/M2	1000.0
Temp Test	021 DegC
Temp Corr	025 DegC
Voc(V)	25.04
Isc(A)	1.4785
Pmax(W)	28.32
Vmax(V)	20.68
Imax(A)	1.3689
FF (%)	76.50
V_Id (V)	16.40
I_Id (A)	1.4701
P_Id (W)	24.08
Cell_Eff (%)	27.6
Module_Eff (%)	19.3

Authorised signatory