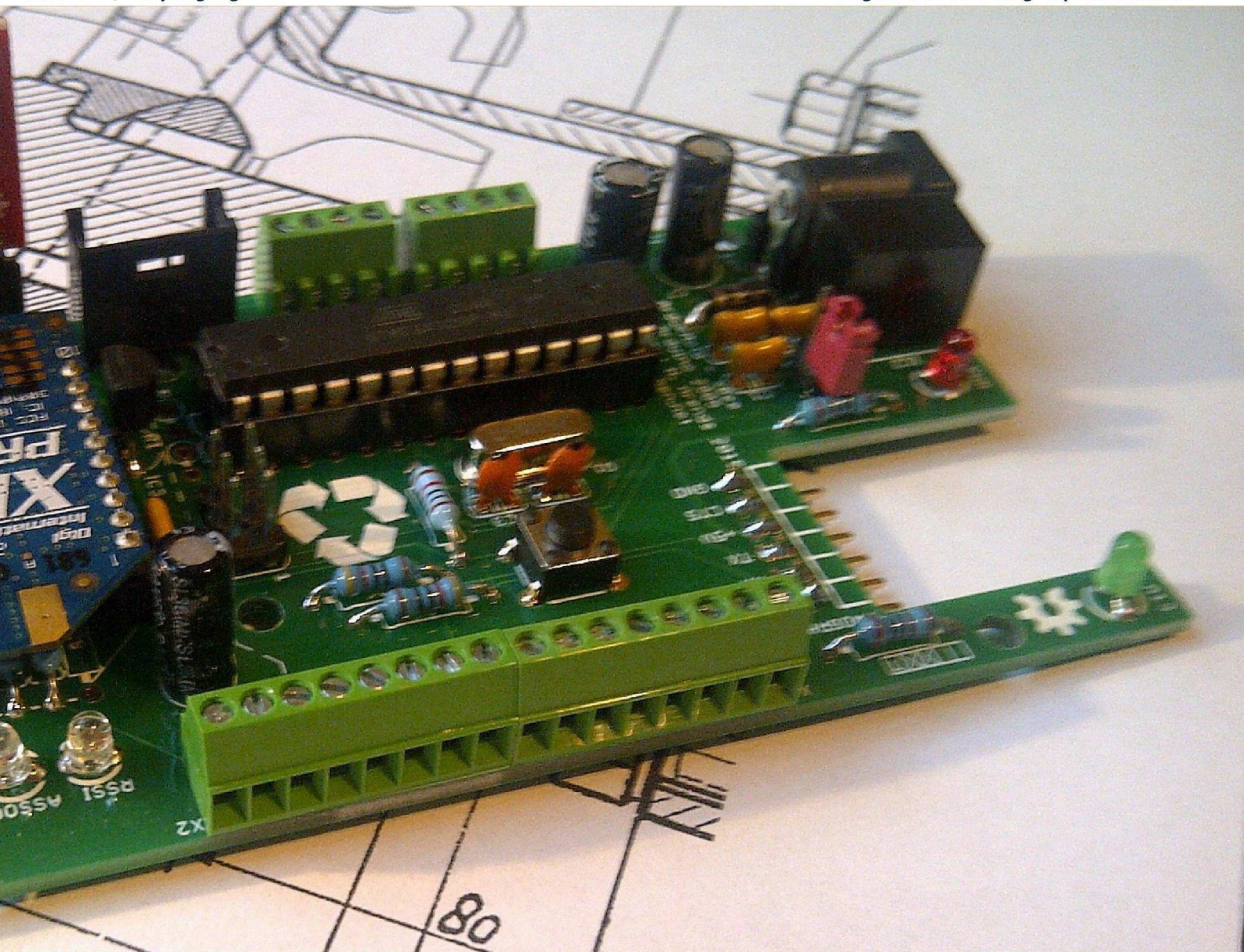


DE KUNSTMAAN

Juni 2016, 43e jaargang nr. 2

Uitgave van de Werkgroep Kunstmanen



AutoHotKey

PGA103

en nog veel meer

Dear member,

This pdf contains some translated articles of our Dutch magazine “De Kunstmaan”.

Google Translate is used; none or very few corrections are done afterwards. Results may be sometimes incorrect or hard to understand, but mostly I think it is usable.

Figures and pictures are partly left out. Please use the “paper” (Dutch) magazine together with these translations.

I hope these translations will help you to understand the Dutch articles.

Please check also our web-site, which has now a translated version:

www.kunstmanen.net

(middle of home page, “English version”).

Rob Alblas

werkgroep Kunstmanen

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Preface

May 14 was the General Assembly of our Working Group. It was a pleasant meeting with many things that are given to the working group exchanged for a small amount of charge. I myself have given a lecture on different software packages that are useful for the amateur radio.

With a turnout of 17 members, the turnout was very low. Looking at the rise over the past few years you will see a marked decline since September last year. This decline is partly unfortunately sad explained by members who are no longer among us or can not come. On the other hand, the recruitment of new members low. Moreover, the percentage decrease in the number of members over the years, much lower than the decline in attendance at the meetings.

The effects are also felt in the wallet. With an estimated loss of 970 Euro we have to do something. During last meeting provided valuable input which we have to consider about.

survey

This Kunstmaan included a survey with the request to fill it in and return it. We want to know whether the efforts of the government are well received by the members and, where necessary, we want to improve this.

It is also possible to complete the survey through the website. If you go to kunstmanen.net you see below Home "Survey 2016" stand. This will take you to a web page up where you can enter the questions right. Press the bottom of the Send button to email the results to us.

Member List

In all the previous Kunstmaan announced and voted on during the AGM. We will publish a list in the Kunstmaan. Only limited data, but so that members can lay over the e-mail contact with each other.

antenna perils

Last March, I have taken out of hibernation my antenna system. With the help of Harry's things further optimized. It turned out that my platesetter was installed more than 10 cm behind the focal point. The determination of the focal point can be quite comfortable with a PVC sliding construction. Adjusting the helical going very well Msg3.

At my home is it really necessary to include an interdigital filter the LNA. Do you not then you get streaks in the recording.

Figure 1. The disturbances take a few seconds. At the time of a fault, the eye pattern disappears completely and the decoder is out of the lock. I have used a high pass filter.

The interference caused by the deployment of 4G networks. The signal level is so high that it comes through everywhere and the LNA and downconverter overloading. Nowadays, you can buy coaxial cable has an additional shielding against radiation 4G. But looking on the internet for "Hirschmann KOKA 9 TS COAX Cable 4G-proof". Sale even as a pair of matching F-connectors. For summer is a nice little project to see if this new cable is really much better.

Figure 2. Additional shielding of aluminum foil. In total, a triple shielding!

The alignment of the antenna was a problem. When I went to follow the sun came out I discovered that the shadow of the helical was not perfect in the middle. A deviation of 1 to 2 cm is I think acceptable, but no more.

The starting point for alignment is that the antenna electric saw no need to squint! This summer I will be over here doing measurements. The sun is easy to use as a measuring station. Another important assumption is that the two axes of the rotor at right angles to each other perfectly. See also the article "Optimal tracking polar satellites" by Rob in June 2013 Kunstmaan.

Aligning an azimuth elevation rotor system is relatively simple:

- The mast should stand perfectly vertical
- The elevation shaft must be perfectly horizontal. With correct construction is this so
- State of the rotor at the zenith oriented than the dish should (except for an offset dish!) Are horizontal in all directions

So far the mechanical that easy to do. Real adjust the rotation of the mast so that north-south state. By simply focusing on the sun or MSG-3 you can do this.

Now for an XY rotor system:

- The X-axis perfect north-south and horizontal stand
- The Y-axis must be perfect east-west. With correct construction this is so.
- State of the rotor at the zenith oriented than the dish should (except for an offset dish!) Are horizontal in all directions

The real trimming is the focus of the X-axis. Successful horizontal well with a spirit level, but north-south is difficult. A compass is not working accurately and certainly not in the vicinity of iron. I think the simplest way to look at a job calculation program when the sun is in the east and the y-axis, with the shadow, here to focus on. On my bike rotor things had to be taken apart. A mathematical proof of this calibration procedure, I can not deliver but it works.

With larger diameters dish alignment is becoming increasingly important. The sweetest you want to send the antenna up signal. Usingen we have seen this. Who can come up with an algorithm for this?

Why is alignment and optimization so important? Because we may need to get the most out of the receipt of the MetOp. With the optimized 130cm dish I received below eye pattern of the MetOp. The receiver is the prototype that has been on the front page of the September 2013 Kunstmaan, already nearly three years ago.

Fig 3 Eye Pattern of the QPSK signal from the MetOp. The I-signal is the yellow pattern, the blue of the Q, this can also be the other way. On the decoder to find out.

To make this prototype generation what surer I am working on the design of two prints: a print of the UV916 tuner with power supply and connection to the display board, the other PCB is the QPSK demodulator.

Figure 4. Prototype of a built UV916 receiver board.

Website

The adjustments we make on the website are minimal. A webmaster who runs the Web site would be welcome. The design of the website is now more than three years old, a more modern jacket would be welcome.

Our website I use, among other things when I'm looking for old items. So you can easily search the contents of the old Satellite.

Kunstmaan

In this Kunstmaan again enjoy reading. Fred wrote a nice article about Autohotkey, handy! Rob looked up our friends in England, see also his report.

The rotor occur lives you see in the Articles of Harry on the control with the Arduino. For those who wish Timo has provided a schematic and PCB design started with the PGA103.

It remains for me to wish everybody a nice summer holiday and hope everyone will meet again at the next meeting. This will be a little later in September, ie on the 24th!

Summary

My experiences with weather satellites, etc. in Vietnam.

HRPT

Due to various circumstances of this front is not much news. One of the reasons were acute problems with one eye, which compelled me, the same day to take the plane to my ophthalmologist in HCM. One of the drawbacks of living here. The first check of my eye showed what strange things. In the last days of the 4 weeks preceding the 2nd monitoring the situation became worse. During the 2nd audit found an abandoned retina and 2 holes in it. The next morning at 8 am I was on the operating table. In the eye gas is injected in order to get back in place the retina. I had to lie on my stomach about a week with my head to the side. Flying was only allowed if all the gas was out of sight. And that lasted for approximately 3 weeks. I do so for a number of weeks quietly: reading and computing is quite strenuous 1½ eye.

Rotor

Because I think the Y-rotor must still work a bit hard, I decided to first build a new rotor and only then put on the whole roof. As a start I made a kind of functional design and let here by a number of people. The eye problems is also the project for the time being still.

Automation

"When I had forgotten for the second time in a short time to set the receiver to the proper frequency (early senility?) I thought it was time to do something about it." [1]
And so you, as a former IT worker appear in whatever way you can automate this. Eventually I chose AutoHotKey. To arrive at a working script took much more time I had planned. But there is now a working solution. This is explained in detail in [1].

Once my eye allowing the weather to sit at the computer a little longer I would also like to make something similar to generate a number of different types of recordings "automatic" one pass in HRPTReader. If successful the script is obviously the Kunstmaan.

WeatherStation

Well, it's been here a long time dry and hot. So I could only see my new station that at about 10 km. distance was something of storm activity. Thumbs, the provisional remains there. Test whether the storm almost directly above us is can still be again.

References

[1] AutoHotKey for startup WSAT and Xtrack, The Kunstmaan, 2016-2

summary

Automation of the process of starting and WSAT Xtrack.

introduction

When I had forgotten for the second time in a short time to set the receiver to the proper frequency (early senility?) I thought it was time to do something about it. Because I used once played with AutoHotKey seemed to me that the first choice. Finally, after more messing around and trying than thought before, the script below is rolled out not only warns of the frequency, but immediately automates the entire boot process.

What is AutoHotKey

AutoHotkey (AHK) is a free, open-source macrocreation- and automation software for Windows that allows users to automate repetitive tasks. It is controlled by a scripting language that was initially focused on creating shortcuts, also known as hotkeys. This has over time grown into a full-fledged scripting language. [1]

You can automate almost anything by sending keystrokes and mouse clicks to a program. This will most begin with. I also. The script I operate basically the menus, buttons and screens WSAT and Xtrack. In itself is a "risk" to fix it. When changing the location of a key, a button somewhere on coming or rename screens, the script does not work anymore. In a program that has been around longer, will prevent not so fast, but it is good to take this into account.

Moving a window on the screen is not a problem: the coordinates are relative to the window.

install

First [1] must be installed and downloaded AutoHotKey (AHK).

Download the installer from [1] and start it. Choose Custom Options and let in the three checkmarks on. I myself put after installation ActiveWindow Info (Window Spy) and the Help file on my desktop because you use it a lot when creating and customizing a script. Beginners should certainly just read the home page to see what is possible (and that's a lot!).

Script

This is the complete script as discussed above.

<pre>#NoEnv ; Recommended for performance and compatibility with future AutoHotkey releases. ; #Warn ; Enable warnings to assist with detecting common errors.</pre>
--

SendMode Input ; Recommended for new scripts due to its superior speed and reliability.

SetWorkingDir %A_ScriptDir% ; Ensures a consistent starting directory.

```
.*****
```

```
;
```

```
; Init
```

```
.*****
```

```
;
```

```
Soundbeep
```

```
Msgbox, 4096, , Zet de elektriciteit aan
```

```
Soundbeep
```

```
Msgbox, 4096, , Zet de ontvanger op de juiste frequentie
```

```
.*****
```

```
;
```

```
;De tijd wordt via "Atomic Clock" elke dag aangepast
```

```
;Via deze procedure voor elke run
```

```
.*****
```

```
;
```

```
Run, C:\Program Files\Atomic clock\Atomic.exe
```

```
Sleep, 1000
```

```
Send, {Right} {Enter}
```

```
WinActivate, TButton2
```

```
Sleep, 1000
```

```
Send, {Tab}
```

```
Send, {Enter}
```

```
Sleep, 1000
```

```
Winclose, Atomic Clock Sync v3.6
```

```
Sleep, 1000
```

```
.*****
```

```
;
```

```
; Wsat
```

```
.*****
```

```
;
```

```
Run, C:\wsat\wsat.exe, C:\wsat\
```

```
WinwaitActive, Wsat
```

```
WinMove, Wsat, , 0, 0 , , 750
```

```
WinwaitActive, Wsat
```

```
.*****
```

```
;
```

```
; Tab Tracker
```

```
.*****
```

```
;
```

```
WinActivate, gdkWindowChild22
```

```
ControlClick, X84 Y69
```

```
.*****
```

```
;
```

```
. *** Button Download Kepler ***
```

```
.*****
```

```
;
```

```
WinActivate, gdkWindowChild53
```

```
ControlClick, X94 Y95
```

```
.*****
```

```
;
```

```
. *** Button Read Kepler ***
```

```
.*****
```

```
;
```

```

Sleep, 1000
WinActivate, gdkWindowChild56
ControlClick, X97 Y149

.*****
;
; Selecteer bovenste satelliet
.*****
;
Sleep, 1000
WinActivate, gdkWindowChild41
ControlClick, X218 Y117

.*****
;
; Start
.*****
;
WinActivate, gdkWindowChild59
ControlClick, X94 Y205

.*****
;
; Controle of wsat actief is
.*****
;
Label1:
IfNotEqual, gdkWindowChild58, ""
    MsgBox, Controleer of Wsat actief is (Below hor. = v of ^)
else
    Goto, Label1

.*****
;
; xtrack
.*****
;
Run, C:\wsat\xtrack.exe
WinWaitActive, xtrack
WinMove, xtrack, , 650, 0
Send, i
WinWaitActive, xtrack
ControlClick, X10 Y493
ControlClick, X10 Y465
ControlClick, X10 Y437

.*****
;
; Record Menu Opstarten
.*****
;
WinActivate, Wsat
WinWaitActive, Wsat
WinActivate, gdkWindowChild76
ControlClick, X189 Y35
ControlClick, X195 Y70
Sleep, 1000

.*****
;
; Sat Type

```

```

,*****
WinActivate, Record HRPT
WinwaitActive, Record HRPT
Sleep, 1000
ControlClick, X15 Y57
WinActivate, Record HRPT
WinWaitActive, Record HRPT

,*****
;Record Start
,*****
WinActivate, Record HRPT
WinwaitActive, Record HRPT
ControlClick, X57 Y179

```

explanation Script

I will briefly explain what the individual parts and a number of commands.

intro

The first four lines are automatically added to each script by AHK.

init

These alerts with Sound Beep (beep) for two very important things. MsgBox put a message on the screen. After the execution of the message can be clicking on it to go through.

Atomic Clock

I have the freeware program Atomic Clock Sync [2] installed on my system and configured these everyday adjust the PC time. In addition, again this is done here just for transit. Security for all is not it?

WSAT

Using the Run command is the program launched WSAT. WinWaitActive let the script wait until WSAT actually operates. WinMove then makes the screen above.

Transfer Tracker

The tab "Tracker" is made active and selected by Control Click.

Kepler

Through "Button Download Kepler" and "Button Read Kepler" the latest Kepler data is retrieved. The top satellite is read and tracking starts.

Control

By vochige climate, I have suffered from corrosion, even with plugs. Because it is not seen the GODIL built these extra stop regularly. Check here if the correct sign (v or ^) in the separate cubicle in "To Rotor" right down state and then startup can be prosecuted. Presumably this can be removed for Dutch users. Just look first a couple of times and it continues to go well.

Xtrack

I think it's always nice to see where the satellite is. Through this routine is started Xtrack, put the screen next to the WSAT screen, zoomed and activated for the next transit. A similar option is perhaps already built into WSAT by Rob.

Record Startup Menu

The follow ense step is to launch the Record Menu.

Sat type

Standard HRPT enabled

record Start

.... And recording starts. And then just wait happens to the satellite: WSAT regulates all further themselves.

I usually check a moment the screens and then put WSAT manually "Viewer" to be sure.

Programming and Testing

Sleep

Regularly drag commands (Sleeping) for. I used for testing an old laptop, which is quite slow. Sleep command will stop the script now and then so that the computer preceding commands can finish first. Who has a fast system can certainly experiment with their omission. Because there is a; (Semicolon) to continue is a comment line. If the script stops functioning properly only need to; only to be removed again in order to have a working whole. Just leave is of course also an option: it takes a little longer for the script is ready, but with more security.

commentary

About one during testing or want to skip several blocks can do easily before the block / * convert and after the block * /. Everything in between is then beaten.

functions

An addition of Rob Alblas:

"You can also define functions in AHK, you can define a function with understandable name for each action (or group of actions). That makes it a whole lot easier to read and onderhoudbaarder. Then you have the top of the script a defined part where all the magic numbers are defined.

You can then put the parts for the various programs in a function, the main function contains only a few lines. Makes it easy to take part (eg Xtrack.) Away; 1 line of comment create instead a piece or 8. "

utilities

some utilities are also installed during the installation.

ActiveWindow Info (Window Spy)

An extremely useful program. This provides inter alia as you move over an existing program with the mouse, which is the position of the mouse and how the underlying screen / field name. Try it with WSAT as an example.

Help file

As long as you have not written a lot of scripts actually indispensable: "What command would now be able to use again?"

Convert .ahk to .exe

Using this program, a script can be translated into an .exe. In this way, people who have no AutoHotKey, still run the scripts.

Finally

This was my first AHK script in a very long time. It will be here and there undoubtedly are better and more effective. For me was the most important in order to have a working script in order to avoid the problems mentioned above,

It also can be a lot more possible then told here. Just some sniff the Help file and on the website.

Furthermore, a good advice for everyone who wants to create scripts: no gain without pain. So practice, practice and more practice. Really the only way to get the hang of it. We see scripts like to appear in the Kunstmaan.

References

[1] AutoHotKey, see website

[2] Atomic Clock Sync, see website

PGA103 Print

Timo Lampe, with a foreword by Ben Schellekens

Summary

In this article Timo presents a PCB layout for the PGA103.

In the first Kunstmaan this year we wrote about the PGA103 amplifier suitable for a frequency range of 50 MHz to 4 GHz with a low noise figure.

Some members bought some samples. But an affordable PCB was not available. Timo started working and has a PCB designed where it is also possible to incorporate a small network adjustment for the different frequency bands in order to achieve an even better result.

The PCB is designed to "just" FR4 printed material and suitable for frequencies of 10 MHz (28.6dB) to 2450 MHz (8.0 dB). See further the schedule for the amplification at different frequencies.

This PCB is not only suitable for the PGA103 but for many other amplifiers which have been carried out in an SOT-89 case.

The reconstruction will not pose many problems because the SMD components are implemented in the 0805 format.

Soon I'm going to order the printing in China, they will probably be available on de March meeting.

Refences

LNA with the PGA103

The Kunstmaan, March 2015, Volume 42 no. 1

summary

A study to the possibilities of using a telescope mount as a rotor for weather satellite reception.

rotors

introduction

For an antenna rotor we have three options at this point:

- A DIY X / Y-rotor Powertech DG380 rotors, as I have made myself.
- The rotors of Peter Smits
- A Yaesu G-5500 which is a small € 800 should cost. I have not heard if anyone has ever experimented with it ..

What I was wondering is whether a telescope mount this could be used. This consists of a tripod and a head, where the motors are in (the "rotor"). It basically just the head. These are quite to the price, but what I wanted to know first whether it mounts at all be suitable. I've asked that question in Astro Forum [1] asked.

Ask

For this first approach I wanted to answer the following questions.

- Can a dish from all sides moving 0-180 gr.?
- Can be moved a dish of 5 kg.
- Can he at the speed of an on coming? That's about 15 min for a transit duty on eg. Z to N.
- Can you control such a mount to any point of the sky from a "private" program?

Answers

Two people have responded, including one from experience. Their answers I have listed below unchanged.

Hugo de Jong:

"In the 70 years I receive weather satellites with a BC603, a frequency converter and double crossed Yagi. Now with PCs is making images have become a lot easier, maybe I'll go (if I have time) that stuff again pull out.

I tried a few years ago with my GoTo telescope ever to follow ISS poor motors of my montage shrieked when coffee mills.

The mounts for telescopes are optimized for precise positioning with low speeds and accelerations, and it is based on a well-balanced telescope. But they're really tinkering systems if you do a 1:20 satellite smoothly wants to follow along. Then, the accuracy in positioning is slightly less important, but the velocities and accelerations are much larger. the torque applied to the motors are Due to the size of the dish very large, in spite of that it was "but" it is between 5 kg. You really need much more robust engines than flimsy astro stuff ... ;-)

I think you best with a few interested companions may come up with a super-saucer-montage, based on very powerful engines from the dump in combination with position sensors. Idea?"

Sander van der Wal

"The Meade AutoStar has a built-in satellite tracking function. You can also upload web elements. The problem of course is that a telescope and a dish different kinds of taxation for a montage. "

Hugo Young

"That's right. Which I used. Pinwheels coffee. "

conclusions

We can be quite short about: a telescope mount is not suitable to serve as a rotor for a satellite dish.

References

[1] <http://www.astroforum.nl/>

SCREWDUNO, AN ARDUINO FOR XY ROTOR CONTROL

Harry H. Arends

summary

This Arduino clone can be used with both Arduino rotor steering options using screw terminals.

Introduction

In Kunstmaan 2015-4 p.14 I describe using a XBee module for communication between a computer program Xtrack and XY Rotor Control based on the Arduino. At first I had caught it plans to build all the parts for the rotor control (e.g. stepper motor drivers and power) itself and this one design print. After several prototypes, I came to the conclusion to leave this path and to use ready-made modules. An important consideration is that the deal also members must be recreated and that the costs at DIY are too high (e.g. cooling box and connectors). The Screwduno has screw terminals which one can make reliable connections to the remaining components of the control rotor.

Print

When the design is based on an Arduino Uno with an AT Mega 328 in DIL housing with a clock frequency of 16MHz. For programming a FTDI interface is arranged on the left side of the PCB (Program). This can also be used for communications with the PC.

Also located at the left side of the PCB to the power supply formed by J4, IC2 and some capacitors. At the top are the connections of all digital inputs and outputs (X1, X2).

+ 5V is available at the top of the PCB (Power) and analog inputs (Analog In). In addition, the I²C port for the optional 4-line display. Also, find a RTC with battery and NVRAM on the board, they also use the I²C bus.

On the right-hand side of the PCB can be found the XBee IC3 and 3V3 for the power supply of the XBee. Far right on the board, all unused inputs and outputs of the XBee available for other projects which this board is universal.

In addition, there are LEDs for: RSSI and ASSOC which monitor the condition of the while XBee to SQW by means of off frequency of 1Hz shows that the RTC is working. In addition, there is still a PWR-LED on the PCB to indicate that there is a supply voltage is present and an LED connected to Arduino pin A13.

Schematic

The schedule is based on an Arduino Uno with a few adjustments.

The food is not 78xx voltage regulator but a switching voltage regulator. It can be powered directly from the 36V (maximum) engine power. The 3V3 voltage for the XBee is provided by IC3, this IC delivers up to 250 mA.

In the DTR line is a jumper included in order to prevent undesirable re-boot of the processor during testing.

The POWER + 5V connector can be included for feeding include the light valves in the engine housing, the steering motor controls and the optional display. This procedure requires approximately 950 mA are available.

NOTE: The XBee can up 3V3 signals. Therefore, it is included a voltage divider R8 / R9 in the TX-signal. For applications in the future are also all unused signals of the XBee via M14 connectors brought out, they can also up 3V3.

The RSSI LED (Relative Signal Strength Indicator) indicates that receiving a data stream. The ASSOC LED (associate) flashes 1x per second when contact is made with other XBee.

Optionally added an I2C EEPROM (IC4).

Parts list

Resistors (0.25 W / 10%)

R1, R2, R3 *, R9 = 10K (1,089,159)

R4, R5, R6, R7, R10, R11, R12 = 1K (1,089,147)

R8 = 15K (1,089,161)

capacitors (2.5mm Plug)

C1, C4, C5, C8, C10, C11 = 100nF (458222)

C2, C3 = 22pF * (451 287)

Electrolytic capacitors (2.5mm Plug)

C6, C7, C9 = 47uF / 16V (460 656)

semiconductors

D1 = 1N4007 (564849)

A13 ASSOC = LED high eff, 3mm, green (180 156)

PWR = LED high eff, 3mm, red (145 998)

RSSI = LED high eff, 3mm, yellow (145 980)

SQW = LED high eff, 3mm, blue (180205)

IC1 tMega328 = A / P with UN OptiBoot * (092 026) (empty 155197)

IC2 = TSR1-2450 (156673)

IC3 = MCP1700-330 (651 408)

IC4 = AT24C08 (160903) This is an option and not immediately required

IC5 = DS1307 (1,117,147) ***

Miscellaneous

Q1 = 16MHz crystal, HC49 / 4H low profile * (155 145)

Q2 = 32.7680 KHz crystal (168467) ***

XB1 = XBee (-Pro) **

2mm 10pin XBee Socket (2x) ** (1.31137 million)

RESET = Pushbutton B3F100, 6x6x3mm ** (439 176)

28-pin IC socket * (189515)

Power Analog-to = 4 pole screw terminal 2.54mm (567658)

X1, X2 = screw terminal 8 pin 2.54mm (567844)

J4 = Power connector, 2.1mm (735 742)

Battery holder 12mm (1009386) ***

() = Order Conrad (www.conrad.nl)

* = These parts are available as a set with iprototype.nl

The ATmega328 is here provided with

a bootloader

** = Available at IprotoType

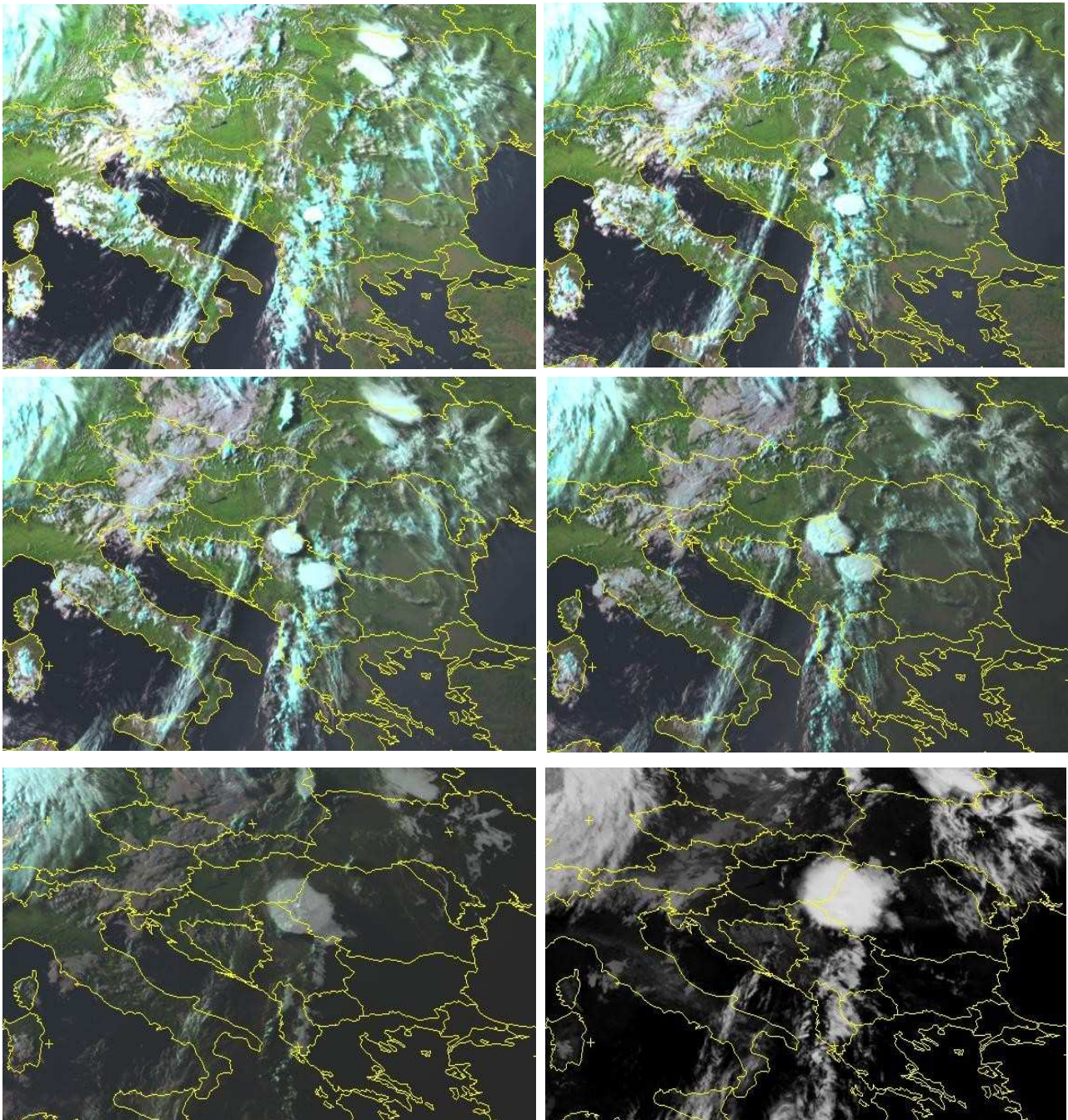
*** = Only for RTC option

In Kunstmaan 2013-4, see pages 158 to post a description of how a sketch in Arduino and / or Screwduno. The Kunstmaan 2014-1 explains the programming environment as for the Arduino XY Rotor project is used.

Cloud "explosion" above Serbia,

Clouds can suddenly, as from nowhere, pop up in a spectacular fashion. The pictures below are derived from MSG2, June 20; the images are 15:30, 16:00, 16:30, 17:00, 18:00 and 19:00 UTC. On the border of Serbia and Romania suddenly creates a spherical cloud. ACTually, there are 2 of them, but the left one is developing rapidly and "overgrown" eventually the other which was stable but already longer present. The diameter grows in 30 min. for about 50 km. Shown as a movie this looks spectacular, as if there occurs a violent explosion.

This kind of films can be made automatically and continuously with the program xrit2pic. The following KM more about this.



AN ALTERNATIVE RECEIVER FOR EUMETCAST BASIC SERVICES

Arne van Belle

Since December 31, 2014 is EUMETCast receiving only in DVB-S2 VCM Eutelsat 10A at 10 degrees East. The VCM mode is required to decode both Basic Service as High Volume Service which alternate rapidly.

The MSG images are transmitted via Basic service on High Volume Service will soon Sentinel 3A Data coming but so far there have been aired only test files.

Recommended dish diameter of 80-90 cm for basic service and at least 120 cm for High Volume Service. You can with a 80-90 cm dish in clear weather or HVS received but rain falls HVS signal path.

Receivers suitable for both services must be compatible DVB-S2 VCM and these are quite pricey, the TBS 5925 (USB2) or TBS6983 (PCI Express card slot) from 220 euros, the Ayecka SR1 (network receiver) from 485 euros.

To everyone's surprise came "CrazyCat" satellite freak in Ukraine on MSG-1 Yahoo group with the message that some DVB-S2 receiver with a custom driver can receive the Basic Service while the receiver is not VCM compatible!

Used demodulator in these receivers (type STV0903bac should be) can be set so that it only BAS data pulls from it. He does this by adjusting the demodulator parameters (enable "TS FIFO Minimum latency mode").

During broadcast of HVS data demodulator does this not once but BA S starts again gathers demodulator this just turn up on time.

It's about the TBS 5980 (marked "Q box CI") and the SkyStar2 eXpress HD. H elaas is not for the much used Skystar HD USB box: this would only Basic Service works under Linux with a special driver.

With its own driver TBS this does not incidentally: you have special CrazyBDA 1.0.0.2 driver for the TBS5980 and use. For SkyStar2 eXpress HD you use the drivers Technisat but you need after windows start to run the tools2XPFIX .exe.

To clarify, these receivers can never receive HVS but the price is there also (about 62 Euros on Ebay for TBS5980). Unfortunately the SkyStar2 eXpress HD discontinued but is sometimes offered 2nd hand.

I have TBS5980 long tested on XP, Windows 7 and Windows 10 and can conclude that the TBS5980 with CrazyBDA driver and BDADatEX tool is not inferior to the precious SR1 receiver, he receives Basic service also on a 70 cm dish and rain. This external USB receiver is not as warm as the TBS5925.

There are some minor drawbacks installation and configuration but which are no objections:

The CrazyBDA 1.0.0.2 driver does not install script, you must install it using hardware management, update driver.

The driver is not signed digital use you have a 64 bit version of Windows then you should put them first in test mode in order to use the driver.

Software to receive data (BDADatEX) knows no PID selection, you will receive all PIDs. This is not a problem because HVS still does not come in and you can leave unwanted data to the backup channels Tellicast.

BDADDataEx other hand, does have a convenient option, you can speak the signal quality to optimally align the dish and LNB.

The TBS5980 I ordered through eBay at "eshoptbs" or "dvbforfun" in Hong Kong for about 62 euros. And a second hand I found in Belgium for 33 euros including shipping.

The driver can be downloaded from <http://crazycat69.narod.ru/sattelite/wip/CrazyBDA.zip>

You also have BDADDataEx need of <http://crazycatlab.sat-fishers.com/BDADDataEx.rar>

Scan the files first get ownloades well for viruses!

Instructions SkyStar2 eXpress HD can be found here:

[http://www.eumetsat.int/website/wcm/idc/idcplg?IdcService=GET_FILE&dDocName=PDF_DVB_SKY STAR_WIN_SETUP_GUIDE&RevisionSelectionMethod=LatestReleased&Rendition=Web](http://www.eumetsat.int/website/wcm/idc/idcplg?IdcService=GET_FILE&dDocName=PDF_DVB_SKY_STAR_WIN_SETUP_GUIDE&RevisionSelectionMethod=LatestReleased&Rendition=Web)

From the Library

Dear people,

New energy! That is what you and I desperately need. Preferably many kilowatt-hours per kilogram. I mean batteries, either rechargeable or not. What we have now is of little use. Heavy, soon empty and quickly broken. E-bikes and scooters are notorious, laptop batteries already decay when in stock, and have you ever seen a "Heavy Duty 1000x Rechargeable" still working after ten times? But now there is a battery on a nuclear base. It lasts for hundreds of years and also provides hundreds of amperehours. It is a new development from America and VERON tells us about it with a lot of explanation. Nuclear decay and a thermocell gives electricity, I do understand. Deep Space probes do all the time. But why is there an ionization chamber? I understood less and less in the description. It shall not be the issue with the aprilfoo? Oh no, not again this nonsense. Yes, again this nonsense. But maybe I should take a positive face to all the good things that modern technology has to offer to humanity. Hurry therefore in rows of 105 to VERON Arnhem where a number of test specimens is available. Be quick, because I think the stock is limited. Very limited even. Sigh.

In the CQPA of april Gerard X is chasing a man-made interference spoiling his reception. It turns out to be an unbranded LED bar at the neighbor house with an inferior switching power supply. Put on the scope and the saw teeth looked really dirty. Unfortunately, he does not say whether the interference at 137 MHz or 1700 was noticeable because that is what is relevant for us. You can expect everything nowadays.

In Electron of May a great explanation of transmission coding. If you do not know what quadrature modulation is, a good explanation here. Also an improvement on the previously published watt meter in 2015. With a limit of one nWatt, but the highest frequency is not clear to me. That will probably depend on the ad8307 used - approximately 500MHz. But the most relevant to us in this magazine are the experiences of Hans Steiner, who builds a rotor with 3D printed parts. With just next to it to slow the enthusiasm once again: the Decree on Environmental Law. In our dear bureaucratic little country you can not just build an antenna. How exactly I do not know yet, but I am warned for my own plans.

Even more antennas. I have always thought from my childhood on that when two antennas can see each other, with the noses towards each other, then reception is guaranteed. Not so! A 150 MHz antenna that looks too low over the roof? Losses! A 23 cm looking through a hole? Losses! Radio waves need more space in height and width than you might think. Electron of June 2016 explains the Fresnelzone including calculations. I've sometimes been thinking of putting a dish in the garden looking up between the buildings here. Now I wonder if it makes sense, with the knowledge of this article. It will take a bit of calculation to do from me then.

In the same magazine a logarithmic voltmeter. Perhaps useful for adjusting dishes at satellite passes? It is a simple but well-thought scheme, with good compensation tricks. Otherwise it is not of much use of course.

Aluminum soldering is possible, though I have never done it myself. The method is further explained in Elektron June: you bind tin with aluminum under a layer of thin oil, so that no oxide layer builds on the aluminum. Aluminum by itself is extremely fast with the formation of an oxide skin. If I had known this in my in my youth, it had saved a lot of time, but I'm going to do this one day just for fun. Aluminum you must have soldered, if only once in your lifetime.

In the same magazine a reference to the magazine QST (we reviewers just copy each other unashamed) a shield for Arduino but itself featuring a PIC and a SDR IC (RDA1846S) and creating a transceiver for 144, 222 and 430 MHz. Maybe a usefull backend for our 1700 MHz receivers? Info on hobbypcb.com. Aside: this is one of the few times that I see a PIC anymore. They seem to be completely wiped out by the Arduino culture of the last 2 years.

A small satellite is missing. Would you like to help find it. It is a cubesat released by Russian students and then disappeared. At 145.87 MHz, and on n2yo.com the orbit data of this Samsat 218D, that is, if it is there of course. More in CQPA of May this year.

A look back at Philae. I'm not easily sentimental, but I feel pity for this device by now. Eleven years on tour, spending half a day over the last 20 kilometer (even public transport here in the village is faster) and then some bouncing around and landed in

the shade with a hopeless future. In the Ruimtevaart 2016/1 of the NVR an interview with the project coordinator, Koen Geurts. There is still a lot of results in this mission and in the magazine is a summary of facts; the measuring instruments, the measurement results and the ingenious maneuvers to get alongside.

Plans to do mining of resources on planets and comets are getting serious. Maybe our children's children will be cargo ship spotters, listening on 1700 Giga Hz when another few hundred cubic kilometers of methane and hydrogen arrives on earth from Jupiter. I am dreaming away a bit. This is because professor Buist mentions the (elsewhere controversial) Asteroid Act of November 2015 in the Ruimtevaart.

That's it for now. Time for summer! Sun, sea and beach. A wonderful holiday for you and for me, that is the heartfelt desire of

your librarian

GEO Symposium 2016

Rob Alblas

On April 23, the annual GEO conference was held, as (almost) always in the National Space Centre in Leicester.

Because there were in advance only two presentations on the agenda I hesitated to go to "the other side" just for these. Also, there was not very much interest at other members to go.

I found the solution by combining the trip with a visit to Cambridge. A place that we used to get a break on the way back from Leicester, when the catamaran was still in operation (good old days ...). Furthermore, I also did prepare a short presentation.

Symposium.

As expected, it was not very busy; I counted about 18 people.

I did have a mini-stand with some magazines and could actually recruit a member.

The following is a brief summary of the various presentations given. Power-point can be found on the web page of GEO:

<http://www.geo-web.org.uk/symposium2016.php>

first reading

The first lecture was held by Nicholas Coyne Eumetsat.

One part was a repeat of what we have already heard in Darmstadt (2015). Overview of this presentation:

- genesis EUMETCast
- Activities of EUMETCast
- Future
- Sentinel 3

Some of the items that passed:

EAT: EUMETCast Administration Tool. With the growing number of services and users also be managing becomes more complex. EAT has been developed over the years. EUMETCast now includes three services:

Basic Service channels:

This channel is used to transmit the well-known MSG, METOP etc. data.

High Volume Services Channel:

For the moment this will be used for 6 Copernicus S3 channels.

Terrestrial Service Channels:

A network intended to spread "near-real-time" data to users. Only for selected professional users.

It is used for both basic and HVS services.

Future.

- Sentinel 3A dissemination of data should start in May 2016
- Meteosat-8 moves to the Indian Ocean (ie, above) and begins in September with parallel service with Meteosat-7. Fuel until 2019.
- Meteosat-7 will be put from its orbit in February 2017.
- Sentinel 3B will be launched in the fall of 2017.
- METOP-C will be launched in October 2018.
- Meteosat-9 will remain active until 2021, longer than expected.
- Meteosat-10 fuel until 2022.
- Meteosat-11 (already launched) remains inactive until 2018.
- MTG (Third Generation) starts in 2021.

Receiving Station:

To receive all basic and HVS channels EUMETSAT recommends the following:

- PC with 64-bit CPU
- 64-bit operating system (Linux or Windows)
- at least 4GB of RAM
- 1 Gb network interface
- USB 2.0 for ECU
- ECU software
- Tellicast client from version 2.12.1, version 2.14 is "on the move"

Further, Windows XP is no longer supported.

Note that this applies if you want to receive everything, incl. HVS. For receiving only basic service, nothing needs to be changed.

Second reading

By Dr. Hartmut Boesch, head of Earth Observation of the University of Leicester.

A comprehensive story about what can all be measured and detected by remote sensing satellites (such as weather satellites). Including extreme weather phenomena such as typhoons, but also things like the causes of global warming are studied using satellite data. The detection of deforestation, desertification, depletion of coral, insect pests etc. are also included.

Satellites make global observation possible, even from remote areas. Data is almost immediately available.

With the new Sentinel satellites from the Copernicus program even more data will be available: higher resolution and more measurements per unit of time.

This provides new challenges: how to deal with this huge amount of data?

New methods for analysis will be needed. Furthermore, it requires a very large storage capacity; about 16 petabytes (a petabyte is 1000 terabytes, or a million gigabytes).

It is important that data is freely available to everyone. Scientists face a big challenge to make the most of the Copernicus Programme.

The full presentation can be downloaded from the GEO website, and is very rewarding. It is a large download; such 200Mbyte, but that's because there are some movies included in the presentation.

ISS

At around 14:00 there was a school contact from ISS in Kent with "Wellesley House

School". For this, we have extended the lunch break and we went to the parking lot of the NSC. Armed with receiver and Yagi antenna "mounted" on a "human rotor" we were able to receive the transmitter of the ISS.

Third reading

Unfortunately, David Taylor could not be present, due to his health. There was organized a Skype connection. Beforehand I was a bit skeptical whether this would "work", but it went quite well. David was larger than life on screen. Originally it would be a question-and-answer session, but David did prepare a small presentation.

That was among others on its software, and especially about how things in the future will expire. In order to simplify licensing issues his programs will not be linked anymore to hardware. With a one-time update the software runs on any PC, and future updates are free.

Software for new satellites such as Sentinel is no longer made by David, but there are alternatives (free software ESA).

A good tip for Windows 10 users: Windows 10 has the bad manners to automatically update and reboot at night. Not acceptable when you have 24-hour running software. Rebooting is preventable by indicating in Windows that the WiFi connection is a "paid" link. You just have to know ...

My reading

I've talked amongst others about our magazine for which also a translation in English is available.

I also told about the weather station that we will organize at Space Expo in Noordwijk and the changes I've done for this in my software.

Furthermore, a dish-kit some members of our group made was discussed.

In the break I searched for the weather satellite receiving station that they also should have at the National Space Centre. This was setup years ago, using software of David Taylor. Because we had been asked to help in setting up such a station for Space Expo in Noordwijk this was a good opportunity to see how they have handled this in Leicester. Unfortunately, the receiving station had disappeared. Later it turned out that they failed to renew the license at Eumetsat, and when no data entered anymore they just removed the weather station...

Short trip report

I wouldn't be me if I wouldn't make this trip a little bit different than usual. Why would you do easy as it can be difficult? A car can very well be left alone. So I cycled my folding bicycle with backpack crammed to the station and from there travelled to Amsterdam. Then with the Thalys to Brussels, where I had an hour's time to step up to the Eurostar. What do you do in such a lost hour? Then such a folding bike comes in handy; Expand and you ride so to the Grand Place in Brussels.

There is no problem with taking your folding bike; it's for free (but it has to be covered). At Eurostar the bike must be screened like the 'normal' baggage; who knows what you have hidden in the tires ...

In London arrived I had to change to a local train to Leicester. There are no special high-speed trains; they just drive with 200 km / h with "diesels". Something to learn by Ducth Railways.

Arriving in Leicester I stepped comfortably on the bike and drove to the hotel. As expected the enthusiasm for the symposium appeared not too high; in other years, there were at least some 10 people in that hotel, now I was the only one. Fortunately at another hotel I met some "partners in distress", and we ate together wonderfully in an Indian restaurant.

The next day I drove to the National Space Centre on the bike, finding out where you are expected to drive as a cyclist (often on the sidewalk).

Return

The day after the symposium, the folding bike came in handy. There is not much to see in Leicester and besides, it was Sunday, then there's not much to do in the morning. But it is nice to cycle along the few attractions.

Then traveled by train to Cambridge. Due to work I had to detour via London. In London I could spend some more time, and I cycled from Big Ben over Buckingham Palace at London Towers, and through Trafalgar Square and Piccadilly Circus back to the station. Straight through the crowd that had come to the London Marathon which was just held. (I myself did a "bicycle" half-marathon here.)

Then I traveled to Cambridge, where the next day I visited in the rain some of the university buildings. The location of Newton and Stephen Hawkins, birthplace of no less than 87 Nobel Prize winners.

The day after I "trained" back to London where it appeared that the French railway had a strike, so there was an extra hour delay. Eventually I came home again in one piece.

annual report 2015

the Working Group

The membership of our group at the end of 2015 is 112 members virtually the same as the year before. It must be said that there have been added nine new members in 2014. On January 10, the day of our meeting, Jene Langevoord died.

meetings

As usual, there were five meetings of the working group. On 10 January, the first meeting with the traditional New Year's reception. 30 man turnout was very high. It's nice that Fred and his visit as to plan to Netherlands he was again present at the first meeting of the year! After the official part your president gave a presentation of a frequency sweeper from 1200 to 2200 MHz which include filters can be measured.

March 14 was the second meeting with an attendance of 26 men. After the general our president gave a lecture on the receipt of the Russian METEOR with the RTL dongle. In combination with GNUradio can receive this satellite in a very simple manner. the quality of the images is much better than APT, still less than HRPT.

During the annual meeting on May 2 word given by the AGM, the charge to the Board for the policy 2014 and the accounts provided the financial control committee (consisting of Timo Lampe and Herman Big House) approval. In 2016, the place of Timo will someone else be taken. The budget for 2015 shows a loss of more than 800 Euros. A major cause is the decline in the number of members and the increase in shipping.

After the annual meeting Rob Alblas gave a lecture on the satellite box. The satellite decoder is modular. Extensions are so easy to achieve. Recently, the IQ datadumper joined us. This is the first step, in the receipt and demodulation of the satellites that broadcast QPSK, such as the Metop and Fengyun. A brief explanation was given on the hardware description language VHDL where satellite decoder is written in.

On the meeting of 1 September 2 Arne has given a lecture on the RF meter. This portable multimeter is designed by a Chinese and go to 3 GHz. The multimeter comprises eg signal generator and a spectrum analyzer and has its own color. The turnout was 19 members lower than usual. Peter Cooper had taken two Introduces. If graduation they had the construction of a rotor system. This consists of stepper motors, gears 3D printed and laser-carved MDF. They intend to join after graduation.

Several members due to the termination of the hobby stuff donated to the Working Group. Proceeds from the sale of this stuff has benefited the club's.

November 14 was the last meeting of 2015. The theme was a day of measurement. Fortunately the weather was fine and we could adjust with satellite dishes

out two helicals. Arne had taken his radio multimeter and thus were measured include patch antennas for the 1700 MHz. With Timo oscilloscope rise time of square wave was measured from the Agilent 33220A, 10 nS this was neatly within specifications. Harm showed its new structure: a QPSK modulator.

administration

In 2015 There were no changes in the composition of the Board. The vacancy in the office of Secretary has still not been completed and is perceived by our treasurer. The work of the scholarship coordinator lie with the President. Joop Lankhaar has indicated to quit his post of webmaster. The vacancy has not been filled yet.

Exhibitions and Events

The Working Group was on March 21 at the Bossche Flea site, where we were in our regular spot. The stand crew were: Ben, Henry Herman, Rob, Robert and Timo. Direct reception was not possible. We welcomed two new members.

On November 7th we were on the Day of Radio Amateur in Apeldoorn. The DIY exhibition, where we are always, is on the first floor. This year the number of builders who wanted to show their concoctions considerably less. This while there are no costs involved. You even get a packed lunch.

The Kunstmaan

In 2015 The Kunstmaan has undergone a metamorphosis to come out in A4 format. The font in the old satellites was small and therefore sometimes difficult to read. The A4 size we have now selected 10 point Arial. Diagrams of circuits can be displayed at full size.

The order of the items is also adjusted. In the beginning, get technical articles, followed by articles about the association. The value is the satellite status.

The Kunstmaan is in 2015 four times released in full color. In total there are 120 editorial pages published, compared with 2014, this is much more square footage. The first two editions were 32 pages, the other 28. The aim is to make the Kunstmaan 28 pages thick. More causes problems with the shipping. Our editor Harry Arends has been carefully compiled with a lot of care. The Satellite Status from Arne was a regular feature. An integral part of the Kunstmaan is the report of the meetings recorded by our treasurer / secretary ai Rob Alblas.

Fred van den Bosch placed in each Kunstmaan an article entitled "Weather Satellites in Vietnam". This bash reef his experiences with the reception of weather satellites in Vietnam where he was coming up against Elm in the exercise of the hobby.

In Kunstmaan March was a great variety of items. So Fred has also started working with the Arduino and a GPS receiver. Rob describes how to run two Ethernet connections over a single cable, this function works only for 10/100 Mb of his hand. Also complements the description of the data format of the Meteor N2. Because the direct reception of Meteor satellites in the 137 MHz band is very interesting, I designed an amp that has no exotic flush but air coils that you can wrap yourself. Harry has designed a PCB. Also, my hand of a description of a holder for an etching tank, made of PVC. A while ago I bought some PGA103 LNA'tjes. In Australia I had found some prints. In this Kunstmaan the initial findings of this amplifier. To round off a very funny story about APT tone detection using the Goertzel algorithm in the WRX1700. Jan Mahieu wrote it and the files made available. Paul describes our librarian the paper reduce the GEO now three times a year as a pdf and once a year comes as paper.

On the cover of, June Kunstmaan adorned with a 3-meter dish that is given to the Working Group. The dish comes from Indonesia, where did it as a television satellite dish service. The idea was to be able to receive a signal loud crackling of the MSG-3. Unfortunately, the dish is as deaf as a doornail. Probably still suffered too much damage during transport. Fred draws on my article about the USBee logic analyzer and purchased a clone. This Kunstmaan this description. Paul Jan van Gils discloses made QFH antenna of copper tubing with a diameter of 4.8mm, combined with RTL dongle. Another great application is receiving ADSB that you make visible the aircraft jobs. The nomination Rob gave on the May meeting on the construction of the satellite decoder listed in this Kunstmaan. VHDL language is touched and the use of a simulator, it is essential you want to design digital circuits.

By me an article about the reception of MetOp with GNURadio and the USRP B200. As frontend a 130cm dish and LNC1700 downconverter. The real-time making an image is not possible. The amount of data in the tens of GB per recording. For the WRX1700 I designed a tuning indicator for HRPT modulator. So you can easily see of the VCO is the sweeping.

Because of the interest in the Meteor is republished the cross Yagi Arne 1992.

We have been back at EUMETSAT in Darmstadt On the cover of the Sept. Kunstmaan your president for a model of the Metop satellite. Rob has made a short trip and this Kunstmaan are several pictures of the visit. Paul gives his own unique way its contribution from the library. Of my hand an article how the 8-pin Atmel microcontroller also can be used like Arduino. On my holiday I bought the Rigol DS1054z oscilloscope, which is software upgradeable. This Kunstmaan a description of my findings. I have also been working to control the VCO Mini-Circuits with a PLL Analog Devices. With a few minor succeeded!

Rob describes the linearizing HRPT and LRPT-images. When APT this is done in the satellite, with HRPT this must be done in the receiving station. Non-linear images occur because looks with different angles towards the earth's surface and by the curvature of the earth.

On the cover of the last Kunstmaan of 5 201 shines an optimized helical antenna. Harry describes how to get more out of your dish and helical. With a 160cm dish you can receive the MSG-3 more than 12dB above the noise. An offset dish of 110cm gives 8dB. Harry describes how two XBee modules can communicate with one another over a distance of more than 100 meters. Further, an article about the Xtrack settings to communicate with the control Arduino rotor.

My hand an article on receipt of Meteor with GNU Radio and RTL dongle. Rob describes how periodic variations can occur in a satellite signal and a monitor for the Ayecka SR1 receiver.

Digital Kunstmaan

Five times the Digital Kunstmaan amounted to 5 201. As far as verifying the Digital Kunstmaan be read properly. The open rate of around 70 percent is high. It should be noted that part of the transmitted digital newsletters possibly lingers filters of the Internet service providers in the spam.

Let all who have a great news has for the digital Kunstmaan pass this to redactie@kunstmanen.net.

purchasing Action

There are purchase factions at Mini Circuits and went to Mouser. Elmar organized various amplifier and a purchasing action by Reichelt and Pollin.

At RS you must have a Commercial Register and you can not order as a private individual, our Working Group can be ordered from RS.

handbook

This year has been no expansion of the manual.

Library

Last year we had subscribed to the Electron (the Ver un). Obviously we are working as a member of the GEO. We were members of the Dutch Society of Astronautics.

The loan of equipment to members of the working group is unfortunately rare. We have the miniVNA and Marconi signal generator available! The lent of the miniVNA approximately permanent.

Traveling

On July 2, we again held a visit to EUMETSAT in Darmstadt. It was hot. Variant readings were taken care of on Thursday and we have visited ESOC on Friday. We got an interesting lecture on the Sentinel satellite. Thursday night we visited the Brauhaus with several employees of EUMETSAT.

On 25 March, Arne and I went to the interest day for amateur satellites. Perhaps an idea to give a lecture about the group here. It is expected there will be another interest day in 2017.

Website

We have a Facebook page, a Facebook group and a Twitter account. Things to do this are minimal. Twitter is especially attractive as an international platform. The website also deserves attention again, with the departure of the webmaster will not improve. Who will pick up the online presence of the Working Group ??

satellites

201 final five were for APT NOAA 15, 18 and 19 available. HRPT was the NOAA15 (weak signal), 18 and 19. NOAA16 is no longer there.

The Russian Meteor N2 transmits only HRPT out LRPT anymore. T N1 has failed.

Chinese Fengyun satellites z assigns three signals. Decryption is not yet possible by us. The two Metop satellites, we can not yet decode.

Ben Schellekens, president

Report meeting May 14, 2016.

Opening by the Chairman.

We're going to do a poll, possibly through the website. In particular, the reaction of people who are not coming (able to come) to the meetings of interest to us.

The number of members attending our meetings is decreasing. We consider to reduce the amount of meetings per year. This also saves the costs.

There is some equipment available from members who have stopped. The proceeds are for the club's coffers.

Finances 2015, policy

The Treasurer introduced the financial numbers. We are experiencing a structural loss. This can be collected provisionally; there is enough buffer.

A note from one of the attendees: Distribute the magazine at the meeting, and send the rest. This saves on postage. We will have a look at this; of course the magazine must then be ready just before the meeting.

Herman Grotenhuis proposes to increase by 2% the contribution each year to bring inflation into account that way. That means 0.50 euros per year increase. This is often done with other clubs. It prevents big increases now and then, with discussions. We will keep this in mind. For now, there is still plenty of cash, but "once" measures still need to be taken.

Wim Bravenboer as a member of the financial control committee states that has been validated cash flow in 2015; those present grant discharge.

Wim remains for one extra year; Herman Grotenhuis will be replaced.

Hereafter those present grant discharge to the Board for its policy in 2015.

Administration

We're looking for a webmaster. The website is still kept a little up-to-date by Rob Alblas, but there has to be given more time.

Publication of data from members.

As announced there will be created a list and published in the Kunstmaan. This will contain only names, place and email-address, so no address or telephone number.

The meeting agrees.

satellite Status

given by Arne. See below in the Kunstmaan

Any other business

Herman Grotenhuis: shows an interesting article about noise measurements.

He also has a DVD on the renovation of the radio telescope CAMRAS.

Harrie v Deursen.:

The QPSK demodulator is now functioning; the eye pattern looks good.

A print is created.

Peter Smits:

Is going to try the new rotor software of Harry.

Elmar:

The contribution of Geo Quarterly is now £ 15 per 2 years; this one gets 4 issues in PDF format; the last issue of each year on paper.

Rob:

Has visited the GEO symposium in Leicester. A report can be found in this magazine.

Ben:

Has a question about the program WSAT 'running on a raspberry. Edwin Temme has already compiled xtrack for raspberry. (WSAT not yet, but it should be possible, that needs to be evaluated.)

Closure

Rob Alblas

(Secretary A.I.)

The following is a lecture given by Ben Schellekens, about a number of small useful programs, with some tips.

Arduino:

The internal editor is not so convenient; you can set an external editor, eg. Notepad ++. It is also possible to use Visual Studio. This is free for amateurs, but you have to register.

AppCAD:

This program of HP is intended for the design of HF printed circuit board. (For high frequency traces are on board not only by connections but actual components with a particular behavior.)

AppCAD also provides the ability to calculate unwanted mixing products (spur) of a mixer.

kicad:

Another tool to design ("normal") PCBs. This program, unlike for example Eagle does not have restrictions (free version) with respect to size and number of layers in the PCB design.

Kicad is "adopted" by CERN.

In China one can make cheap PCB etching: 5 pcb's size 10x10 for 15 euros. Larger pcb's soon become disproportionately expensive.

On a print of 10x10 you may add several small prints, which must be afterwards be separated by sawing.

The merging is done by designing the prints at the correct position of a 10x10 print and then adding together by means of gerbv later. Unfortunately it is not possible to shift the PCB's to the correct position.

RFSim99

With this program you can draw in an interactive way the circuit diagram of a filter and at the same time display the response.

Interdigital Bandpass Filter

A program to calculate the response of such a filter.

Status of satellites

Arne van Belle

by 20 June 2016

POLAR APT HRPT About Advent (MHz) (MHz)

NOAA 15 137 620 1702.5 morning / evening, on HRPT weak
NOAA 18 137.9125 1707.0 early morning / afternoon
NOAA 19 137 100 1698.0 afternoon / night
Fengyun 3A Not 1704.5 AHRPT new high speed format
Fengyun 3B no 1704.5 AHRPT new high speed format
Fengyun 3C no 1701.3 AHRPT new high speed format
Metop-A of (137 100) 1701.3 LRPT / AHRPT
Metop-B not only 1701.3 AHRPT
METEOR M N1 from (137 100 LRPT) 1700.0 MHRPT, problems with stabilization
METEOR M N2 137 100 LRPT 1700.0 LRPT out MHRPT is
NPP no 7.75-7.85 GHz X-band with 15Mbits / s

Fengyun 3A, 3B and 3C transmit only AHRPT out, this is not to receive a standard HRPT receiver and decoder. Unfortunately, this is not entirely AHRPT according to the standard so that even a Metop AHRPT receiver is not suitable for the FY-3 series!

Fengyun 3C has different data rate than 3A and 3B (3.9 Mbps).

Harrie van Deursen is receiving and demodulating these satellites.

Unexpected Meteor M N1 was active again after it suddenly failed in September 2014.

Unfortunately, there are problems with the stabilization which the images were often unusable and probably is the satellite therefore expelled since 21 March.

NPP (NPOESS Preparatory Project) only transmits the X-band with 15 Mbit / s. It is recommended a tracking dish with a diameter of 2.4 meters! The successor JPSS-1 will transmit only on the X-band.

<http://npp.gsfc.nasa.gov/sciencedocs/2015-06/JPSS-1SpacecraftHRDtoDBSRFICDRev-May302012-470-REF-00184.pdf>

Sentinel-3A is successfully launched, this long-awaited successor Envisat will not receive directly but via EUMETCast.

http://www.esa.int/dut/ESA_in_your_country/The_Netherlands/Sentinel-3A_met_succes_gelanceerd

launches

Meteor-M and M N2-2 N2-1 December 2016?
JPSS-1 (NOAA 20 after testing) 20 January 2017
Metop-C 2017

Geostationary APT (SDUs) / PDUS Job Position (MHz) (MHz)

MSG-4 (IN-11) in 1691 LRIT 1695.15 HRIT 3.4 degrees W, inactive, reserve
 WITH 10 1691 LRIT 1695.15 HRIT 0 degrees W, operations
 WITH 9-1691 LRIT 1695.15 HRIT 9.5 degrees Oh, RSS
 MET-8 no LRIT - 3.5 degrees O, B ackup
 MET-7 1691 1691 57.5 degrees Oh, WEFAX only test
 GOES-E (no. 13) in 1691 LRIT 1685.7 GVAR 75.0 degrees W via EUMETCast
 GOES-W (no. 15) in 1691 LRIT 1685.7 GVAR 135 degrees W via EUMETCast
 GOES 14, 1691 LRIT 1685.7 GVAR 105 degrees W, Backup
 Elektro-L 1691 LRIT 1693 HRIT 76 Degrees East, via EUMETCast
 Electro-L2 LRIT HRIT 78 Degrees East, test phase
 MTSAT-1R LRIT 1691 1691 HRIT 140 degrees Oh, Backup for MTSAT2
 MTSAT-2 1691 LRIT 1687.1 HRIT 145 degrees Oh, via EUMETCast
 Himawari-8 no LRIT no HRIT Operationally, only through HimawariCast
 Fengyun 2D - - 86.5 degrees E
 Fengyun 2E - - 104 degrees Oh, now via EUMETCast
 Fengyun 2F - - 112.5 degrees E, Backup
 Fengyun 2G - - in testing phase

MET-10 is now receiving operational satellite via EUMETCast.

launches

GOES-R further delayed until November 2016
 Himawari-9 third quarter 2016

EUMETCast since Dec 31, 2014 receive only DVB-S2 VCM Eutelsat 10A at 10 degrees East!

To further increase the amount of data sent over EUMETCast in the future to allow for EUMETSAT is transferred in August 2014 from DVB-S to DVB-S2 VCM mode.

The new transponder is on Eutelsat 10A, 11263 MHz H, which stands at 10 degrees East.

The broadcasting standard DVB-S2 8PSK 3/5 VCM (Basic Service) or 16APSK 2/3 (High Volume Service) with a symbol rate of 33 Msps. Unfortunately, DVB-S and the most "DVB-S2 without VCM" recipients no longer usable. With a special driver, some recent DVB-S2 receivers to make more suitable for Basic Service Only. (only 5980 and TBS Skystar 2 eXpress HD, unfortunately this is not true for the Skystar HD USB box)

The signal at 10 degrees East has a greater bandwidth and is therefore weaker than before.

Recommended dish diameter of 80-90 cm for basic service and at least 120 cm for High Volume Service.

During heavy rains, the signal will disappear sooner and longer.

The reception of EUMETCast data for amateurs free of annual fee, you must, however, register at EUMETSAT. Once you have software (60 Euro) and purchase key (40 Euros).

The EO Portal can EUMETCast users log on and view their personal data and settings and adjust if necessary. Also registering as a new user and extending the license is possible here. You can indicate on-line which products you want to receive your ECU.

We are still working on the new improved Tellicast Client, a trial is over "Info-Channel 1" to receive (version 2.12.1). However, there is no installation version, you have yourself put the files in the appropriate folder. This new client is only required if you wish to receive HVS data.

Thanks to David Taylor and Douglas Deans for the info.