

## **AUTOMATIC DISH ANTENNA POSITIONING SYSTEM**

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### **ABSTRACT**

**Dish antenna positioning is very important for getting broadcast signals from a satellite. If the dish position is adjusted manually, it becomes difficult to align it at the best possible position. In order to achieve the best possible position of the dish we can rotate the dish using remote operation and automatically. The main aim of this project is to control a dish position automatically, which is capable of receiving the standard broadcast signals from the satellite. According to maximum signal strength dish will rotate automatically. It will rotate horizontal as well as vertical direction. So in order to overcome the difficulty of adjusting manually, this proposed system helps in adjusting the position of the dish through an Android application device or bluetooth. Android application may be achieved by any smart-phone/Tablet etc.**

**General Terms: Microcontroller, power meter**

**Keywords: Bluetooth module or android application**

### **1. INTRODUCTION**

Antenna is used in many applications such as RADAR, DTH etc. so dish cannot be adjusted manually in large applications. So proposed system helps to adjust the dish using android application. In this proposed system power meter plays a vital role. Power meter is used to measure the maximum signal strength. According to received signal from power meter, dish will rotate automatically. This proposed system helps to reduce the human efforts especially in large applications. This system uses two stepper motors which enables it to move in horizontal and vertical direction.

### **2. LITERATURE SURVEY**

Amritha Mary A. S, Divyasree M V, Jesna Prem, Kavyasree S M, Keerthana Vasu proposed a system "Microcontroller Based Wireless 3D Position Control for Antenna", this system is based on android application and Raspberry pi. This system controls the movement of the dish antenna in all directions through an android application. It uses the servo motor to move the dish in the desired direction. Raspberry pi is the main controlling element in this system. The disadvantage of this system is we have to enter the angle for the rotation. Prajwal Basnet, Pranjal Grover, Preeti Pannu proposed

"Remote Alignment of Dish Positioning By Android Application", this proposed system helps in adjusting the position of the dish through an Android application device. Remote operation is achieved by any smart-phone/Tablet etc., with Android OS, upon a GUI (Graphical User Interface) based touch screen operation. This system consists of two motors that enable the dish to move both in horizontal and vertical direction. The Android application device acts as a transmitter whose data is received by Bluetooth device which is interfaced to a microcontroller of Arduino family. The microcontroller sends control signals to the motors through an interface IC also known as motor driver IC. Emad A. Gabbar, Moh. Alhasan, Abdelrasoul Jabar Alzubaidi proposed "A design of Software Driver for A satellite Dish Antenna Positioning System" This project deals with designing a Satellite Dish Antenna Positioning System using stepper motors. The system's software uses longitude, latitude of the dish position (antenna site) and the satellite longitude as an input data. The software makes different calculations to transform this data to digits. The digits are then transformed to signals and fed to the stepper motors drivers to move the antenna adjusting azimuth, elevation and polarization angles to the intended satellite. The paper aims to describe the algorithm and flow-chart of the system's software which allows users controlling and adjusting the antenna remotely. Also it aims to show the outputs of the software that will be transformed to signals to control the system's hardware drivers. Me Me Kyaw Oo, Chaw Myat Nwe and Hla Myo Tun proposed "Satellite Dish Positioning Control by DC Motor Using IR Remote Control" In this PIC microcontroller was designed to develop a satellite dish positioning system which can be operated by using a remote control. In order to get the exact angle of position of the dish, it needs to be adjusted manually. In order to overcome the difficulty of adjusting manually, this paper helps in adjusting the position of the dish through a remote control. Remote control acts as a transmitter whose data is received by an IR receiver which is interfaced to a microcontroller of PIC 16F877A. The remote control sends coded data to the receiver whose output is then sent to the microcontroller. The microcontroller sends the control signals to the motor through an interface known as relay driver.

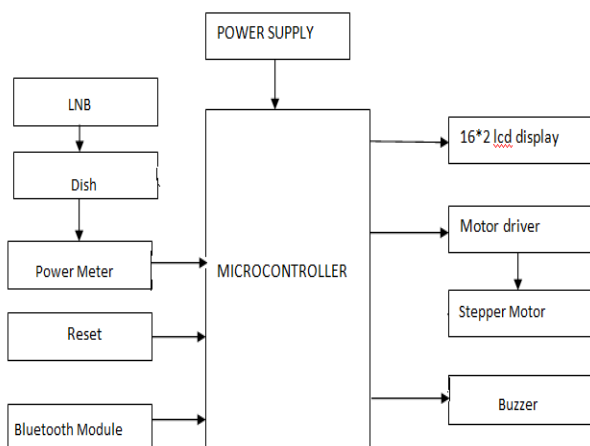
Surya Deo Choudhary, Pankaj Rai, Arvind Kumar, Irshad Alam proposed "Microcontroller based wireless

automatic antennae positioning system” In this the tracking system has an antenna which contains a receiver, a delay circuit and a base transmitter. The receiver is placed at the center point of the antenna. Whenever the receiver receives a signal with adequate strength, a logic high pulse is generated by a monostable configured around a 555 Timer. To avoid interference and unnecessary triggering, a time delay is provided. And 8nos. of IR receiver (photo diode) arranged around the antenna to detect the position of antenna. All the receivers output are connected to the microcontroller through a signal conditioning circuit for a compatible output to the Microcontroller. The logic level is continuously checked with proper time delay. As long as the controller senses the logic high the motor will stay at that place assuming the signal is available to the antenna and the position of antenna will display on LCD in degrees. Whenever there is no signal or logic low level appearing, the controller will drive the motor to search a signal i.e. logic high at the controller input port. The controller will continuously repeat this process to track the antenna for a particular signal.

### 3. BLOCK DIAGRAM

In this proposed system we are using stepper motor which will move horizontal and vertical direction according to direction dish will move in both directions. power meter will measure maximum power and it will give to the set up box and to the microcontroller and it will process on it. The Bluetooth device sent data to the Arduino which is transmitted from Android application device. The microcontroller sends control signals to the motors through an interface IC also known as motor driver IC.

16\*2 lcd display will display microcontroller output. Buzzer is used to reset and indication.

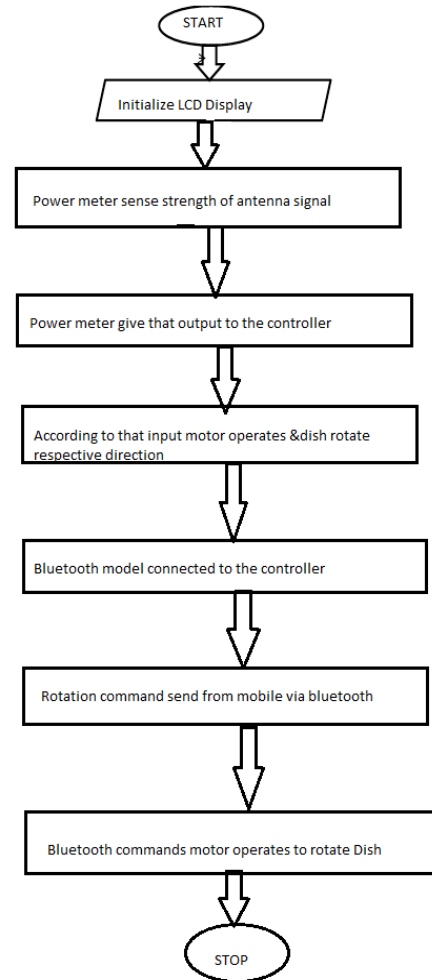


**Fig 1: Block Diagram**

### 4. WORKING

Power Meter is the main part of this proposed system, which is automatic rotation of the dish antenna. It receives the maximum signal strength and rotates in that particular direction using a stepper motor having high torque. So this system works automatically in horizontal as well as vertical direction.

### 5. FLOWCHART



**Fig 2: Flowchart**

### 6. REFERENCES

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