



MILITARY COLLEGE OF SIGNALS

UNATTENDED GR SENSOR (UGS) SYS

UGS sys is an early wng sys dev by MCS which can be used for surv and intrusion detection in unattended areas/gaps in def, border access con and perimeter security. The system comprises of three basic components incl Sensor Node, Media Exch Gateway (MEG) and Comd, Con & Int (C2I), power sta.

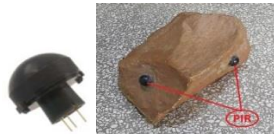
COMPONENTS OF SYSTEM.

1. SENSOR NODES

UGS sys comprises of three diff types of sensors to incl PIR, MW and Seismic. PIR and Seismic sensors are passive while MW is active sensor.

a. PIR.

Range > 25-30ft
Battery Life > 60 days.



b. SEISMIC.

Range > 150 ft (in radius)
Battery Life > 60 days



c. MW.

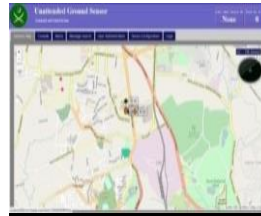
Range > 25-30ft
Battery Life > 60 days



2. MEG. MEG is a mini cptr equipped with a Zigbee module to receive and process data from sensor nodes over wireless link. It provides interface between the sensor nodes and C2I over wired Ethernet connection.



3. C2I. C2I serves as a user interface to view sensor node info in real time. It provides geo tagging of sensor nodes on satellite imagery/terrain and roadmaps. The alert msg is depicted by red circles animation and audible alarm generated for 30 secs.



4. Power Sys

UGS sys for sensor node is powered by 3.7VDC, 10400mAHc Lithium Ion, which provides 60 x days of continuous op, whereas C2I and MEG are provided with a 24 hrs solar powered hybrid UPS (solar/main AC).

HOW TO START SYSTEM.

- Turn on the laptop (C2I sys)
- Open Firefox and there is bookmark on Firefox click on that or enter the following URL
localhost:8080/cnc/login
- Connect the MEG by Ethernet port
- Turn on the MEG.
- Turn on the sensor to check the communication. (If any popup appears on C2I screen then communication is OK)

HOW TO DEPLOY.

- Deployment of UGS is very important and should be quite tricky. With limited number of sensors we need to cover the maximum vulnerable area. So for deployments always choose the most threaten area. Placement of sensors is another aspect and very important. PIR dots on top of sensor should point towards the vulnerable path and zone.
- All sensors are equipped with GPS module. Wherever you want to deploy the sensor simply turn-off your sensor and take it to the required location and turn-on the power button. Sensor will automatically detect the current GPS location and send GPS coordinates to the C2I laptop. C2I system will automatically place the sensor on actual location on map by using GPS coordinates.
 - PIR NODE DEPLOYMENT

Normally we have 3 PIR with each sensor node. Each PIR node covers a specific area and we need to point out this node towards vulnerable area.

○ MW NODE DEPLOYMENT

MW is combination of PIR and Microwave. MW and PIR both should face towards the vulnerable area.

○ SEISMIC NODE DEPLOYMENT

Seismic sensor covers more area than other sensors. It works on vibrations in ground and it should be deployed on vulnerable area not on path but on one side of path.

HOW TO RECHARGE BATTERY.

- Open the screws of sensor node
- Open the white box
- Unplug the battery
- Plug-in the charged battery (spare) to sensor so that there should not be any down time.
- Bring back the battery with you on post and plug it into charger with power solution.
- Red light should indicate to make sure that charging is in progress.
- When green light on, it means charging is complete and unplug the battery from charger.
- Now your battery is ready to replace with any sensor.

PRECAUTIONS.

- C2I laptop and all other components are sensitive and breakable components. Keep all components very secure and safe from any kind of shock or dust/water.
- Do not plug anything other than UGS items into power solution.
- Sensor node can be placed in sunlight but sensor should not face the sun directly.

TROUBLESHOOT.

- If alert is not being received refresh the Firefox by F5 button on keyboard of C2I or click the refresh icon of Firefox.
- Check that MEG device is on or not.
- If MEG is already on then check the Ethernet cable is connected or not.
- If Ethernet is ok then try to ping the MEG with this command in terminal window
ping 192.168.100.2
- If you receive packets from MEG then it means communication of C2I and MEG is successful.

- Now check the python service is running on C2I system with following command

ps -x | grep python

- Python service should run in background to receive alerts.
- If on login Python service is not running then there is shortcut on Desktop “MEG-C2I_Service”. Double click the shortcut to run the service.
- If project URL is not working or showing error message on Firefox then you need to check the Tomcat (Server) is running or not. To run the Tomcat server shortcut on desktop “Start Tomcat for C2I”, double click this shortcut to run the Tomcat.