The LongPath

February 2022 — Volume 46 Issue 2 A North Alabama DX Club Publication

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Contributors:
AC4G
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K8KI
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From the President

By Bob DePierre, K8KI

It would be an understatement to say our January meeting turned out to be more exciting than I wanted. We won't quite do that again, but you should know the club officers have been working on it for most of the last month, and you will indeed see changes in the next year. You asked for lower costs and greater payback. Ok. We can do that. And I think you'll like it. We'll present the budget again in March.

We need more members, so with Billy Gold's help, I did the presentation for HARC on who we are and the advantages of membership in our group. I also wrote an article in the VOX newsletter. I hope we get some new members. I did get a number of interesting questions from the audience.

I sent out another member survey a couple of weeks ago. I sent it to 84 addressees and got 17 responses. I must admit I don't know what everyone wants, and our club can't be everything to everybody, but I can tell you I'll try to pay attention to the responses I got. The top requested topics (in descending order) were technical, historical, product reviews, antennas, and DXpeditions. Interesting remarks I got said: wear name badges, conduct shack visits, shut the repeater down to save money, continue DX lists at meetings, merge with HARC, merge with ACG, do more vendor talks, love zoom, hate zoom, and every group struggles. Let me hear what you think about these subjects; I'll try to take notes.

I heard a lot of interest in raising club dues at the January meeting. The dues rate is in our constitution, so we have to change it first. I'll ask for an informal vote at our February meeting, just to make sure that's what you want. The formal vote will take place at the following meeting, and, if it passes, will become effective immediately.

We have started working on the hamfest banquet already. We have looked at 5 venues, and a couple of caterers. There's a pretty fair chance we can drop the price as well, but that always comes with its own set of pros and cons. We haven't selected a speaker yet. Ideas?

Our presentation this time will come from the owner of the museum, Dr Marcus Bendickson. He'll tell some stories about Howard Armstrong, inventor of the regenerative and superhet receivers, and FM radio. He'll display breathtaking early superhets, and describe what the early radio pioneers were thinking as they made engineering history.

From the President (continued)

So, let's have the next NADXC club meeting on Tuesday, February 8, at the Museum of Information Explosion at 1806 University. The Zoom sign-on will be exactly the same as in the past. I'll send members the Zoom invitation on Sunday just before the meeting. Again, remember to pick up your dinner on the way over. I'll get a few of you to help set up the tables and we'll just eat there. I'll open the doors by 5:45. The meeting will start at 6:30, and the program by 7:00.

The Museum of Information Explosion

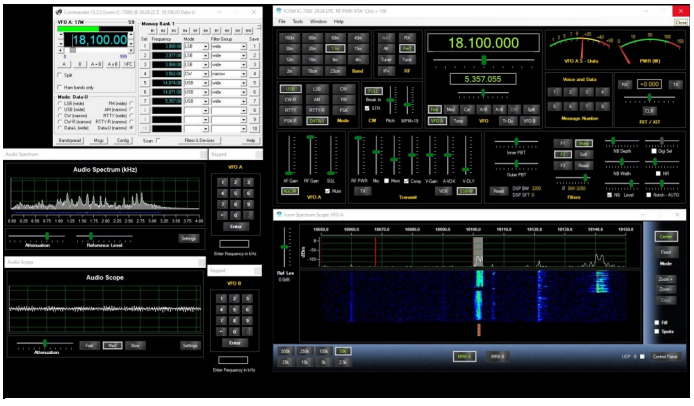
Product Highlight: VA2FSQ's Win4IcomSuite

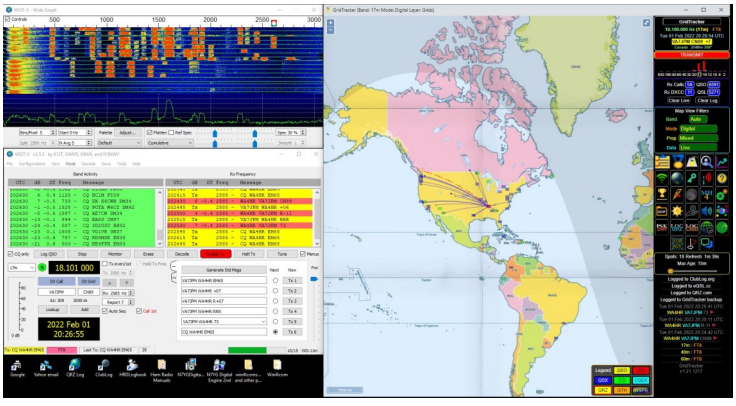
By Barry Barton, WA4HR

I received my ticket in 1977 when radios consisted of knobs, switches and buttons and computers were not really a household item. As time marched on, radios advanced and computers continued to develop. I was not into computers at first. I enjoyed the old-style radios, if that is what you want to call them.

I relocated to Tennessee in 2007. My radio, at that time, was located in a room between the kitchen and the laundry room. By this time, I was using computers on a daily basis and was expressing a desire to get my feet wet in the digital modes. FT8 was not out so I tried psk31. I enjoyed it at first but decided it was not for me as it was keyboard to keyboard, and I was not a typist. A few years later a decision was made to relocate my shack from the house to the newly finished shack located behind my outside garage. Now FT8 was emerging as a new and up and coming mode. Decided to give it a try. I installed WSJT-X on my PC and hooked it up to my newly acquired ICOM IC-7300 using Ham Radio Deluxe for rig control. I really did not like the features that HRD provided for rig control. Note: I use HRD as my logging software, just not for rig control.

In December of last year, I discovered the Win4IcomSuite software package. It came with a free 30-day trial period, I decided to give it a try. If





WA4HR runs dual monitors in his shack, allowing him to control his rig with Win4IcomSuite while monitoring WSJT-X and other tools.

VA2FSQ's Win4IcomSuite (continued)

you like it, you can purchase it for a one-time fee of $60.00 USD with free lifetime updates. It came with a small learning curve, which was not bad long as you watch the video Tom provides describing how to configure it.

As noted in the two included screen shots it provides a lot of controls, resembling more of a radio than HRD.

Features and Notes

- Two VFO keypads, just highlight one, enter the frequency, and hit your enter key. Instantly QSY to your new frequency.
- Various scopes.
- Two analog meters, easy to reconfigure by just clicking the mouse on them.
- Voice and Data keypads which work with CW.
- Various sliders to adjust your power, audio, etc. Note: a mute button for the audio is included.
- The suite provides a means to allow you to install up to six different 3rd party software packages.
- I personally like Commander; it contains 10 different memory banks that contain 10 memories apiece.
- It provides a means to select a different keyer.
- The software is designed to work with HRD v5 and above to log contacts.
- Provides a generous 60 macros, more than I will ever use.
- I find it easy to use and know that by eliminating direct contact with the radio it must prolong the life of the knobs and buttons. It definitely helps preserve the screen.
- The audio and rig control are once again provided by the use of a single USB cable.
- There is an 81-page PDF information manual that's downloadable and contains a wealth of information.
- There are so many different features offered that I have only skimmed the surface.
- In my next article I will explain the use of CW skimmer and Win4IcomSuite working together.

Grounding — on the Utility Side

By Kim Hensley, WG8S

Bob, K8KI, asked if I might write something from the utility side about grounding, and how lightning impacts us on the electric side.

We use grounding for fault protection and dissipation, and for lightning.

On the lightning side, we use static wires and static towers for protection. These may be seen at substations, transmission lines, and some distribution lines.

At substations, static towers are usually the tallest structures at the yard and may be connected with static wires that pass over parts or all of the substation structures.

Within substation yards are ground grids. Every ground grid is unique depending on soil conditions. In our area, we put down a copper grid, intersecting lines that form 20'x20' squares. Ours typically use 4/0 copper wire, and 10-ft ground rods. How many ground rods depends upon the site's resistivity and the fault current. These

Grounding — on the Utility Side (continued)

ground grids dissipate fault currents and lightning. The primary concern is safety, and the goal is to keep step and touch potentials due to a fault within safe levels to protect people within the substation. The potentials are calculated based on a number of factors: soil resistivities, wet and dry conditions, fault currents, etc. These grids more than suffice for lightning protection.

This mesh of wires is all connected as one, either by special compression connectors, or exothermic welds. If a connection is handling lightning and/or fault currents, you do not use bolted connections. Lightning and/or fault currents can simply blow those connectors away!

On transmission lines, grounding practices vary, but keeping tower resistance low is key to both lightning and fault protection.

Lightning arresters on all utility equipment depend on good grounds to perform as they should. Failed arresters are usually the result of poor grounds.

On distribution lines, the National Electric Safety Code (NESC), not to be confused with the National Electrical Code (NEC), calls for "made electrodes" wherever there are lightning arresters. For multi-grounded distribution systems, which we have in our area, there are to be a minimum of four (4) made electrodes per mile. Made electrodes are driven ground rods. This is usually achieved quite readily because of the need for lightning arresters on equipment such as transformers, capacitor banks, reclosers, etc.

With so much grounding in place, lightning has many opportunities to go to ground. However, direct strikes are almost always disastrous, be it your antenna, house, distribution transformer, or equipment in a substation.

When it comes to head protection, I inquired about what helmet I needed. For a protective helmet, weather for biking, motorcycling, and/or racing, the question often put to me is: what's your head worth?

Likewise, with grounding, how much is your gear and house worth? Some hams have no grounds, or they do a small attempt with #4 or #6 conductor. For me, I used 2/0 copper with 10-ft ground rods every 20-ft. with exothermic welds.

I've had the opportunity to do grounding of a few communication sites, and they've done well.

A well-done grounding system has very worthwhile benefits. Information on good grounding of communication sites can be found online or with the ARRL. Having grounds tied together for the same equal potential pays huge dividends, but you can't go cheap on the wire, especially if you are going from one end of the house to the other, and including your tower. Consider stepping up to 1/0 or 2/0 copper, multiple ground rods, and exothermic welds.

When Bob, K8KI, asked me to do this article, he observed the electric utility system does pretty good with lightning. Observation of its performance shows that many good grounds provide good protection. You can step up the performance of your grounding by wisely investing in it.

Proposed 2022 Budget

Discussion to occur at the February 8th Meeting

Dues In (w/April $5 increase)	+$720
Donations (Mick Bell, W8AU)	+$300
Recurring Expenses	(-$668)
Discretionary Expenses	(-$1,000)
DX Banquet profit	+$650
Total change to bank balance	+$2

Station Upgrade, Repair, and Activity

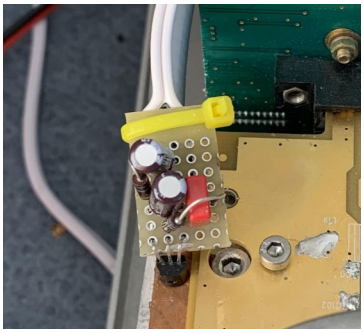
By Steve Werner, AG4W

This month I made a bad assumption that my hardline cable going to the EME array was good. After a lot of testing I found water had gotten into the hardline to N connector adapter. When I took it off I poured water out of the N connector side. I use rescue tape and electrical tape so I was surprised. The test with the time domain reflectometer showed ringing, but I thought that the power splitter between the 2 yagi antennas was the problem. I originally thought the whole problem was the melted balun and water getting into the shield attached to the antenna so I improved the insulator and balun which I discussed in last month's LongPath.

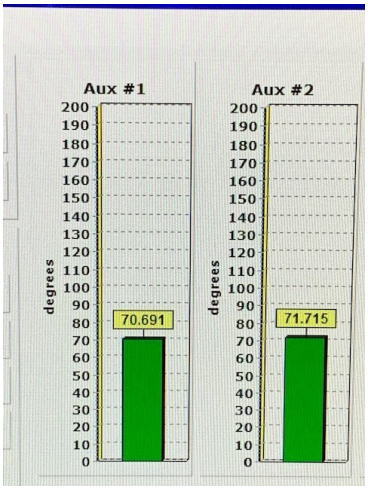
AG4W's Hardline to N adapter

I finally got the EME antenna repaired and started testing and the azimuth Yaesu rotor died. I thought it was the control box or a cable problem, but it turned out to be the rotor. It has been used for over 15 years. Over 10 years of that time it was used to rotate a 2 element quad. I was surprised to see there are none of the smaller Yaesu rotors currently available to purchase in the US. The IC-9700 VHF/UHF transceiver is also not available. Prices are going up so if the dealers do get stock, discounts are not as generous as before. I am glad I'm not working in electronics manufacturing anymore. The supply chain management is a nightmare with delivery delays and obsolete parts.

I made 2 temperature sensors for my 2 meter amplifier this month. They are integrated with the 4 auxiliary channels in my Wavenode WN-2d wattmeter. I used perfboard and just soldered together the sensor, 2 resistors and 3 capacitors. It is good to use ferrites on the shielded leads going to the sensors to avoid interference. During initial testing I was surprised to see the fan was doing a good job of cooling the sensor so I had to put in an air shield in front of the sensor so I could read the heat sink temperature. I am happy with the new temperature display on my monitor.



One of AG4W's amplifier temperature sensors



The temperature measurements display on AG4W's shack computer screen

I am still finding things that were destroyed by the lightning strike in June. Our gas fireplace even had two electronic modules that were damaged.

I participated in the ARRL January VHF contest. I was disappointed that almost all activity was FT-8. FT-8 is good when propagation is poor, which was most of the time, but operators did not seem to change to CW or phone when things improved. I am still concerned about "not in the log"

Station Upgrade, Repair, and Activity (continued)

contacts with FT-8. When several QSOs are worked at the same time there is plenty of room for error. In some cases I gave second acknowledgments to help solve that problem.

This week I have my presentation to the Denby Dale Amateur Radio Club in England. They have meetings every week online with excellent speakers. Adrian, our 2021 banquet speaker, is giving a presentation 2 weeks after mine on his Market Reef expedition. The person responsible for recruiting presentations, Nick G4IWO, seems to go after authors that have published in CQ or QST. He puts a lot of effort into it, but sure is growing his club with members even outside the UK.

My Search for HF Solid-State Amplifiers

By Bruce Smith, AC4G

Before my Alpha 87A HF amplifier died in action and while I was deciding whether to repair it or not, I decided to research solid-state amplifiers to evaluate and determine if I should graduate my ceramic tube finals HF 87A amplifier and break down to purchase a solid-state HF amplifier with full-legal output for my low band operating, especially for my 80m & 160m operations. I have conducted fairly detailed research on available HF solid-state amplifiers that can be purchased in the U.S.A. and have included their parameters which I have tabulated into Table 1 and Table 2 below. It has taken me well over a year to compile this information working on it at various times to pull this information together.

Across the top row of the tables are the various amplifier models that I have provided detailed information. Each row of the tables shows certain parameters that I was interested in. Unless I made a typo error, the data in this table describes each HF amplifiers and the specifications that I was interested in to allow me to analyze and decide if I really needed to purchase a solid-state amplifier or keep my 87A and repair it.

A study of the parameters of the amplifiers listed above show many similarities in final output components, amplifier capability, physical size, required electrical power, and power output. Many of these amplifiers were designed and built in the more recent years; however, there are a few amplifiers in the tables that are older, lower power, and not what I am looking to consider, but I have included them anyway.

Rather than discussing a long-detailed analysis on each amplifier, I will provide details on

the amplifier that has my eye, which is the RFKIT RF2K-S. To this end, the RF-KIT RF2K-S is a kit designed in Germany, but available in the U.S.A. As noted in the DXEngineering Sales Catalog, this amplifier is no longer available at DXEngineering, but is available at Island Amplifiers as a new model B26-PA RF2K-S. With this said, the previous version (RFKIT RF2K-S) of this amplifier is included in the tables and specifications & performance is closely similar to the new fully assembled version (B26-PA RF2K-S).

Any technical-oriented ham operator can build this HF amplifier from a kit (RF-KIT RF2K-S), or purchase it fully assembled (B26-PA RF2K-S) from Island Amplifiers USA. These HF amplifiers offer full legal output (1500W) on the 160-10m amateur bands and 1100W on 6m. These amplifiers employs low noise fans and pin diode T/R switching for quiet QSK operations. Since these amplifiers are powered from 90 to 290 VAC, a nominal RF input of 55W achieves 800 watts output at 110 to 120 VAC and 1500W output on 230 to 240 VAC. The LDMOSFET devices (BLF189XRB) are rated at 3400W. These amps have 4 selectable antennas and a built-in automatic antenna tuner to match up to 3:1 SWR. They also have Auto RF Sense Band Selection capability to operate the antenna on the correct band. These amplifiers (the RF-KIT RF2KS-KT/ B26-PA RF2K-S) offer LAN and Wi-Fi connectivity

Features	ACOM1200S	AMERITRON ALS-606S	AMERITRON ALS-1300	Elecraft KPA500	Elecraft KPA1500	Expert 1.3K-FA	Expert 1.5K-FA
SOLID STATE Finals	Single MOSFET power transistor BLF188XR	Four 50V TMOSFET power transistors MRF150	Eight 50V TMOSFET power transistors MRF150	Two LDMOSFET power transistors VRF2933	Two 1400 watt LDMOSFET power transistors BLF188XR	Single MOSFET power transistor MRF1K50H	Single LDMOSFET power transistor MRFX1K80H
Bands Covered	160m – 6m (including WARC and 60m)	160m – 10m (including WARC and 60m)	160m – 10m (including WARC and 60m)	160m – 6m (including WARC and 60m)	160m – 6m (including WARC and 60m)	160m – 6m (including WARC and 60m)	160m – 6m (including WARC and 60m)
Physical Size	H: 6.380" X W: 14.65" X D: 16.46"	H: 7.00" X W: 9.75" X D: 14.50"	H: 6.50" X W: 10.00" X D: 18.00"	H: 4.40"" X W: 10.80" X D: 11.80"	RF Deck: H 4.5" X W 13.5" X D 11.5"; Power Supply: H 4.5" X W 13.5" X D 11.5"	H: 4.72" X W: 11.20" X D: 17.00"	H: 4.72" X W: 11.20" X D: 17.00"
Weight	31.97 lbs	12.5lbs	23 lbs	26 lbs	RF Deck: 22lbs; PowerSupply: 17lbs	23–24 lbs	23–24 lbs
Electrical Power	93–265 VAC	120 OR 240 VAC	120 or 240 VAC	100–120, 200–240 VAC, 50/60 Hz	195VAC to 250VAC, 50/60 Hz	100VAC to 255VAC	100VAC to 255VAC
Rated Power Watts	1000W	600W	1200W	500W	1500W	1300W	1500W
Drive Power	50W	65W	90W	30W – 40W	50–60W	37–54W	37–54W
Built-in Power Supply	✓			✓		✓	✓
Separate Power Supply		✓	✓		✓		
Max Line Current	10A	10A	12A	20A	20A	18A or 9A (depends 120/240 VAC)	?
Has Automatic ATU	Optional				✓	✓	✓
Band Sensing & Switching	✓	✓	✓	✓	✓	✓	✓
T/R	REL	REL	PIN	PIN	PIN	REL	REL
QSK		✓	✓	✓	✓	✓	
Remotable	✓	✓	✓	✓	✓	✓	✓
USB					✓	✓	✓
RS-232	✓				✓	✓	✓
Antenna Ports	1	1	1	1	2	4	4
Selectable Inputs					2	2	2
LAN compatible					✓		✓
IMD3	> -30dB	>-25dB	>-25dB	?	> -32 to -35dB	> -30 to -35dB	> -30 to -35dB
PRICE USD ($)	$3,974.99	$2,399.95	$3,499.95	$3,524.90	$6,699.95	$4,995.00	$5,595.00

Features	Expert 2.0K-FA	ICOM IC-2KL	ICOM IC-4KL	ICOM IC-PW-1	RF-KIT RF2K-S-KT	YAESU QUADRA VL-1000
SOLID STATE Finals	Six LDMOSFET power transistors MRF151G	Four MOSFET power transistor 2SC2652	Eight MOSFET power transistor 2SC2652	Eight LDMOSFET power transistors MRF150	Two LDMOSFET power transistors BLF189XRB	Eight LDMOSFET power transistors MRF150
Bands Covered	160m - 6m (including WARC and 60m)	160m - 10m (includes WARC/excludes 60m)	160m - 10m (includes WARC/excludes 60m)	160m - 6m (including WARC/excludes 60m)	160m - 6m (including WARC and 60m)	160m -15m & 6m (excludes 60m)
Physical Size	H 5.25" X W 11.75" X D 15.00"	H: 9.5" X W: 4.4" X D: 11.8"	H: 17.00" X W: 11.75" X D: 19"	H: 13.80" X W: 11.00" X D: 16.00"	H: 7.48" X W: 12.20" X D: 16.73"	H: 5.31" XW: 16.14" X D: 17.28"
Weight	59 Lbs	29.99 Lbs	79.37 Lbs	55.50 Lbs	35.27 Lbs	46.3 Lbs
Electrical Power	190VAC to 255VAC (50/60 Hz) up to 20A	117VAC to 255VAC (50/60Hz)	117VAC to 255VAC (50/60Hz)	117 - 240VAC	90VAC to 290VAC (50/60 Hz) up to 20A	120VAC or 240VAC (50/60 Hz)
Rated Power Watts	2000W	500W	1000W	1000W	1500W+	1200W
Drive Power	50-60W	50 - 80W	Max 100W	60 - 100W	40-55W	80W
Built-in Power Supply	✓			✓	✓	
Separate Power Supply		✓	✓			✓
Max Line Current	?	18A @ 120 VAC or 9A @ 240 VAC	60A	?	?	?
Has Automatic ATU	✓		✓	✓	✓	✓
Band Sensing & Switching	✓				✓	✓
T/R	REL	REL	REL	REL	PIN	REL
QSK				✓	✓	
Remotable	✓			✓	✓	
USB	✓				✓	
RS-232					✓	
Antenna Ports	6	1	4	4	4	4
Selectable Inputs	2		2	2	4	2
LAN compatible	✓				✓	
IMD3	> -30 to -36dB	Unknown	Unknown	<-60dB	up to-40dB	up to-40dB
PRICE USD ($)	$6,995.00	$2,455.00	MSRP: $6,700.00	MSRP: $5,000.00	$4,990.00	$4,299.95

to allow for remote operating.

In summary, with the emphasis on modern FCC compliant, quiet, tubeless full legal output amplifiers, the RF-KIT RF2KS-KT/B26-PA RF2K-S amplifiers have everything that I would want in an HF amplifier and would be fun to assemble from a kit. My question: is it cheaper to repair my Alpha 87A or spend $5 Grand on a new HF solid-state amplifier? After some thought and at the current time, I have decided to keep what I have and repair it since it has many of the features of new amplifiers, less solid-state finals. The 87A was an amp ahead of its time in-the-day and when repaired will continue to be the work horse it always has been for me. If you have been looking for a solid-state amplifier, I trust the tables above will help you to easily decide which amplifier may be good for you. 73 and Good Luck in your solid-state amplifier search and selection.

2022 NADXC Officers and Directors

President	Bob De Pierre, K8KI
Vice-President	Steve Molo, KI4KWR
Sec./Treasurer	Chris Reed, AI4U
Directors:	Bruce Smith, AC4G
	Fred Kepner, K3FRK
(Ex-Officio)	Steve Werner, AG4W

How to Join

Come to a club meeting or send in an application by mail (form on www.NADXC.org)

This edition of The LongPath published by: Fred Kepner, K3FRK

Products in the Spotlight

By Steve Molo, KI4KWR

This month I will cover two products that have become very popular within the POTA teams and even our YouTube influencers at GigaParts. With these two paired you can have power generated for a long time while running a POTA pileup.

PowerFilm 60-Watt Foldable Solar Panel

Designed, engineered, and manufactured in the United States, the 60W Foldable Solar Panel from PowerFilm is generous in capability and forgiving in cost.

Lightweight, durable, and extremely portable, these solar panels are mounted to weather-resistant fabric that quickly folds for storage and transport. Ruggedized to survive in the harshest of conditions, these panels will continue to work even after part of the panel sustains damage, unlike many other panels on the market.

Easily stowed away in most backpacks, this solar panel is a perfect accessory to provide power to a wide range of electronics.

Comes with the Aptiv Weather Pack Connector (formerly Delphi) making sure your connection is secure and protected against the elements.

PowerFilm solar panel unfolded and folded

Specifications

Electrical Characteristics:

- Rated Voltage at Pmax 15.4V
- Rated Current at Pmax 3.6A
- Open Circuit Voltage 21.9V
- Short Circuit Current 4.6A

Physical Characteristics

- Part Number F16-3600
- Folded Dimensions 13.0 x 7.5 x 2.7 inches/330.2 x 190.5 x 68.6 mm
- Unfolded Dimensions 47.0 x 51.5 inches/1,193.8 x 1,308.1 mm
  Weight 2.6 lbs./1.2 kg

Thermal Characteristics

- Temperature Coefficient for Power - 0.200 (%/C)
- Temperature Coefficient for Voltage - 0.240 (%/C)
- Temperature Coefficient for Voc - 0.300 (%/C)
- Temperature Coefficient for Isc 0.109 (%/C)

So now you have the solar panel. so how do you use the power generated? This falls into the second product featured this month. There are two options: one for lead-acid and the other is for the newer $LiFePO_4$ batteries.

Genasun 10A MPPT Solar Charge Controller for Lead Acid Batteries

So, you paid for a 60-Watt solar panel, and now you want to get your money's worth. The GV-10 extracts more power from any given panel than a PWM or other MPPT controllers. PWMs may offer a lower controller cost, the GV-10 MPPT controller delivers more power reducing the cost per watt by 10-30%. The GV-10 is the ultra-high-speed MPPT solar controller.

- Maximum recommended panel power 140W, 10.5 A charging current. Advanced Multi-Stage charge profile for 12V Lead-Acid/AGM/Gel/Sealed/Flooded batteries.
- High-Speed MPPT: speed tracking 15 Hz (15 times per sec.)

Products in the Spotlight (continued)

- 98.3% Peak Efficiency and Tiny Night Consumption (0.9 mA)
- Advanced electronic protections for reverse panel and battery polarity.
- 5-Year Warranty, made in the USA, certified cETLus, Class 1 Div.2, conform to CE, FCC, RoHS.

Genasun 10A MPPT Solar Charge Controller for Lead-Acid Batteries

Charge Profile

- Flooded batteries (Jumper ON):
- Bulk Voltage: 14.6 V
- Absorption Voltage: 14.4 V
- Absorption Time: 2.5 hours
- Float Voltage: 13.5 V
- Equalization Voltage: 15 V
- Equalization Time: 2h (every 30 days)
- Sealed batteries (Jumper OFF):
- Bulk Voltage: 14.3 V
- Absorption Voltage: 14.1 V
- Absorption Time: 2.5 hours
- Float Voltage: 13.7 V

Genasun 5A MPPT Solar Charge Controller for $LiFePO_4$ Batteries

Mission-Critical Reliability: Genasun controllers are deployed to the most remote locations on Earth. They endure years at sea, harsh Antarctic winters, freezing conditions in the upper atmosphere on solar powered airplanes, and in a few off-the-map locations. Genasun's Ceramic controllers set a new benchmark for reliability. If you need mission-critical power, this is your controller.

Genasun 5A MPPT Solar Charge Controller for $LiFePO_4$ Batteries

Features

- MPPT BUCK technology
- DC Output Load with Low Voltage Disconnect (LVD)
- LED indicator for battery state of charge
- 99.85% Peak Efficiency
- High-speed MPPT Tracking (15 times per sec)
- Advanced electronic protection (over-temperature, panel overload, battery and panel switched, reverse battery polarity, reverse panel polarity, load short circuit)
- Advanced 2-stage charge profile for 4S $LiFePO_4$
- Tiny self-consumption
- Radio Silence, HAM Radio friendly
- Made in the USA
- 10-Year Warranty

Specifications

- Max. Recommended Panel Power: 65 W
- Rated Battery (Output) Current: 5 A
- Continuous Rated Load Current: 5 A
- Max Panel Voltage: 27 V
- Max. Recommended Panel Voc at STC: 22 V
- Min. Battery Voltage for Operation: 7.2 V
- Trickle Charge to Recover Dead (0V) Battery: Yes

- Charge Voltage CC/CV 14.2V (3.55 V per cell)
- Load Disconnect/Reconnect Voltage: 11 V / 12 V
- Operating Temp. Range: -40 °C - 85 °C
- Electrical Efficiency: 96-99% typical
- Operating consumption: 0.150 mA
- Night Consumption: 0.125 mA
- Environmental Protection: IP40, Conformal Coating, Nickel-Plated Brass & Stainless Hardware
- Connection: 4-position terminal block for 12-30 AWG wire
- Weight: 2.8 oz., 80 g
- Dimensions: 4.3" x 2.2" x 0.9"
- Certifications: CE, FCC, RoHS

January Meeting Minutes

By Steve Molo, KI4KWR

Meeting was called to order at 6:30pm with 15 members present

General discussion

- Programs for HARC Meeting
- DX
- CONTESTS
- Membership — membership push via HARC presentation

Budget discussion

- Chris's Law…lay the books out and show membership what has been done under his responsibility as Treasurer
- Bouvet DX $1000.00 donation, some had hard feelings over it and it now affecting the future
- Do we go with Budget B shown by Bob K8KI… and only lose $200 hindering DX dinner cost?
- DX Dinner
- DX Fund
- Yearly Expenses
- Membership
- Budget
- Do we make a resolution to raise dues and then grandfather 2022 due paid already? We had a huge consensus here, 90% for the $5 due raise

Social Media Presence

- Facebook vs website, where do we attract club information

DX Banquet

- Do we have the Banquet at MIE?
- Do we eliminate the Banquet completely?
- Prizes as a raffle like Florida Contest Group does and raise $$$

Comments by Membership:

- We are challenging Bob for this budget. We ask for direction on the budget, lower cost DX dinner
- We don't need numbers…we need direction. Then we have another meeting and present thoughts and direction.
- The concern is that we are going to lose money every year….we just need to find a new spot for the dinner.
- Only worry about one year at a time.
- Nobody wants to be in the red on this budget, but if we got 7kK three years ago that is what we have now
- We need to look at other location and food options
- This is a club, not a business
- Need to better outline money in/money out for Feb or Mar meeting.
- Get estimates for counts of 100/150/200 people and with/without alcohol, then decide.

A motion was passed to research additional options and report back in Feb.

The meeting adjourned at 8:30pm

Upcoming DX Contests

By Chuck Lewis, N4NM

CQWW RTTY WPX Contest, (DIG), 80-10 meters

Feb 12, 0000Z to Feb 13, 2359Z
Exchange: RST & Serial No.
See page 75, Feb. QST and
www.cqwpxrtty.com/rules.htm

Asia-Pacific Sprint, (CW), 40 & 20 meters

Feb 12, 1100Z to Feb 12, 1300Z
Exchange: RST & serial #
See page 75, Feb. QST and
www.jsfc.org/apsprint/aprule.txt

KCJ Topband Contest, (CW), 160 meters

Feb 12, 1200Z to Feb13, 2359Z
Exchange: RST + continent code; JA send prefecture
See page 75, Feb QST and www.kcj-cw.com

ARRL Intl. DX Contest, (CW), 160-10 meters

Feb 19, 0000Z to Feb 20, 2359Z
Exchange: RST plus State/Province; DX send RST plus pwr.
See page 75, Feb. QST and www.arrl.org/arrl-dx

CQ 160 Meter Contest (PH), 160 meters

Feb 25, 2200Z to Feb 27, 2200Z
Exchange: RS plus State/Province; DX: RS plus CQ zone
See page 75, Feb. QST and
www.CQ160.com/rules.htm

REF French Contest (PH), 80-10 meters

Feb 26 0600Z to Feb 27, 1800Z
Exchange: RS plus Serial No.; F stns. send Dept.
See page 75, Feb. QST and https://concours.r-e-f.org/contest/a-propos/

UBA (Belgium) Contest (CW), 80-10 meters

Feb 26, 1300Z to Feb. 27, 1300Z
Exchange: RST plus Serial No.; ON stns. send province
See page 75 Feb. QST and
www.uba.be/en

ARRL Intl. DX Contest, (PHONE), 160-10 meters

Mar 5, 0000Z to Mar 6, 20, 2359Z
Exchange: RS plus State/Province; DX send RS plus pwr
See www.arrl.org/arrl-dx

Stew Perry Topband Challenge, (CW), 160 meters

Mar 12, 1500Z to Mar 13, 1500Z
Exchange: 4 Character Grid Square
See www.kkn.net/stew

Other contests:

Balkan HF contest, CW/SSB, 1300Z, Feb 13 – 1700Z, Feb 13

Russian PSK WW contest, DIG, 1200Z, Feb 20 – 1159Z, Feb 21

REF Contest, SSB, Feb 26, 0600Z – Feb 27, 1800Z

FTn DX Contest, DIG, 1200Z, Feb 26 – 1200Z, Feb 27

UBA Spring contest CW, 0700Z – 1100Z, Mar 6

DXpeditions in February 2022

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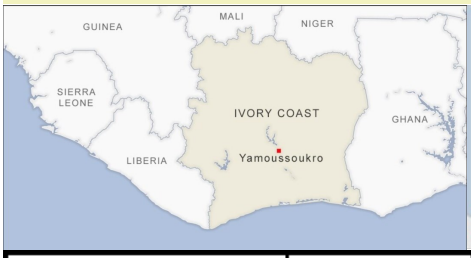

Start Date	End Date	DXCC Entity	Call	QSL via	Info
2022 Feb01	2022 Feb10	Surinam	PZ5KV [spots]	Club Log OQRS	By DL6KVA; HF, CW
2022 Feb03	2022 Feb20	Zimbabwe	Z2	LoTW	By DL7BO as Z22O and DJ6TF as Z21A; 160-10m; CW SSB FT8 FT4
2022 Feb04	2022 Feb13	Ivory Coast	TU5PCT	LoTW	By OK1BOA OK1FCJ OK6DJ fm IJ85ce; 80-10m; CW SSB RTTY FT8; QSL via Club Log OQRS
2022 Feb06	2022 Feb28	Senegal	6W	Club Log OQRS	By ON4AVT as 6W/ON4AVT fm Warang; 80-10m; SSB + digital; end fed wire, double Zepp; operation to continue utlil April
2022 Feb08	2022 Feb15	Maldives	8Q7AH	LU4DXU	By LU4DXU fm Dharavandhoo Island (IOTA AS-013); HF; SSB FT8
2022 Feb08	2022 Mar01	St Kitts & Nevis	V4	LoTW	By KG9N as V4/KG9N fm St Kitts (IOTA NA-104); @V47JA; HF; QSL via KG9N
2022 Feb12	2022 Feb15	Ogasawara	JD1	LoTW	By JE1XUZ as JE1XUZ/JD1; HF; CW SSB FT8; 50w; QSL via JE1XUZ (B/d)
2022 Feb12	2022 Mar08	Maldives	8Q	Home Call	By OK2WM as 8Q7WM and OK2WX as 8Q7WX fm Innahura I (IOTA AS-013); 160 80 40m; CW SSB
ARRL International DX Contest, CW (Feb 19-20, 2022) Check here for pericontest activity too.					
2022 Feb24	2022 Mar08	St Vincent	J88PI	GW4DVB Direct	By GW4DVB fm Palm I (IOTA NA-025, FK92ho); 40-6m; SSB FT8
2022 Feb25	2022 Feb27	Puerto Rico	KP3RE	EA5GL	By KP3V KP3H KP4RD KP4VP WP4U WP4N NP3MR NP3MJ WP4AW fm Vieques I (IOTA NA-249); 80-10m; CW SSB FT8
2022 Feb26	2022 Mar26	Sint Maarten	PJ7AA	AA9A	By AA9A; 80-10m; CW SSB FT8 FT4
March					
2022 Mar01	2022 Mar17	Curacao	PJ2	LoTW	By DK5ON as PJ2/DK5ON; 160-6m; SSB CW + digital, incl FT8/4; QSL via Club Log OQRS or DK5ON (B/d)
2022 Mar01	2022 Mar31	Austral Is	FO		By SP5EAQ fm Rimatara I (IOTA OC-050); HF; SSB; Covid permitting