The Binnacle

November 2022 Volume 44 Issue 11

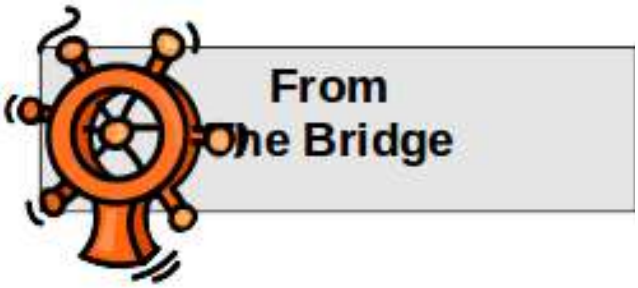
Edward White
An antique electrical engineer
Struggles to understand a modern radio

Ken Lockley on
Beginning a new build,
A Canadian Forces "Ville" class tug.

Plus

An old friend from Shaver and Hobbies needs help.

Scott Munford----Rightly Proud!



Presidents Message Nov 2022

Good Day,

Well fall has finally arrived and the weather has changed to our normal rainy days, so less time at the pond but more time in the shop building.

This month's meeting is our Annual General Meeting, so election of executive and our yearly financial report. Please come out and have a say in your club and vote for your executive.

This month's learning session will be lighting of your boats for the Christmas Lighted Boat Parade tentatively scheduled for 3 Dec and the following two Saturdays. Members who have done this before are encouraged to bring some lights or even their boat decorated so new members can get ideas for their boats. Experienced members may also get an idea or two with the information session. Ron Hillsden has donated some lights for the 50/50 Draw, these can be used to light up your boat.

If you know of anyone that is interested in the club bring them down to the meeting and let them see what it is all about. If you have any questions about how to do build your boat send them to the executive and we will schedule them as one of the learning items for our meetings.

David Nelson
President

On the Radar!

Our next general meeting will be Thursday November 10th at 7:30.in the usual place (St Peters Church Hall, 3939 St Peters Road off Quadra Street near the Keg).
This is our official Annual General Meeting and we will be electing next year's Executive.
We will also have presentations on lighting up your models.
Also, please bring your present project to the meeting for a show and tell.

The December meeting is planned as a social with spouses and friends invited. Coffee will be supplied and we will be asking members to bring some goodies to share.

Regular General Meetings
2 nd . Thursday, 7:30 pm. St Peter's Anglican Church Hall, St. Peter's road, Lakehill.
Next meeting 10th. November In Person!!!!

Every Sunday Morning, 9am-ish to 11:30-ish at Harrison Model Yacht Pond, Dallas road.

The Langford Lake Navy.
Wednesday Mornings 9 :30 ish, Leigh Rd. At Tillicum.

Victoria Model Shipbuilding Society

GENERAL MEETING MINUTES
St Peters Church Hall
Oct 13 2022

Call to order:

- Time: 7:35
- Members Present: 11

Reports:

- Financial – Fiscal Year Surplus $83
- Outreach -
  Bill Andrews eye surgery went well
  Ron Armstrong has a walker and needs help re-wiring a servo, Mike Claxton to help

Old Business

- Cory Weins won the Denton Cup.

New Business

- How to show value of membership?
  - Improve education at meetings
  - Look into Survey Monkey and survey Rick Gonder did before Covid. -
- New Aluminum float at Langford Lake has a high rail and we can't use it. Municipality is installing a kayak dock which should be OK

Donations:

- none Did we send BC Hobbies a Thank you letter? To check

Entertainment Next Meetings:

- Nov – AGM (Ron Hillsden is stepping down, we need a secretary) and Christmas Lights Dave to ask Scott Munford and Jim Cox to present
- Dec – Christmas reception. We can have coffee and food at the hall again. We will invite members and guests to a Christmas goodies pot luck at the Church Hall on our regular meeting night for socialization and Christmas tea.

Upcoming Events

- Christmas Light up. Due to the uncertainty of weather, we are selecting December 3 as the first date for a sail past, with the opportunity for sail pasts on the following 2 Saturdays 10 and 17. That gives members a chance of 1, 2 or 3 sail pasts depending on the weather.? To notify Black Press and James Bay Beacon newspapers

Round table

Paint and Glue discussion

Adjournment:

- 9:30

Jeff Johnston

Those of you who frequented B C Shaver and Hobbies when they were still on Fort Street will remember Jeff Johnston, a former coworker and long time friend . Jeff has recently sustained severe and life-changing injuries while working at his new job where he has damaged his T-12 vertebrae in his spine after a devastating fall - resulting in Jeff no longer being able to feel or use his legs.
His family has set up a GoFundMe drive to provide some relief, which is linked in this post. Any contributions are welcome and greatly appreciated.
To further provide relief, BC Hobbies is contributing by matching in-store donations up to 5000 dollars! To contribute, please visit BC Hobbies in store and we can take your donations at the till. There is no doubt a long road ahead for Jeff, but with your help we can make a difference.
https://gofund.me/2bb9c164

Scott Munford U.E.

Scott Munford's application to obtain UE (Unity of Empire) status was approved. For those that don't know, UE is a Canadian honour granted to ancestors of United Empire Loyalists. After the Paris Peace Treaty 1783, Parliament voted to allow United Empire Loyalists who relocated to Canada from America, to use these two initials after their names. It was a way of acknowledging and honouring their loyalty and sacrifice to the Crown.

The United Empire Loyalists were generally those who had been settled in the thirteen colonies at the outbreak of the American Revolution, who remained loyal to and took up the Royal Standard, and who settled in what is now Canada at the end of the war.

Today, Canadian descendants of Loyalists can still apply to the UELAC (United Empire Loyalists Association of Canada) to include the initials UE (for Unity of Empire) after their names because the title is hereditary. This is a unique quality amongst Canadian honours. It doesn't come with any special status or rewards. To obtain an UEL CERTIFICATE, you must be able to fully document descent from a United Empire Loyalist ancestor.

Congratulations, Scott!

SHIPS BOATS AND MODELS NOVEMBER 2022. KEN LOCKLEY

The Canadian Navy in late 1942 commissioned Russell Boat builders of Midland Ontario to produce 37 small 40ft. harbour tugs. The war came to an end before all were completed but they served the navy and industry very well for many years.

Currently I can only find 6 that still are afloat, but I suspect there's a few tucked away in our many waterways. Recently one was found aground up near Bella Coola. Many were used for Reserve and Sea Cadet facilities across the country.

One positive aspect to these vessels was they could be moved by rail for servicing or change of operating areas. There are many naval reserve facilities in the Great Lakes regions where these vessels gave some of our young people their first chance to go on a boat bigger than a rowboat.

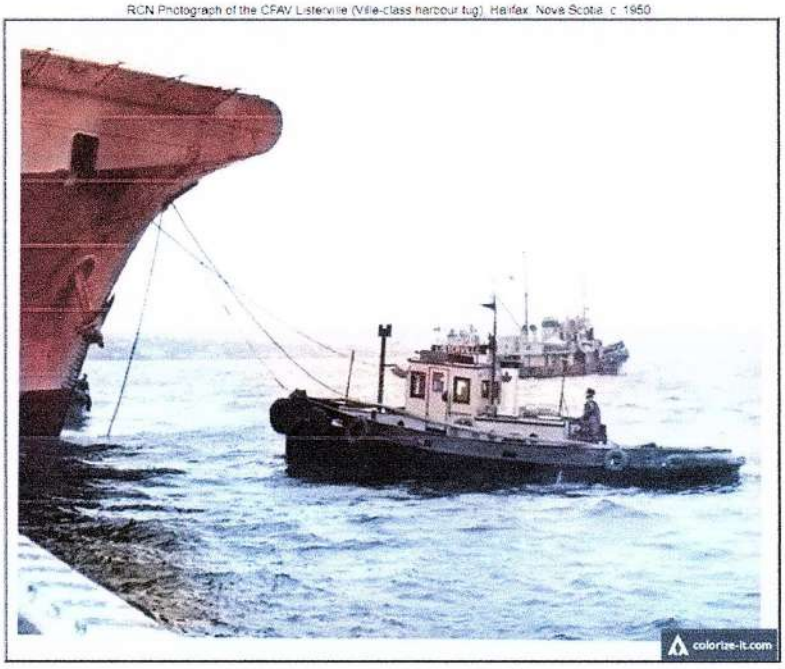
Esquimalt, BC, May 12, 1986. Photo courtesy Mac Mackay.

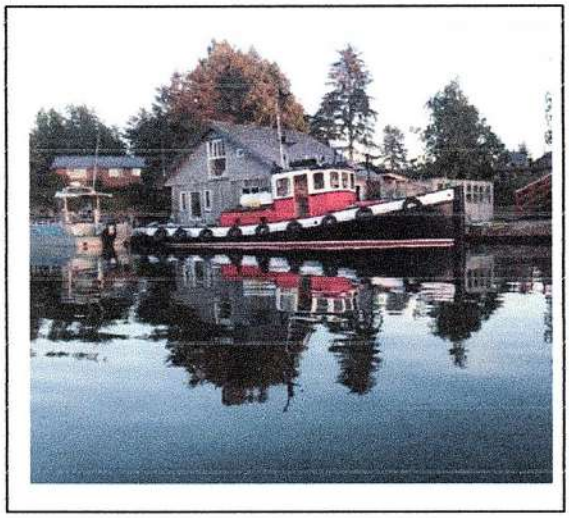
ENLARGE to 1024 pixels wide ENLARGE to 600 DPI SCAN

The picture below left is a great shot of the CFAV Listerville line handling the HMCS Bonaventure in Halifax Harbour. The Bonny was part of Canada's big navy in the early 1950'. Our navy had several ex-HMS vessels at that time. The Korean conflict seemed very pressing at the time and our Canadian Navy played a significant role in that period of the 1950's.

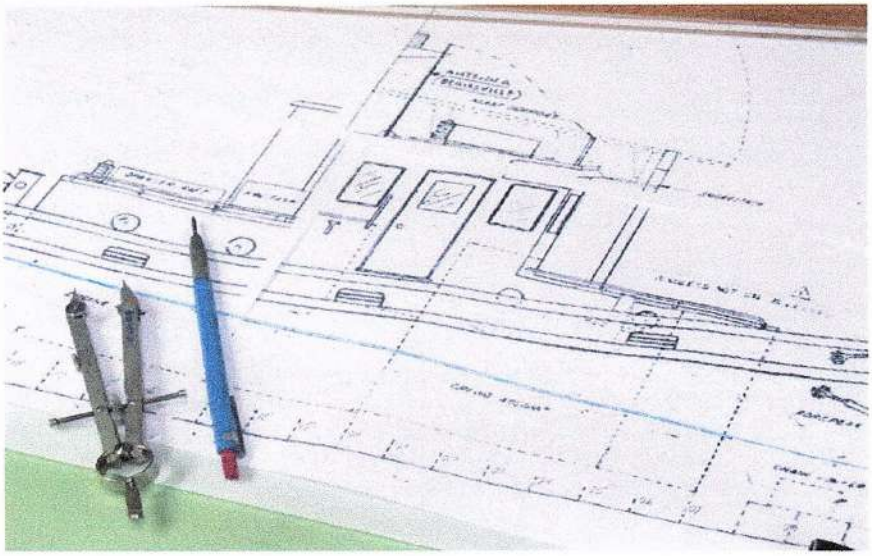
The picture below is the Beamsville now based at Tofino. It's currently being used by a firm that caters to divers with diving platforms and small utility barge towing.

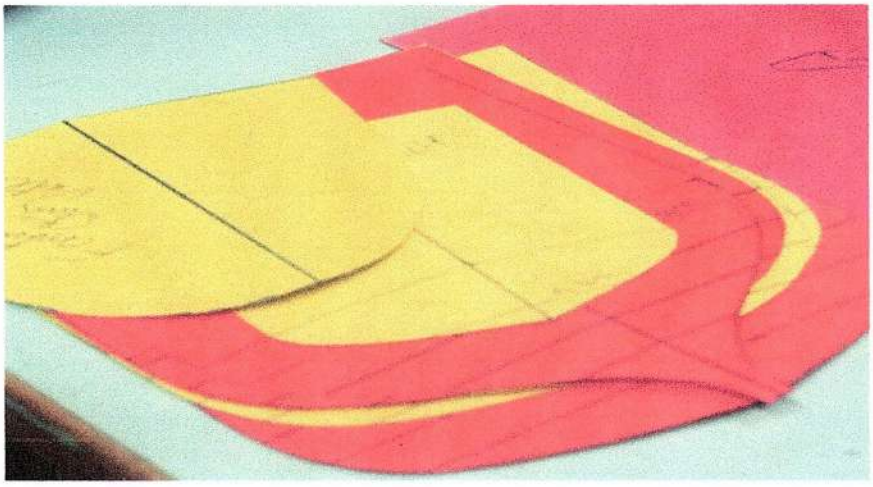
RCN Photograph of the CFAV Listerville (Ville-class harbour tug), Halifax, Nova Scotia, c. 1950





OCTOBER 2022 IN THE WORKSHOP





This month I started on my Winter project, and that's to build the little tug to the left. The first thing to get is plans for the vessel, one way or another.

In my case, Ron Hillsden came to my rescue. He was able to take the drawings off the Russell Boats site and using a Poster Program enlarged the drawings to full size for me finishing 25 inches.

The body plan came with six frames through the middle of the vessel and basically, I had to create the first and last frame. This isn't too difficult as I have done it several times in the past successfully.

My fold up drawing board comes in handy every now and then, particularly at the early stages of starting a new vessel. This small drawing exercise remind me of starting industrial arts in grade seven at Oak Bay Junior High. Our drafting teacher was Ernie Lythgoe and he had tremendous patience with the young boys learning to mechanically draw.

Long before computers and auto cad and working a screen.

I use high-quality plywood available at "Windsor Plywood" which isn't as easy to get at present as I believe it's a Russian product which we are not importing In time. I suspect Windsor will find a replacement.

Brightly coloured Bristol board Patterns ready for the next stage next Month.

My New Radio

I have recently bought a new radio. It's a Turnigy TGY-i6S. It says at the beginning of the manual " The TGY-i6S transmitter and TGY-iA6B receiver constitute a 10 channel 2.4 Ghz AFHDS 2A digital proportional computerized R/C system. This system supports quadcopters."

I've been reading the manual and am really surprised by the capabilities that it has.

Now, actually, it's quite a few years since I really explored the radio control topic or really understood what a modern radio control unit does. I suspect I am not alone, I think most of us just find out how to make the motor controller and rudder work and leave it at that. In fact, being honest, the last time I really knew what I was trying to do with a radio was making a proportional controller out of a piece of dowel and a triangular sheet of copper. That would be about 1960! It was called a "Galloping Ghost" and was to be applied to a single channel tube radio that was controlled only by a single push button. So I decided to find out what a “10 channel 2.4 Ghz AFHDS 2A digital proportional computerized R/C system” actually is. And bore you with the details.

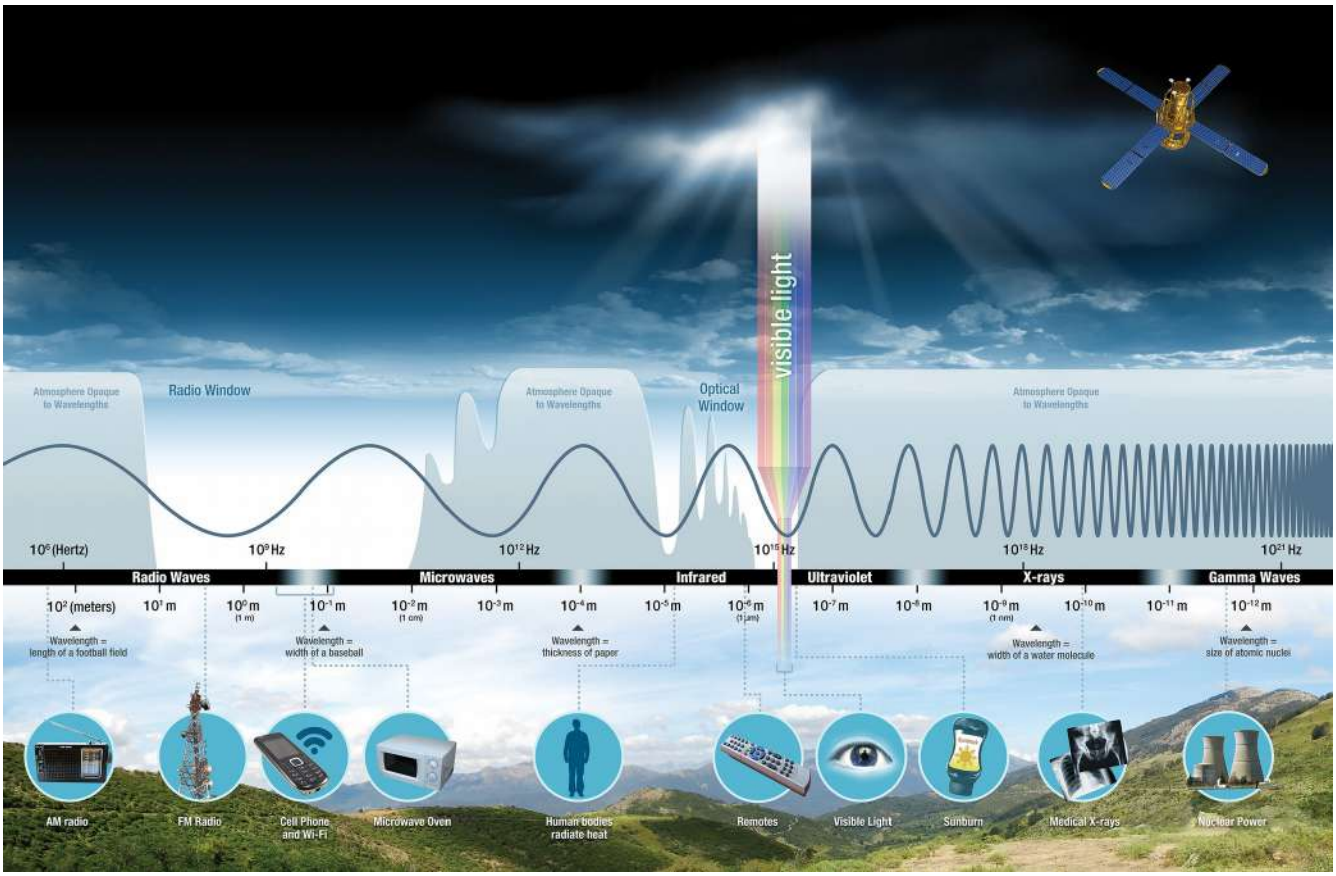
2.4 Ghz means that something is vibrating to and fro 2.4 thousand million times a second. That's pretty quick. In this context that something is a radio wave, part of the electromagnetic spectrum.

I refuse to try to go any deeper than saying an electron is something weird that has no mass or weight and carries a negative electric charge. Electrons are mostly found in atoms, and we think of them as being in orbits around the core of the atom, which has protons and neutrons. (more weird things, this time with a bit of mass and, in the case of protons, with a positive charge). Anyway, some electrons in some atoms are not as tightly locked in as others, they can move around a bit. If we drag electrons out of a lump of matter, it becomes positively charged. If we push extra electrons in, we call it negatively charged. We can make them move by applying a sort of electrical pressure, which we call a voltage. When lots of them keep on moving, we have an electric current flowing.

When an electric current is flowing through something, it creates a magnetic field, and when something is charged, either positively or negatively, it creates an electric field. These fields spread out at the speed of light. Let's think about applying a positive voltage at one end of a piece of wire. That positive voltage is going to drag electrons away from the wire, and a magnetic field is going to exist as long as the electrons are moving,(not very long). When the electrons stop moving, the whole piece of wire has the same positive voltage, and the magnetic field dies off and an electric field comes into place.

If, then, we apply an alternating voltage, going from positive to negative and back again, that wire will produce alternating magnetic and electric fields around it, moving out at the speed of light, which can be detected as being like waves. Depending on the frequency that we alternate the voltage, we can detect those waves in different ways. We call them electromagnetic waves. (Except for when they don't behave like waves at all, and we have to think of them as particles instead, hence the Photon. Honestly, we don't know what we are talking about!)

Here is the wonder of the "Electromagnetic Spectrum"



I just love this picture. It shows one of the best ways we have found so far to think about something that "communicates" from nearly everything across nothing and to everything else. It's awesome to think that a billion or so years ago, blobs of something like jelly, floating in water, found that they could react to some of these signals in ways that gave them an advantage in reproduction. And that resulted in higher lifeforms like whales and dolphins, as well as lower ones like us.

Anyway, above the black line across the middle, the figures show the frequency in Hertz, (vibrations per second).The frequency can also be expressed as the wave length, below the line, since all the electromagnetic waves travel at the same speed. (Just because we measured it as the speed of light first, that's what we call it!) You can see here that light is just a very small part of the spectrum, where evolution found a means of detecting and signalling that bit to our brain. Across the bottom, the bubbles show different uses and effects of that range of frequencies.

We are now concerned with the 2.4 Ghz band. That's the highlighted area above the cellphone and wifi bubble. It actually runs from 2.4 to 2.4835 billion cycles per second. This band is shared by very many modern devices, wifi and bluetooth, wireless keyboards and mice, Microwave ovens, baby monitors, wireless microphones and speakers, amateur television, garage door openers, radars, smart power meters, and ourselves, the radio control hobbyists. It should have huge potential for interference between different devices, but in fact it doesn't. That's due to two things.

The first is the band is mainly used for very low power devices with short ranges, and at that frequency the signals are weakened quickly by any solid objects and even by the atmosphere. So Bluetooth typically has a range of only 60 feet, wifi a couple of hundred. This band is the very same as

microwaves and radar. High power can cook you! Microwaves are carefully shielded to contain the radiation. Our radios are legally limited to 1 watt of output power but the majority are operating at much lower powers, 100 milliwatts or less.

The second line of defense against interference is a genius system called frequency hopping spread spectrum. This means that both the transmitter and the receiver change the transmission frequency many times a second. The pattern of frequency changes is fixed in the transmitter, and set in the receiver as the two are "bound" together at power on. The pattern is pseudo-random and the number of possibilities are huge. So it is very unlikely that any two transmitters will be using the same frequency band at the same time for more than a few milliseconds.

These signals operate on line-of-sight. If your mate steps between your transmitter and the model he will act just like the piece of meat he actually is, soaking up the microwave power in his body.

Now the 2.4 Ghz carrier frequency is over three hundred times as fast as our previous 72 Mhz band, which means that it can carry three hundred times as much information.

So all the information that the model needs, plus a whole lot more that we don't yet know it might want, can easily be transmitted as purely digital signals, giving another huge potential jump in reliability.

But do I understand it yet? Well no. If you have been paying careful attention you will have noticed that I have glossed over the way that the information we want to send is actually coded onto the 2.4 Ghz band carrier waves. Going back to the early days of radio, and the bottom end of the spectrum, the first radio worked by "amplitude modulation", that is, varying the strength of the carrier wave by the information we were sending. It worked really well for morse code (digital) and pretty well for audio, but it was constantly getting interference that sounded like hisses and crackles. Then at higher frequencies, 80 to 110 Mhz, we moved to frequency modulation, where we waggle the frequency of the carrier wave, just a little bit, in line with the signal. It gave us much better reception.

I can then imagine that our "channels" on our old 72 Mhz sets that separated the instructions for each servo were something like audio musical tones that themselves were switched on and off around 50 times a second in the pattern of "pulse width modulation" that is fed to the servos.

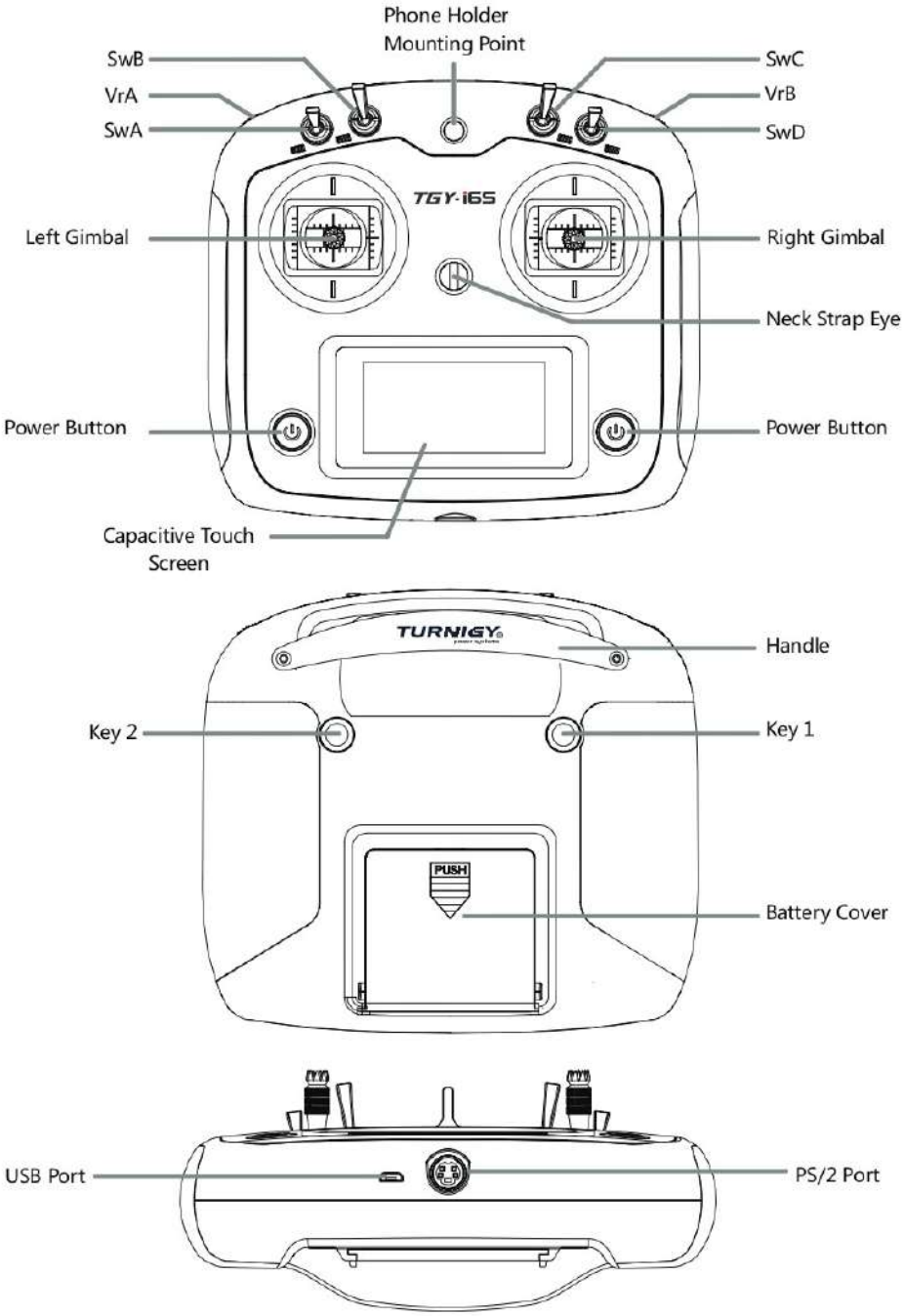
So here's the challenge for any of you who are geeky enough. Granted that our kit is doing this amazing random hopping between frequencies just above 2.4 Ghz, what do we do to those short "packets" of carrier waves that ends up having some kind of meaning when the receiver is done. It's a long, long way down from 2.4 Ghz to 50 hz, there's lots of room to play about with the signals, but how do we actually do it?

If you are sensible, of course you will just buy the kit, celebrate the money you haven't had to spend, hook it up the way the manual says, and enjoy running your boat and shooting the shit with your friends at the pond of a Sunday Morning.

Here's a picture of the radio set just bought by one of the club's cheapest members. (Me)

And here's the diagram of the controls and ports.

2.2 Transmitter Overview



Downloaded from www.Manualslib.com manuals search engine

Front and centre is a touch screen, and all the computer functions of the transmitter are controlled by it. On either side of the screen are two push buttons for power on/off. For some reason they have to be pushed both at once, maybe to reduce the chance of operation by accident. Above the screen are the two joysticks and a neck strap ring. There are no trims on the joysticks, all that is done on the touch screen. On the top of the front face are four switches and a threaded insert on which to mount your cellphone or anything else you want to.
The outside switches are single throw and the inside double throw.

On the top corners are two knurled scrolling switches, double throw, centre sprung. They come conveniently to your two index fingers as you hold the transmitter, and your third fingers are hovering over two plain push buttons on the back. There's an aluminium carry handle at the top back, although it's edges are just sharp enough to be uncomfortable. A little emery cloth will cure that. On the bottom of the back is the battery compartment that takes 4 AA size batteries, (it will run on both alkaline and rechargeable batteries). Channels 5 to 10 on the transmitter can be assigned to any of these four pairs of switches.

The transmitter came with two receivers, one of which has standard servo connectors, and the other computer type I/O pins that will run to a microprocessor on the model that shifts the whole idea just as full size aircraft have gone to "fly by wire". You are not then so much “controlling the model” as “telling the robot what you want it to do, and the microprocessor decides how”.

I'm just going to start with two channels on the joysticks, rudder and motor speed control, or rudder and sail position. Then I'll work my way up to lights, maybe separate control of two sails, or two motors, even the wonders of channel mixing. It's very clear to me that the potential of this radio unit is way beyond anything I am going to have the patience to build.

The bottom face has two ports, a USB port, and a PS/2 port. The usb port will let you connect it to a computer, either to receive firmware updates, or to turn the transmitter into a games controller on the computer, you can then train on a simulator before going out for model reality. I haven't found out yet what the PS/2 port does.

But there's apparently one more astonishing (to me) capability on this set. That is, I can buy separately, sensor modules for temperature, voltage, and rpm. These I can install in the model and connect to the receiver, and those measurements will appear on the transmitter's touch screen. So the receiver can transmit and the transmitter can receive!

Go to the Hobbyking web site and look at the Turnigy i6S. It's 85 bucks, for Pete's sake, and it calls itself "entry level".

We thank our corporate supporters

Our Website is
https://www.vmss.ca