

November Club Meeting

Date: Friday, November 19, 2010
Time: Socializing at 7 pm, Meeting at 7:30 pm
Place: Covington School, 205 Covington Road, Los Altos (near Foothill Expressway and El Monte Road)

Speaker: Howard Califf, [W6HOC](#)

Topic: Holiday Treats for Radio Amateurs

Summary: Just in time for the holidays and increasing sunspot numbers, Howard Califf W6HOC will show the latest and greatest in new and fun amateur radio gear.



Everything from station accessories to tools to rigs and antennas will be on display. Be sure to attend to find out about special holiday promotions too. Happy Holidays!

Howard Califf W6HOC (file photo)

Snacks: Cookies and coffee will be served.

Questions: Bring your hardest radio questions. The mysterious Dr. Know-It-All reveals all answers.

Pre-Meeting Dinner: 6pm at the Beausejour Restaurant, 170 State St., Los Altos. Great "Prix Fixe" dinner menu.

November Raffle Prizes

The prizes for the raffle at the November meeting are:

First Prize: Fluke Model 115 True RMS Multimeter



Second Prize: MFJ Mod-1722 Ultralite Dual Band 144/440 Mhz Mag Mount Antenna (<http://www.mfjenterprises.com>)

Third Prize: NIFTY – Amateur Radio Band Plan

Upcoming Events

Nov 19	7:00 pm, Club Meeting , Covington School
Dec 2	7:30 pm, Board Mtg at the Los Altos Town Crier
Dec 11	8 am to 6 pm, Am-Tech Day , SLAC NAL
Dec 17	7:00 pm, Club Meeting , Covington School
Jan 6	7:30 pm, Board Mtg at the Los Altos Town Crier
Jan 21	6:00 pm, Winter Banquet , Michael's in Mtn View
Thursdays	8:00 pm, FARS net, 145.230(-), 100 Hz PL

For details and additional events, see the [FARS Calendar](#) <<http://www.fars.k6ya.org/events/calendar>>

President's Corner



Membership Meeting. Our next regular meeting is Friday, November 19th at 7pm. The program is "**Holiday Treats for Radio Amateurs**" presented by Howard Califf W6HOC, Ham Radio Outlet. Just in time for the holidays and increasing sunspot numbers, Howard shows the latest and greatest in new and fun amateur radio gear.

Am-Tech Day. The next Am-Tech Day is scheduled for December 11th. Don't miss out! There will be food, radios, and hams. Check the web site (k6ya.org/amtechday/) or the email list (k6ya.org/mail/) for the date and program information.

FARS/PAARA Winter Banquet 2011. The Banquet has been scheduled for Friday, January 21st. PAARA joins with FARS once a year to put on this fabulous fete. We will have a fabulous dinner, a great speaker, and ~\$800 in raffle prizes. Be sure to reserve that date, as we shall soon be taking sign-ups for the banquet. More details and sign-up information can be found at (k6ya.org/events/banquet).

Board of Directors Election, November 19th. Our November membership meeting is our annual membership meeting. All members are encouraged to attend and exercise their right to vote. There are two board seats up for election this year. The FARS board has nominated Mark Hardy, K6MDH, and Kevin Weiler, K6XXX to each continue for another 3-year term

Email Notices. Subscribe to the FARS Announcement list (k6ya.org/mail/) to receive reminders of FARS activities and other news.

de Mikel, KN6QI

October Meeting Report

Dave Wolfe, [AA6XV](#), spoke on Learning to Operate Morse. He covered various aspects of operating CW, aimed at people who have not operated CW before, or are perhaps returning to it after being off for a while. It was a popular and well received presentation that indeed sparked interest in new CW operators.



Photo Credit Robert Fiemate



Dave Wolfe AA6XV **Ken, Tom, Lloyd and Greg**
October Speaker (file photo) **October Raffle Winners**

The first prize, a Powerwerx SS-30DV Switching Power Supply, was taken home by Ken Ashe KI6HLQ. Tom Arnold AF6YW won the 2nd prize, a Maha MH-C9000 Wizard One Charger Analyzer. 3rd prize, a 2010 Northern California Repeater Directory, was won by Lloyd DeVaughns KD6FJI. Finally, Greg Miller WY6P won the 4th prize, a ARRL Repeater Directory.

CLUB INFORMATION

www.fars.k6ya.org

President: Mikel Lechner KN6QI
Vice President: Steve Stearns K6OIK
Treasurer: David Cooper K6WA
Secretary:
Radio Officer: Phil Hawkins KA6MZE
Training Officer: Kevin Weiler K6XXX
Relay Editor: Joanna Dilley K6YRU
FARS Board: Dick Baldwinson N6ATD
Peter Chow AF6DS
Robert Flemate KE6TFU
Charlie Morrin KI6FXY
Barbara Neuhauser AE6RM
K6YA Trustee: Phil Hawkins KA6MZE
FARS Web Page: <http://www.fars.k6ya.org>
FARS Relay: <http://www.fars.k6ya.org/relay>

Club members and non-members are encouraged to subscribe to the FARS Announcement list by browsing www.fars.k6ya.org/mail, clicking on Subscribe/Unsubscribe and following the instructions under "Subscribing to fars-announce".

You may submit announcements to the FARS Announcement at fars-announce@svpal.org. The list is moderated and messages will be posted as approved by the list moderator.

Contact the FARS board of directors at fars-board@svpal.org

Club meetings are held at 7 PM on the fourth Friday of each month except January (Winter Banquet); and sometimes there are changes for June (for Field Day) and November & December (for holidays).

Annual club membership is \$20. Club badges are \$9. Visitors are always welcome! Directions in this newsletter. Talk-in: N6NFI (145.23-, 100 Hz) or W6ASH repeater (145.27-, 100 Hz).

FARS *Relay* is the official monthly newsletter of the Foothills Amateur Radio Society. Contributions to the newsletter from members, family, and guests are earnestly solicited! Contributions are subject to editing and/or compression. All readable forms welcome.

Here is how to reach the editor:

Joanna Dilley K6YRU
PO Box 51985
Palo Alto, CA 4303
Email: joanna.K6YRU@gmail.com
Also available at FARS meetings.

CW in Concert

Members of FARS have been invited to listen to the Foothill Symphonic Winds concert at Cubberly Auditorium in Palo Alto on December 12th at 3:30pm. They're playing "Land of Perpetual Ice" by Greg Butcher, a piece about an expedition to Antarctica.

Why invite hams? In one section of the piece the whole ensemble will play Morse code (the music is annotated "actual Morse code") and they'd be pleased to see someone in the audience who can understand and appreciate it. ☺

Intrigued? Please report back if you attend! See http://www.windband.org/foothill/#Concert_Schedule but note the 3:30pm start time instead of the listed 2:30pm start time.

Wednesday Luncheon Hits 179th Week Mark

Members of the Fresh Choice Restaurant staff pleasantly greeted those who attended "Arv's Lunch" #179 on October 13, 2010. Named by **Dave K6WA** after one of The Societies' own Honorary Members, **Arvid Hamer WA6UUT**, the longevity of this activity can be attributed to the good times had by all that attend this casual and informal weekly get-together.

As has been the custom on most Wednesdays, **Arv WA6UUT** and **Dave K6WA** arrived promptly at 11:30 AM to start off the meal & to set up several tables for those arriving later.

With up to 15 attendees at once in the past, those who marked the occasion remarked about the number of meals enjoyed in the great company of other Amateurs & their friends.

The luncheon takes place at the Fresh Choice Restaurant in Mountain View, starting at 11:30 and continuing for several hours. The facility is located at 2540 West El Camino Real, between San Antonio Road & Showers Drive.

Come by and enjoy a relaxing chat with friendly Amateurs and their friends, while feasting on tasty food that you select yourself from the bountiful presentations available.

(Publication delay: activity now at the 183rd week!)

Operating News:

A few FARS members had the opportunity to participate in the CQ Magazine World Wide DX Phone Contest at the end of October. QTH: Stanford's W6YX. The team contacted over 100 countries on 10M through 160M.



Jake N6EWS (left) and
Dave AA6XV (right)



John K6JK (left) and
Joanna K6YRU (right)

Interested in CW?

The CW CQWW DX Contest is Nov. 27-28th. US & DX!
See <http://www.cqww.com/> for details on the exchange.

ON THE AIR THIS WEEKEND

This weekend Nov. 20-21st is ARRL's 2010 Sweepstakes!
See <http://www.arrl.org/sweepstakes> for details. US & Canada

AMATEUR RADIO – TECHNOLOGY DAY

August 28, 2010
Amateur Radio – Technology Day (#68)



VOLUNTEERS:

Morning Activity Set-up Crew, Team 68

Photo © Robert KE6TFU

Shown L to R front row: **Phil KA6MZE***, **Arv WA6UUT**, **Charlie KI6FX,*** **Barbara AE6RM*** (with doughnut).

Shown L to R back row: **Dave K6WA***, **Michael KJ6CHX**, **Chris KJ6IVM**, **Randy KJ6IVN**, **Robert KE6TFU*** (going for the doughnut).

VOLUNTEERS:

Evening Activity Recovery Crew, Team 68

(No photo taken)

Dave K6WA*, **Joanna K6YRU**, **Kevin K6XXX***, **Phil KA6MZE***, **Doug KG6LWE**, **Keith KG6ZJI**, **Viki KI6WDS**, **Christopher Poda**.

*Denotes FARS Board of Directors member

An enjoyable time was had by all attendees, indeed, during this 68th Am – Tech Day. For example, there were numerous antenna experiments performed on the “antenna lawn” outside the main building we use at the SLAC National Accelerator Laboratory in Menlo Park.

Some antennas were used with low powered rigs that were positioned outside the antenna lawn on the various picnic tables arrayed alongside of the lawn area. With an Eastern-facing slope at about 300 feet elevation, one could have likely captured a fair amount of long distance communications traffic while munching on a tasty Am – Tech Day lunch or one of the many available snacks on hand during the event.

Doug KG6LWE completed the necessary marking & adjustments to his portable multi-element beam antenna, with apparently great contacts resulting subsequently during an operating trip with others to Alcatraz Island in San Francisco Bay.

Doug’s work with his antenna was done concurrently with performing his volunteer mission as the “hot grill wrangler”, with many a well-fed amateur thankful for his multitasking skills. The hotdogs, hamburgers & “veggie burgers” were enjoyed by most of the hungry participants hot. off of the grill, as well as several other tasty items that are typically served each month



Doug KG6LWE preparing for Alcatraz
Photo © Joanna K6YRU



The **K6YA** Get-On-The-Air Station, ready for some QSO’s
Photo © Joanna K6YRU

AMATEUR RADIO – TECHNOLOGY DAY

September 18, 2010
Amateur Radio – Technology Day (#69)



VOLUNTEERS:

Morning Activity Set-up Crew, Team 69

Photo © Robert KE6TFU

Shown L to R front row: **Phil KA6MZE***, **Arv WA6UUT**, **Joanna K6YRU**, **Jacob N6EWS**.

Shown L to R back row: **Dave K6WA***, **Christopher AE6HL**, **Robert KE6TFU***.

*Denotes FARS Board of Directors member



VOLUNTEERS:

Evening Activity Recovery Crew, Team 69

Photo © Robert KE6TFU

Shown L to R front row: **Phil KA6MZE***, **Robert KG6UWZ**, **Joanna K6YRU**, **Jacob N6EWS**.

Shown L to R back row: **Dave K6WA***, **Senthi KJ6KCG**, **Christopher AE6HL** <--Note: has call sign this month!, **Robert KE6TFU**

AMATEUR RADIO – TECHNOLOGY DAY

October 23, 2010
Amateur Radio – Technology Day (#70)



A formal presentation in the Panofski Auditorium this October was provided by **Tim Barrett K6BIV**, who presented D-Star, Ham Radio for the 21st Century. Tim is trustee of the KM6DD D-Star Repeater, which has the largest user base in the world. He is also trustee for the K6PIT repeater, owner of IRLP Node 8420 and EchoIRLP Node 62684. Both an enthusiastic & very knowledgeable amateur, Tim kept the audience both educated and focused on the many various aspects of the D-Star Communications System. Tim is shown during his presentation as he emphasizes a significant aspect of D-Star & D-Star Dongle.

Tim K6BIV

Photo © Dave K6WA

AMATEUR RADIO – TECHNOLOGY DAY

October 23, 2010
Amateur Radio – Technology Day (#70)



VOLUNTEERS:

Morning Activity Set-up Crew, Team 70

Photo © Dave K6WA

Shown L to R front row: **Phil KA6MZE***, **Charlie KF6CUU**, **Bob W6LOG**, **Arv WA6UUT**.

Shown L to R back row: **John K6PKT**.

Not pictured: **Dave K6WA***, **Joanna K6YRU**, **Doug KG6LWE**

*It looks like **Charlie KF6CUU** has a little sign he is displaying. Does that say "Scientists like Am – Tech Day"? (Charlie is a retired physicist).*



VOLUNTEERS:

Evening Activity Recovery Crew, Team 70

Photo © Dave, K6WA

Shown L to R front row: **Phil KA6MZE***, **Kristen K6WX**, **Joanna K6YRU**, **Lloyd KD6FJI**

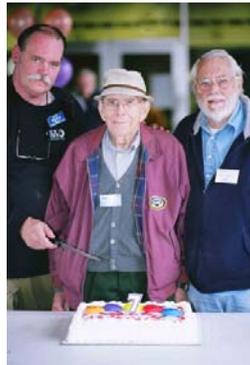
Shown L to R back row: **Dave K6WA***, **Kit WA6PWW**, **Jake N6EWS**

*Denotes FARS Board of Directors member

This Am – Tech Day #70 was our 6th Anniversary of the initial event (then called "Ham Day") held at Sunnyvale Baylands Park. The day featured the use of Special Event Station N6T and acknowledged another year of this once-a-month activity.



Charlie KF6CUU, in an animated talk with **Ting BG2VJU**, a plastic surgeon visiting the Bay Area from Mainland China.



Ready to cut the cake are **Dave K6WA**, **Arv WA6UUT** and **Mike W6WZ**.



The special Am – Tech Day cake enjoyed by the many attendees, starting our 7th year!

Photos © Dave K6WA

AMATEUR RADIO – TECHNOLOGY DAY

November 13, 2010
Amateur Radio – Technology Day (#71)



VOLUNTEERS:

Morning Activity Set-up Crew, Team 71

Photo © Robert KE6TFU

Shown L to R front row: **Phil KA6MZE***, **Charlie KF6CUU**, **Arv WA6UUT**, **Robert KE6TFU***.

Shown L to R back row: **Dave K6WA***, **Charlie KI6FX**

Not pictured: **Joanna K6YRU**, **Doug KG6LWE**

*Denotes FARS Board of Directors member



VOLUNTEERS:

Evening Activity Recovery Crew, Team 71

Photo © Robert KE6TFU

Shown L to R front row: **Kristin K6WX**, **Paul VK5FPAW**,
second row: **Phil KA6MZE***, **Mikel KN6QI***, **Doug KG6LWE**, **Gordon KI6UH**.

Shown L to R back row: **Dave K6WA***, **Jeff AK6TG**, **Kevin K6XXX***, **Robert KE6TFU***.

Not pictured: **Joanna K6YRU**

Highlights of this Am – Tech Day included the Feature Presentation by Umesh Ghodke, K6VUG, titled D-Star 101: A Look at This New Technology And The Demonstration Of How Simple And Exciting It Can Be. With a view towards the end users perspective, Umesh was able to show all participants how easy D-Star can be. Using both Powerpoint® slides and a D-Star radio as his tools, he gave what may initially seem complex, an air of simplicity. All questions were answered and he stayed focused on the best approaches to transfer his ideas about a great level of operating simplicity with this digital communications mode.

Many amateurs enjoyed experimenting with various antenna configurations on our antenna field. Several observers (and participants) made positive comments, including Paul VK5FPAW, who was returning to Australia on the following Monday. Paul said that they didn't have anything like Am – Tech Day in Australia, so I suggested that he start one up!

Dave, K6WA



Amateur radio enthusiasts taking advantage of the incredible Am – Tech Day location and helpful input of fellow operators. New antennas, home-brew projects, and numerous modes from CW to PSK-31 can be seen at Am – Tech Day.

Photos © Joanna K6YRU

A Home-brew Rotor Controller and Position Indication Project

By Nimit Hongyim - K6XOX

This project began from the time I found 2 DC motors with a built-in gearbox for \$40 USD from the De Anza Electronics Flea-market. I always wanted to build something like this but never had the chance to start. Now with the motor in hand I needed to lay-out the idea on how to make it happen by search all the resource from internet. I have all kinds of problems lined up such as:



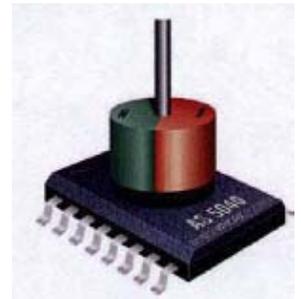
- How to mount the antenna on this small rotor
- How will the program know where the motor is positioned
- How to get the data out from 'Orbitron' (satellite tracking s/w)
- How to control the DC motor using only one signal on each direction
- How to connect the 2 motors from AZ and EL using scrap aluminum

Introduction

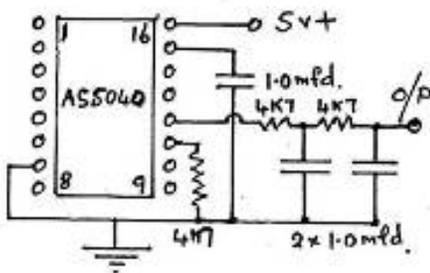
This project describes a complete azimuth and elevation readout system that outputs to array driving motors. Motor movement may be initiated by either front panel switches, or by external computer control. The system interfaces to the satellite prediction program 'Orbitron'.

The traditional method of determining the direction of rotor position is to use a linear potentiometer driven by a gearing system to convert 360 degrees to the 270 degree motion of the potentiometer. A bridge circuit with a calibrated meter enables the direction to be read out. The potentiometer method has the advantage of providing an 'absolute' reading. But it was difficult to find the POT with perfect linear and support with absolute readout as 0 v – 0 degree , 2.5 volt for 180 and full scale with 360 degree with 5 volt. I spent time finding so many of POT on HSC and EBAY only to find none of them worked at all. So then I decided to Google using keyword "DC motor position" and I found one from **John Drew VK5DJ** <http://vk5dj.mountgambier.org>. This gave me the bright idea on how to encode the position for the DC motor.

The AS5040 was produced to provide the radial location of steering wheels, accelerator pedals etc in fly by wire applications. The chip is capable of providing accurate readouts without missing a location on a shaft rotating at 600RPM. It is not anticipated that the capabilities of the chip will be stressed by beam rotation speeds! The chip samples each location at 12KHz. Position is determined by a rotating, small diametral magnet (6mm * 2.5mm) using NdFeB alloy. It is nickel coated as the material is quite brittle. The magnet is placed 1-3mm above/below the AS5040 chip and an alignment better than 0.25mm. Fortunately the chip supports a calibrate mode to allow fine adjustment. The AS5040 is a small surface mount device and measures about 6mm*5mm. The chip manufacturer's Website is <http://www.austriamicrosystems.com/04segments/industry/AS5040.htm>

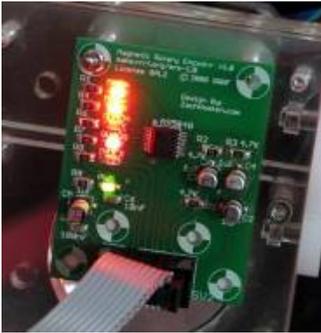


Analogue output from an AS5040/45



By integrating the PWM output available from both the AS5040 it is possible to output a 0 to +5V signal. A simple resistor/capacitor combination on the PWM output will do and this can then be fed to either the A/D converter in the shack unit, use it as a substitute for the potentiometer input, or even simpler, scale it with a pair of resistors (or a potentiometer) as a replacement for a pot. I fed to the GS-5600 Yaesu rotor control by using LM324 as Voltage follower technique.

As we are only interested in the analog output the circuit is simple, a regulated +5volts to pin 16, a 4k7 pull down resistor from pin 11 plus a 1.0 uF buffer capacitor from pin 15 to GND. Analog output is taken from pin 12 through 2x.4k7 resistors and 2x.1.0mfd caps to avoid loading the output and provide some filtering. Output voltage is 0 volts at 0 degrees up to +5 volts at 360 degrees.



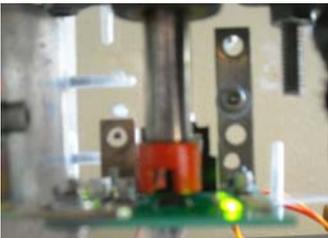
PCB – Purchased for \$2 USD from this website:

<http://store.makerbot.com/electronics/pcbs/magnetic-rotary-encoder-v1-0.html>.

You can find detailed info at http://reprap.org/wiki/Magnetic_Rotary_Encoder_1.0

If you go to the manufacturer's website and ask for a sample, they will send to you 3 pieces.

Another option is to purchase from Digikey for around \$7.

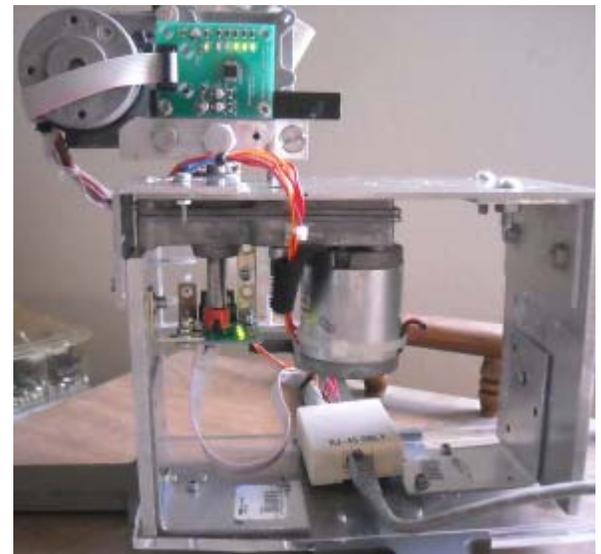
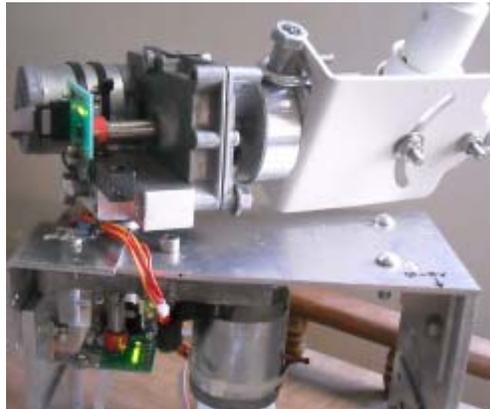


Magnet – You can buy the magnet from OSH for \$5.99. Small but very accurate.

The magnet is special; you have to find one with **2 poles on the same surface**.

A magnet pad will not work.

The following photos show how I mounted the parts at the end of the shaft of the DC motor gear.



I used the DC out 0 -5 VDC from AS-5040 board and used the RJ-45 as the cable which was a very good idea because you can make one or buy one anywhere that's as long as you want. And I have perfectly fit for all the pin such as 2 sets of motor and VCC+ AZ and EL voltage position feedback to the controller.

Rotor Controller Box

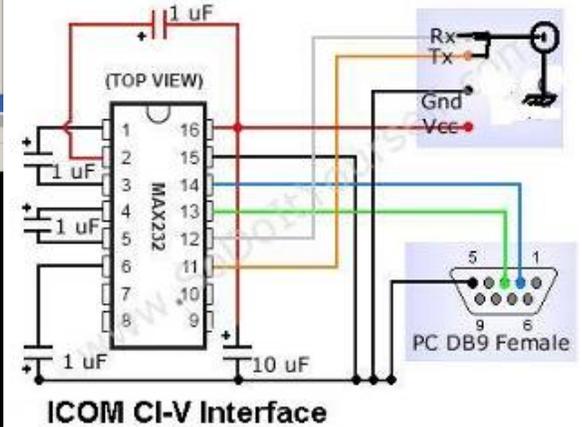
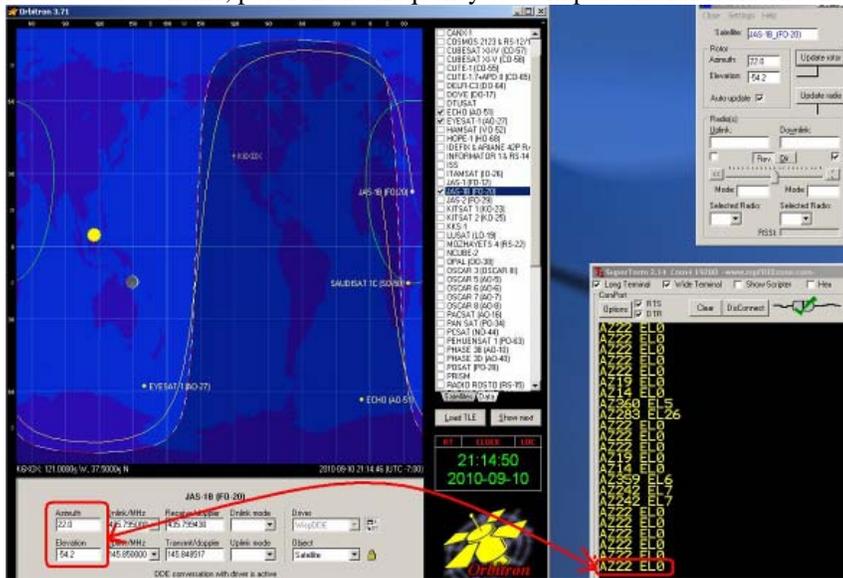
I was lucky enough that I found someone selling this G-5600B Yaesu control on EBAY for \$100 and nobody bid with me. I got this one and perfectly fit to modify for the manual controller as output and indication panel.



Above are photos of the front and back. You can see the relay board ULN2003A that I designed, and some of the Op-Amp LM324 that help to maintain the voltage level and boost the current in order to feed the front panel meter without pulling the voltage down.

Orbitron Software control

After the hardware was completed, I used Orbitron to get the data out to control both rotor and Radio Doppler frequency during pass of the satellite. The key to getting the Orbitron data output is the technique called DDE (Dynamic Data Exchange), which sends the raw data of sat name, position and frequency to Com port one for radio and the other one for the rotor by using GS-232 format.



As the screen shot above that I used the terminal program to see that output really came out from the WISPDDE client program that help to send the data out. Radio will used CI-V interface that I used for IC-910

Rotor Controller

I used the rotor controller kit from FOXDELTA <http://www.foxdelta.com/products/st3.htm> because of its very low price and the fact that it perfectly fit for my project. I will have voltage out for position ID and feed to this kit called ST3 read pass to A/D LTC1298 to PIC and the program will compare the data and then send the data to control rotor AZ/EL and display to 2x16 LCD display.



This project uses [LTC1298](#) DIP 12bit A/D chip and a PIC16F84A.. The interface takes its power from a Yaesu Controller. ST3 is preferred for use with G5500 rotor and is supplied with a 450 Deg Firmware on PIC16F84A with GS-232 data format. It provides hardware & firmware to interface satellite tracking software with Yaesu rotators, for automatic antenna azimuth and elevation control which my rotor does much better position indication than Yaesu Rotor. This kit cost \$79 assembled and tested and ships from India.

This project was presented on 9/24/2010 at the FARS meeting and Homebrew Contest and I won 1st place.

<http://www.youtube.com/watch?v=bDfATC7k4dQ> – YouTube video in which you can see the rotor I put together from the junk parts.

Here are the useful links I used to obtain all information for completing this project. I want to thank all the following people and websites for providing the information that I found after searching on Google:

- <http://vk5dj.mountgambier.org/Beam/AS5040/AS5040-45.html>
- John Drew VK5DJ for providing me the idea on how to get the position indication unit with AS5040 on his website http://www.electric-web.org/rotary_encoder.htm
- J.A. (Tony) Hutchison VK5ZAI
- Dinesh VU2FD from FoxDelta Amateur Radio Project Kit, <http://www.foxdelta.com/products/st3.htm>
- Fernando Mederos CX6DD for providing open source of program **WISPDDE** in Visual Basic that I modified to use in my project and which made my project look more professional ☺
- Sebastian Stoff **Orbitron Creator** <http://www.stoff.pl/> Free download Orbitron for WinXP .Thank you very much!!!

FARS 2010 MEMBERSHIP RENEWAL FORM

Date: _____

PLEASE fill out the form for all new/renewal memberships.

Name(s) & Callsign(s) & Class (E-A-G-T-N-None): _____

Mailing Address: _____

Home phone: _____ Work phone: _____

Fax (H or W?) _____ Packet BBS Address: _____

E-mail: _____ ARRL Exp Date(s): _____

Preferred modes: (e.g. HF-SSB/VHF/QRP/Other): _____

I'm willing to Elmer new hams with: _____

Special topics of interest / suggestions for club meeting speakers: _____

Dues: \$20 per year, new members add \$9 for badge fee. **Please note:** Membership runs from January 1 to December 31.

Send your check payable to FARS, to:

David A. Cooper
PMB 41
270 Redwood Shores Parkway
Redwood City, CA 94065-1173



How to get to FARS Club meetings (Visitors always welcome)

Meetings are held at the Covington Elementary School (directions below) on the fourth Friday. Socializing at 7 PM with the regular meeting at 7:30 PM. There may be changes in the meeting dates for January, June, November, and December.

DIRECTIONS:

From Interstate 280. take the El Monte exit Northeast. Cross Foothill Expressway. (A) At the first traffic light turn right on Covington. (B) Immediately at the fork take the left street (Covington). Go about 1/10th of a mile. Turn left into the parking lot. The gym is the tall building to your right with red and white stripes.

From Foothill Expwy., take the El Monte exit and go Northeast; then follow directions as above at point (A).

From US101 or El Camino: take San Antonio Road west (to Foothill Expressway). Then follow directions above at point (A).

TALK-IN via the [N6NEI](#) (145.230-; 100Hz PL) repeater or the [W6ASH](#) 145.27- (100Hz PL) repeater.