

POWER FENCE SYSTEM

Basically, Electric fence also known as solar fence / Electric Security fence /Security fence / Power fence/Electro fence is divided into four major categories i.e. Agriculture fence, Forest fence, Security fence and High Security fence depending on its applications.

Agriculture fence:- Fence is designed to protect agriculture crops from domestic and wild animals like Wild Boar, Monkeys, Cows, Buffaloes, Gaur and Daisy etc. Fence design shall be exclusively to meet the targeted animal(s) installed around the crop using existing posts. Posts can be Wooden, RCC, Stone, etc. duly grouted on the ground to carry fence strands along the perimeter. Total number of strands, gap between stands height of the fence shall be designed based on the targeted animal(s).

Forest Fence:- Fence is designed to protect villages located in the forest or nearby forest areas. Main threat to the villagers shall be from wild Elephants and Bears. In general, the fence shall consist of 5 strands from ground level with fence height of about 6 feet. Recommended posts for the fence construction shall be MS galvanized of 8.5 feet length. Fence may also have elephant capping to protect metal posts from wild elephants.

Security Fence:- Security Fence is designed to keep out predators, thieves, trespassers and vandals. Major applications shall be to protect Residences, Godowns Manufacturing units, Gated Communities, Police Stations, Schools & Colleges etc., from any intrusion. System will not only detect but also deny intrusion by giving a short, sharp and safe shock to the intruder. It consists of minimum 10 strands on wall top (in general) and minimum number of Powering units. Powering unit shall consist of Single channel Energizer, Alarm unit, Charger, Battery, Metal enclosure and Neon tester.

Maximum length that can be covered using a Powering unit is 12000 running meters. Gate can also be electrified without causing any inconvenience to the users. It denies entry by climbing the gate. System shall raise an alarm upon: Tampering, cutting of strands, shorting of live and ground strands, Climbing fence with the help of heavy-duty insulation, Battery low, Unauthorized switching off Energizer etc. When properly designed and installed, a security fence is the least expensive, safest, and most secure method for securing property and lives when compared to walls, other types of fences, human guards and watchdogs. A well-designed electric fence has more deterrence value than a guard with a sawed-off shotgun or a snarling pit bull.

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High-security fence:- Advanced version of Security fence can be considered as High-security fence. It is designed to protect premises from all types of intrusions and make the perimeter a fool proof system. This is achieved through a PC based Central Control Room which will be controlling as well as monitoring all the Powering units installed in the premises. Control room operates on specially designed alarm management software. Entire perimeter is divided into zones depending on the level of security required. Zone length shall vary from 200 meters to 500 meters. Every powering unit will have a Dual channel Energizer, Alarm unit, Field Controller, Charger, Battery, Metallic enclosure and Digital Voltmeter. Depending on the requirement every gate can be treated as a separate zone or it can be a part of a zone. Field controller monitors the operation and intrusion of a specified zone(s) and communicated with control room located at a distance. Any cutting of cable will immediately trigger alarm at Control Room indication zone on the PC screen. Graphical representation of the perimeter is depicted on the PC with zones marked on it. Any tampering will be indicated real time with CCTV popup.



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Technical Details:-

- The system is a Non-Lethal Security system.
- The system operates as a Psychological and physical Barrier.
- The system alerts any kind of intrusion through an audio alarm System that can be in the vicinity of more than 300 meters, within a second.
- The security fence system will produce a high voltage at an energy output of 2.5 Joules, which will act as an active deterrent, a physical barrier and a reliable detection system.
- The security fence system produces a high voltage in the range of 6.0 kV to 9.9 kV (No load) to deter, detect and deny physical intrusion by giving the intruder a short, sharp and painful shock.
- The Energizer will be able to check the fence around 50 times a minute and the instant the pulsated wires are cut or tampered, a built-in-alarm will immediately alert the monitoring personnel and the security authorities, along with the zone of attempted break-in (Optional).
- External Alarm will be activated within a second. As a precautionary means an internal alarm is provided as a substitute in case of failure of external alarm.
- The Lead Acid Battery (Reputed Make) along with electronic system will be concealed in a Metal box. A Live light fixed on the fence will indicate the activeness of the power fence system.
- Auxiliary supply of 230V AC to be provided by the Customer.

Technical Specifications:-

- **Energizer:** - REM 250 complies with BIS 302-1-76 & IEC 60335-2-76 standards for safety.
 - A. Input voltage: 12 V DC
 - b. Power consumption: <17 VA
 - c. Output voltage: > 7 KV
 - d. Pulse interval: 1.2 second
 - e. Output energy: 2.5 Joules
 - f. Front Panel display: Fence ON and Pulse indication
 - g. Weather proof unit: ABS body
- **Fence Voltage Alarm (Inbuilt in Energizer):-** The unit is designed to sense any type of tampering / intrusion over the fence or system and activate the audio alarm within 1.2 seconds.
- **Battery (Reputed make):-** 12V / 42 AH Rechargeable Maintenance free Lead Acid Battery will be used for storing the energy and to power the Fence system. Battery has more than 2 days of back up to meet any emergency breakdown.
- **Charger:-** Solar PV module (Crystalline) of 12V / 40Wp capacity will be used as a battery charger. The Solar module will be from a MNRE approved manufacturer. Charge Control unit is used to regulate the charging of the Battery to avoid deep discharge and overcharge of the Battery.

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- **Lighting Diverter:-**Lighting diverter will be provided to protect the Solar security fence system from stray Lighting.
- **The details of the same are:-**Lightning can cause serious damage to the energizer. When lightning strikes close to or directly on electric fence, it causes a massive surge in voltage which flows back to the energizer to find the quickest path to earth.
- **Other Components:-** The Critical components used will be of good quality confirming to the general standards of each item will be supplied by us. Specific details of some of the Critical components are.
- **Insulator:-** Strain Insulators for End or Corner Posts: Made of High-quality virgin plastic Polypropylene rated for 15 KV UV Stabilized. Reel Insulators: Made of virgin Polypropylene plastic UV stabilized rated for 15KV operation. These insulators are used to guide the fence wire along the boundary through Intermediate posts. They provide anti-climb configuration to the fence.
- **Permanent Wire tighter:-** Made of special aluminum alloy non-rusting quality. It is used to maintain adequate tension of the fence wires along the boundary.
- **Earth System:-** It consists of 8 mm stainless steel rods or 1-inch die GI pipe with Galvanized clamps, 1-meter length along with a combination of chemical mixture for creating more conducive conditions for Electron flow.
- **Fence wire:-** 2.59mm diameter, High tensile wire with minimum of 230 gms /sq.m zinc coating thickness. UTS of 140.5 Kg/sq.mm and break strength of 740 Kgs.
- **Joining clamps:-** It is used to make joints between the fence wires or interconnection of fence wires with Double Insulated cable etc. It's a positive locking mechanism. The clamps are coated with zinc of more than 25 microns.
- **Warning signboards:-** It is made up of Polyethylene plastic with yellow background and black letters in English or local language on the front face. It will be fixed on the fence wires at every 10 meters.
- **Lead out cable or Double Insulated cable:-** It is made up of 12G hot dip Galvanized wire with 9mm thick insulation on it. It is used as underground cable to carry the supply from the system to the fence wire. It is also used to interconnect sections of fence length.
- **Fence Posts:-** The prefabricated posts are used to carry the fence wires along the boundary wall to protect the premises from any type of intrusion. The posts used are MS Pre-fabricated duly galvanized to ensure protection against rusting and long life.

The details of posts are as under:-

Pre-fabricated Corner posts	40mm sq. post duly galvanized of 5 feet length of which 1 foot will be grouted into the wall.
Intermediate posts	25x25x3mm T angular duly galvanized of 5 feet length.
Support posts	25 NB Class 'B' post for every corner post.

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Electric Fence Energizer: Model – REM 250 Version

Features:-

- Fence Energizer is an ideal choice for Sensitive areas with basic features.
- Designed specifically to offer exceptional value for money.
- Aesthetical look with ABS body.
- Easy to integrate with most professional alarm systems.
- Easy to install using simple but secure wiring.
- Reliable and expandable.
- **CE** marking in compliance with International safety standards vide No. IEC 60335-2-76, IS 8437 (Part - I - Human safety) and EMC directives.
- Can trigger an external device upon tampering.
- Front Panel display consists of LEDs to show real status of Fence.

Electrical Parameters:-

Operating Voltage	12V DC
Input Current	500 mA
Output Voltage	6 KV / 9.9 KV Pulsating.
Pulse Interval	1.2 Seconds (At 500 Ohms non inductive Load) 50 pulses per minute
Number of Pulses	3 milli Seconds (At 500 ohms non inductive Load) Pulse Width
Output Power	3 Joules

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Environmental Characteristics:-

Operating Environment	Outdoor use
Operating temperature	0 deg to 70 deg.
Radio Interference	C (IS 9000 (Part VI) Complies with EMC Directives

Dimensions:-

Length x Breadth x Height 325x 240 x 128 mm
 Weight without Battery 5.28 Kg



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Electric Fence Energizer: Model – REM 250 Version IS

Features:-

- Fence Energizer is an ideal choice for Sensitive areas / Establishments / zone wise installations.
- Micro-controller-based technology which can power a single line of fence for a recommended length of 7,500 meters.
- Designed specifically to offer exceptional value for money.
- Aesthetical look with ABS body having IPX4 rating.
- Easy to integrate with most professional alarm systems.
- Easy to install using simple but secure wiring.
- Reliable and expandable.
- CE marking in compliance with Indian & International safety standards vide No. IS 302-2-76 (1999), IEC 60335-2-76, IS 8437 (Part - I - Human safety) and EMC directives.
- Can trigger an external device upon tampering using potential free contacts.
- Fence Energizer can be used as an independent system or can be interfaced to a Central Monitoring station through TCP / IP.
- Suitable for Multi-level security applications.
- Front Panel display consists of LEDs and LCD.

Electrical parameters:-

Operating Voltage	12V DC
Input Voltage	12V DC OR 230 V / 50 Hz (Optional)
Input current	750 mA
Output Voltage	1 to 9.9 KV Pulsating (Adjustable with on-board keypad)
Pulse interval	1.2 Seconds (At 500 Ohms non inductive Load)
Number of pulses	50 pulses per minute (Selectable).
Pulse width	3 milli Seconds (At 500 ohms non inductive Load)
Output Power	Up to 5 Joules (Variable)

Environmental Characteristics:-

Operating Environment	Outdoor Use
Operating temperature	- 20deg to 70 deg. C IS 9000 (Part - VI)
Operating Humidity	0 to 95% (non-condensing)
Radio Interference	Complies with EMC Directives

Dimensions:-

Length x Breadth x Height	325 x 240 x 128 mm
Weight with 7 AH Battery	5.28 Kg



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Other Features:-

Number of channels	High / Low voltage - 1 no. with loop monitoring
Alarm Output	12V DC
Fence ON / OFF	Using on board Keypad / Through Interface
Operation Password	User password for regular use and Master password for programming.
Connectivity for Interface	TCP / IP with HTTP2 Protocol
Number of configurable outputs	4, used for interfacing / controlling / monitoring.
Number of configurable Inputs	4
Output Relay rating	12V / 6 A
MTBF	200,000 hours
Front panel display	Mains ON LED
	Fence ON LED
	Check indication LED
	Alarm indication LED
	Facility to display status of 4 Inputs
Compatibility	All models of Remcon Fence Secure Software with IPV4 and 6.
Operation	Menu driven operation for easy navigation.
User Monitoring	Thru TCP/IP
Storage of events	Internal Flash.
Bandwidth	Less than 1 Mbps.
Configurable Fence Parameters	FENCE VOLTAGE: From 1 KV to 9.9 KV with 0.1 resolution.
	Number of Missing Pulses from 1 to 10
	pulses Alarm ON Time and Re-Arm time
	Can trigger a gadget for a predetermined period through 12V / 6 A relay.
Synchronization	Using Multi-Zone Networking Device vide model No. REM-250ND
Alarm indication	Upon Fence Tamper by causing Voltage drop.
	Wire disconnect / Cut, Energizer tamper
	Any additional Alarm as required by Customer.
Protection	Short circuit protection.



Following parameters can be viewed using **Front Panel Keypad and LCD** OR **from Web Browser using In-built Web server:**

Fence voltage, SPV voltage, Battery voltage, Mains status and settings for Alarms.

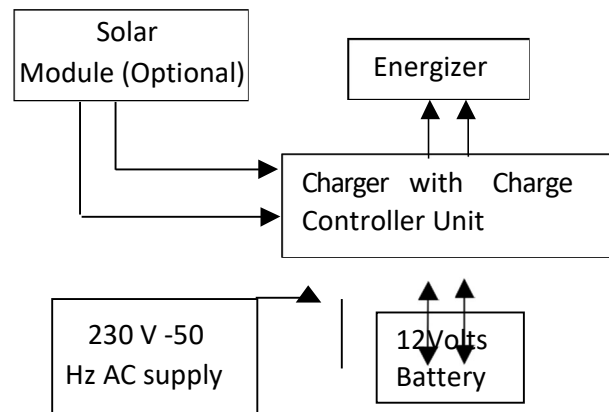
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CHARGER UNIT (RCU)

RCU is an important component in Power fence system as it ensures the healthiness of the battery. It has built-in micro controller which ensure charging through Solar PV module and in case of non-availability of Solar energy it will automatically switch over to Conventional charging mode. 12V Maintenance free / Low maintenance battery (Maximum capacity of the Battery can be of 12V / 120AH rating) can be charged as under:

- Using a Solar module which converts Light energy into DC energy and can charge a battery through a Charge Control unit. A maximum of 12V / 120 Wp Solar module can be connected to the RCU.
- Using a 230V, 50 Hz conventional supply (Range 90V to 260V) is fed to the Battery through a Charge Control Unit, which initiates charging.
- It has a 12V DC Load point to which a maximum of 2 nos. of REM 250 Energizers can be connected.

BLOCK SCHEMATIC DIAGRAM



Charge Controller Unit: It is the heart of the Charger since it controls the charging, discharging along with cut-off and cut-in protections. CCU will never allow the Battery to overcharge by disconnecting the Solar module / DC supply after it attains full charge. CCU will also protect the battery from deep discharge by disconnecting the Energizers (Load) upon reaching predetermined Battery voltage.

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Specifications:-

- Battery under voltage cut off: 10.5 V
- Battery over charge cut off: 13.8 V
- Battery re-connect voltage: 11.5 V
- Charging current (Max): 8 A
- Reverse polarity protection
- Short circuit protection
- Load short circuit protection: Fuse

Connections:-

- Solar PV input
- Battery
- Load (energizers and other 12V operated devices)
- Load cut off switch
- 230V AC input

Dimension:-

- 250 x 130 x 75 mm
- Weight: 1.7 Kg

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