Newcomers' Notebook

Have Go Box, will travel

Jules Perrin VK3JFP, Publications Committee Technical Editor

Figure 1. A Go Box station featuring two popular Icom transceivers, the IC-7300 covering 160m-6m, and the IC-2730A for 2m/70cm. The LDG model Z-100A antenna tuner at top right ensures that a variety of antennas can be accommodated. The case is a 'rack unit' type; these generally come with top and bottom covers to protect the installed equipment during transport.

This issue needs an article on the Go Box, they said. My first question was: "What the heck is a Go Box?" Well, what an interesting journey this became and here is the story. It's not the anthology of Go Box design, but we have to remember newcomers need to start somewhere.

What is a Go Box?

A Go Box is a complete, all-in-one portable amateur radio station. Something that you can pick up and take with you in the event of an emergency situation where independent communications is needed.

Figure 1 above shows a completed Go Box station sold by shack-in-a-box.com. This unit includes an all-bands HF/50 MHz rig, an automatic antenna tuner, a 2m/70cm VHF/UHF rig, and a pair of loudspeakers, all housed in a durable portable container. This, of course, is a 'top shelf' style of Go Box, but the general principles of the Go Box idea are well-illustrated.

The very portability of a Go Box makes it popular with enthusiasts of POTA, SOTA, Field Day contests and such-like outdoor ham radio activities – Parks-on-the-air, Summits-on-the-air, World-Wide-Flora-&-Fauna, John Moyle Memorial National Field Day, etc. A Go Box also serves as a portable backup for your home station.

Figure 2. This clamshell style ABS "instrument case" features ribbed construction, air-tight O-ring seals, and both pluck foam and eggshell-foam inserts for equipment protection. These cases can be obtained in various sizes, ranging from 515 (w) by 200 (h) by 415 (d) mm (415 x 186 x 355 mm internal) through to 210 x 90 x 135 mm (186 x 75 x 123).

Thinking about this idea, my little mind exploded with questions you need to consider in planning, designing, and building your own Go Box.

Buying a ready-made Go Box is an option, but as we are generally experimenters and tinkerers on our own level, building our own Go Box is at least rewarding and fun, as well as having the advantage of saving money.

So, what are the basic components needed in a Go Box?

- A radio (or two?)
- A storable antenna
- Antenna tuner
- Microphone/s to go with the rig/s
- Power source (optional?)
- A suitable, robust box

Each component needs careful consideration to meet your own needs.

The radio

Amateurs have many bands to choose from when selecting an operating frequency range. The priority for the selection for your Go Box rig is functionality. Will it cover the bands you require in emergency operations?

What is a suitable, or workable, power output rating for a transceiver? For emergency operations under likely or extreme conditions, your choice will generally be for a QRP rig, but perhaps not too-QRP – so, 5-10 Wpep output but not 0.2 Wpep. Likewise for SOTA or POTA style operations.

A 100 Wpep transceiver in which the power output can be set at lower values may be a good candidate for a Go Box for both emergency and for Field Day activities. The IC-7300 in **Figure 1** is a good example.

Working "all bands" from a Go Box allows you flexibility, but it means extra equipment to fit in, such as an appropriate wire antenna, or several, and maybe a larger power source to suit the multi-band radio. A single-band, or even a tri-band transceiver might suit your ideas.

If your preference is for the VHF and UHF bands, the availability of repeaters in an operations area in the event of an emergency should be considered.

For obvious reason, the radios you consider should be powered by a 12 volt DC source. This provides you with a variety of options.

Power source

Knowing which band or bands you want to operate, and you have selected the radio or radios that meet your needs, the power consumption can be calculated. Hours of operation and mode of operation also need to be considered at this point.

The mode of operation is important because monitoring a frequency(s) draws little power. In relaying messages, constant-

Here is an eminent example of a 'start-out' Go Box portable station. Carmel VK2CAR put together this QRP station-in-a-clamshell. The blue object at left is a high-capacity lithium battery, a homebrew 7 MHz SSB transceiver takes up the middle area, while the low-power antenna tuner (a ZM-2 by Emtech) is on the right. Her transceiver is a 'single-board' DIY kit, an ILER-40, featuring ~5 Wpep output and low current consumption on Rx. The kit is from ILER in Spain and sold on-line. Carmel housed the transceiver in a project box and made a homebrew front panel.

power transmission modes will drain a rechargeable power source rapidly.

You may want your Go Box to include a battery, or decide to carry a suitable battery along with the Go Box. Using your vehicle as the power source may not be a sensible option as a flat battery in the middle of nowhere is not conducive to having a good day, particularly during an emergency.

Once you have the battery capacity worked out, now you need to recharge it on the move. Your vehicle may be an option for this, with solar panels as an alternative. If you are working in an area where there may be limited sunlight, consider making provision for a spare battery.

Antenna and ATU

The selection here is entirely personal. An antenna in the UHF and VHF range offers the possibility of mounting on the Go Box. HF antennas necessarily need to be a wire type, such as a single-band dipole or multi-band linked dipole. A coaxial cable feedline between the antenna and the rig also needs to be accommodated.

For operation on the HF bands, an antenna tuner is generally an essential item. Even when using a coax-fed style of HF antenna, getting as much power to the antenna as possible is the key to effective operations. Some HF rigs include a basic antenna tuner; experience (ask around) will inform you if it meets the needs of your likely operations.

Small antennas are easily erected and dismounted. Larger antennas take more time to erect and dismantle.

Microphone

Handheld microphones are best suited to portable use, whether for casual on-air activities or during emergency operations. Consider including a spare. This should be of the same type and model that suits the radio.

Microphones that include an amplifier and/or compressor – the so-called "power mic" – draw more current, which will affect your power consumption calculations. Some larger microphones, meant for radio shack use, may be too bulky and not robust enough for portable emergency operations.

The box

All this equipment needs to fit into a rugged case of some sort. When researching this topic, I saw photos of Go Box assemblies in cases ranging across tough plastic, metal, and wooden cases – and some combinations of those materials. The choice of box is also personal.

Plastic is a good option, but I've seen photos of assemblies in metal and wooden cases. The choice of box is also personal. Test instrument cases (aka road cases) made of moulded ABS (acrylonitrile butadiene styrene) plastic, like that shown in **Figure 2,** are widely available from a huge variety of suppliers – both "bricks-and-mortar" retailers as well as online marketers.

When choosing a box, don't forget to account for the inclusion of any extras, as well as any necessary connecting cables.

FURTHER READING

Articles

A Go-Box for the IC-705, Dino Papas KL0S, QST, June 2022, ARRL.

Build a Rapid Deployment Radio Go-Box, Glen Popiel KW5GP, QST, September 2015. ARRL.

QRP Go-Box 2023 with Icom 705 and Windows 11 PC, Karl-Heinz Krawczyk DL1GKK, online at: dl1gkk.com

Small QRP Go-Box powered by Raspberry Pi4, KX2 and TH-D74, Karl-Heinz Krawczyk DL1GKK, online at: dl1gkk.com

Extras

SWR Meter. An SWR meter is a great idea if you are operating portable on HF. Some tweaking is always needed when changing sites and re-erecting the antenna.

Lights. The radio may have operating lights, but you will still need some sort of lighting for the rest of your operations. Writing in logbooks or relaying messages in the dark could be a tad awkward otherwise.

Tool kit. As Murphy said, "Sometime, somewhere it will break." This always happens at the worst times. Packing a few essential tools like sidecutters, pliers, coax crimpers, screwdrivers and a multimeter would reduce the blood pressure a bit in the event of a breakdown.

Now I have learned a bit about Go Boxes. They are a great idea and worth consideration if you wish to go portable or prepare for an emergency.

Have fun and stay safe.

Sources for instrument cases

www.jaycar.com.au
www.roadtechmarine.com.au
www.swamp.net.au
giggear.com.au
sounddevices.com.au

Our cartoonist, Carmel Morris VK2CAR, enjoying her portable home-built 7 MHz low-power SSB station at a local park.