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TH-D72 Review

**New dual-band
hand-held
transceiver
from Kenwood**



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Richard Newton G0RSN is a hand-held transceiver specialist – using them in his professional communications work, he has also thoroughly enjoyed evaluating the latest Amateur Radio transceiver from Kenwood.

The Kenwood TH-D72

Richard Newton G0RSN says, “It’s the rig we’ve been waiting for!”

The Kenwood TH-D72 is the rig many of us have been waiting for – and it has been a long time coming! It’s a dual-band transceiver covering the Amateur 144 and 430MHz bands with the usual extended receive coverage we’ve come to expect nowadays. However – this radio is much more than just another dual-band rig! Indeed, the TH-D72 has a built in TNC that conforms to the AX.25 protocol, allowing it to be used for packet radio when connected to a computer.

The TH-D72 also has firmware that will use the internal TNC to operate Automatic Packet Reporting System (APRS) functions without the need for a computer. But that is still not the end of its versatility, as the TH-D72 has its own built in SiRF Star III GPS with a 5000 point logger function, as well as the ability to function as a standalone GPS. The unit will also talk to the internal TNC and give you fully functional APRS operation without the need for any other bit of kit! Amazing!

However, before we get down to the more advanced features on the rig, I’d like to share my first impressions with *PW* readers. To start, the TH-D72 is a very smart radio indeed and is 58mm wide by 21.3mm high and 33.2mm deep. These measurements are those without projections like knobs and antenna taken into consideration. Incidentally, what impressed me about the size – was the depth of the transceiver, as it’s deeper than most modern hand-helds but I didn’t find this off-putting in the slightest.

My brother, **William G7GMZ** commented on the size and particularly the depth of the rig. So, I guess he makes a fair point that those with small hands may find it a bit of a handful – but I really didn’t find it an issue

at all, especially as it only weighs in at a meagre 370g complete with battery, antenna and belt clip!

As I said, the rig is really smart, finished in charcoal and grey with the kind of attention to detail and panache one has come to expect from Kenwood. However, although the display could not be described as large – the read out is clear and the controls are very sensibly laid out on.

There’s a positive and easy-to-operate joystick type control, which helps with navigating the menus. The most commonly used functions are assigned to large effectively backlit buttons on an ergonomically indented keyboard. The volume and multi function rotary controls are on the top of the rig, next to the supplied helical antenna with SMA socket.

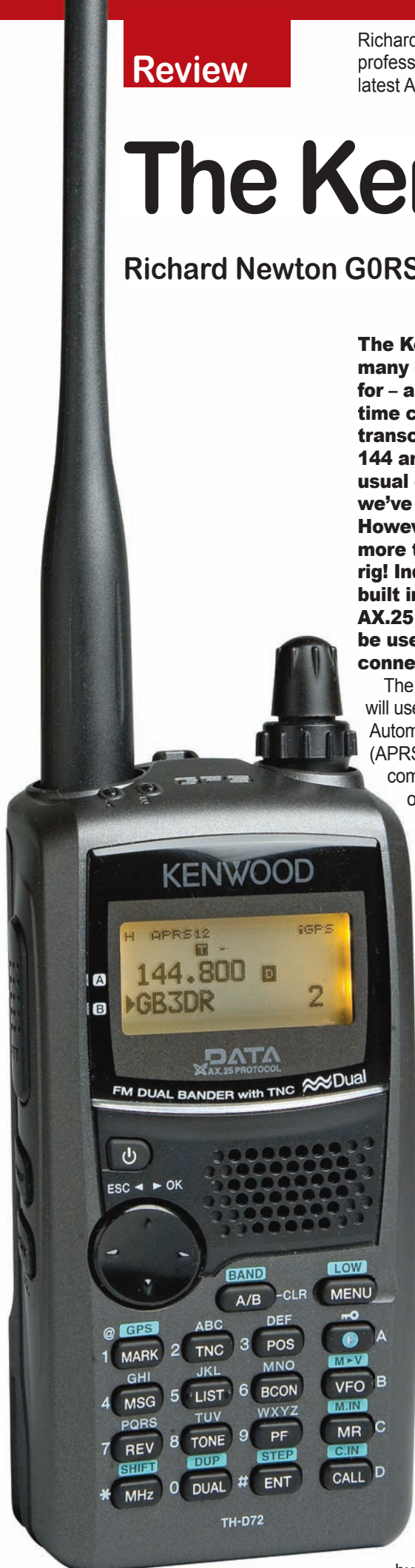
The side panels are also home to the push to talk (p.t.t.) and functions such as back-light and monitor button, while speaker microphone and other external connections are provided via the opposite side panel of the rig.

Richard’s Reviews

Those of you who are familiar with my reviews will know that I tend to follow a given format; first impressions count, so what does the rig look like? Answering these questions – TH-D72 passed with flying colours! Next is the ease of use test – can I pick it up and use it? And following on from there – how many functions can I use without resorting to the manual?

Well, evaluating the latter point was to be interesting – because when I got the rig the manual had not been finished! It was still in draft form, so it was fortunate then that the rig proved to be a cinch to use. Admittedly, I’m used to APRS functions and that no doubt helped me in being able to set up the more advanced features. But even here the rig was cleverly pre-configured, so all I really had to do to get on the air was input my callsign.

As for getting on the air, selecting a frequency and writing it to a memory and even initiating the internal GPS, it was all a breeze!





The very simple plain top with the recessed SMA antenna connection.

Have you ever wondered what your locator is while on holiday, or when you're just out and about? Wonder no longer – with a TH-D72 to-hand, you only need to turn on the GPS, press the **POS** (Position) button and there you'll see the Latitude and Longitude along with the Maidenhead Locator.

Time to get back down to earth Richard and look at the basic specifications! The rig packs a punch and like many of its contemporaries now offers a full 5W of radio frequency (r.f.) output – even when on battery power. It's supplied with a 7.4V d.c. 1800mAh Li-ion battery pack.

The transceiver has 1000 memories; each one can be given an eight digit alphanumeric name. Entering memories is really simple – but is even simpler when using the free software.

I noticed that the review rig came with a USB lead and saw that one of the ports on the side of the rig was labelled with a USB logo. A quick on-line search revealed that Kenwood have supplied free downloadable programming software, titled *MCP-4A*. I downloaded a little program from the site that created a communication port on my laptop. Then I downloaded the main software, all in all the whole thing from searching to downloading and initiating the software took about 10 minutes!

I then connected the rig to the PC with the supplied USB lead, following the on line instructions. Before I knew it I was programming the radio! You can configure memories, functions, APRS menus and even download the GPS loggers, it was fantastic!

What's APRS?

I can imagine some readers asking, "So, what is APRS?" The answer is straightforward – it's a system that takes



The supplied charger.

positional data and transmits it in packets of data over the radio. This is achieved using a system of digital repeaters on 144.800MHz and these signals ripple across the land, are received, decoded and your station will appear on a map.

If you are connected to a Global Positioning System (GPS) then the radio will update as you move and your journey can be tracked. The obvious benefit with The TH-D72 is that you don't have to have a separate GPS and TNC attached to your rig; – it's all built-in, complete with the necessary firmware too!

There are several computer programs for home or portable APRS operation, *APRSPoint*, *UiView* and *WinAPRS* are just but a few, you can even get iPhone and iPod apps and APRS software for Android smart phones now!

The location and station data is also ported to the Internet and if you go to www.aprs.fi you can see stations that have been received via Internet gateways transposed on Google maps without the need for any

radio equipment at all! To illustrate this. I took a screen grab of me out and about with TH-D72.

The TH-D72 doesn't have a map included on the screen –but it does show the details of stations it hears on the APRS and provides details on the display. It then holds the information in a volatile memory bank that will hold details of 50 stations. If you select a station, you can then navigate up to 10 screens

Both sides of the TH-D72 have keys and connections.



Conclusion

Pros: Incredibly versatile rig, many functions, great fun and easy to use.

Cons: The rig is deeper (thicker) front-to-back because of its complexity.

Supplier: Kenwood Communications UK.

Price (suggested): £479.95.

Accessories: The accessory list is very long so I'm only mentioning the larger items: EMC- clip microphone with D earpiece and p.t.t. £35.71, KSC-32T Rapid Rate Desk-top Charger £47.00.

Further information: www.kenwood-electronics.co.uk/products/comms/

giving you details of any status messages sent by that station, plus a distance and bearing, altitude, speed and much more!

The transceiver also incorporates *SkyCommand II*. This is a system where the TH-D72 will remote control a high frequency (h.f.) radio with the system on board – such as the new TS-590S. Once set-up, TH-D72 can be used as a remote control and speaker microphone for the main rig.

The TH-D72 also offers extended receive coverage and this includes the airband. It can also be set to receive transmissions using amplitude modulation (a.m.) and even has the 8.33 kHz airband channel step included. It's also capable of full dual-band operability – that's to say you can have both variable frequency oscillators (v.f.o.s) on v.h.f. or both on u.h.f. or any mix you require. The received audio can be faded between bands, from having an equal split to having one completely silent.

On The Air

For the on the air evaluations I used the TH-D72 on foot, on my bicycle and in the car attached to my mobile antenna. In practice I operated the APRS on **VFO A** and had the volume turned down (so that I couldn't hear the packet radio signals bleeping away) and I either had 145.500MHz or the local v.h.f. repeater on **VFO B**.

The rig operated beautifully and the received audio was impeccable, just what you would expect from Kenwood in my opinion. And the reports I received while operating with the rig were excellent.

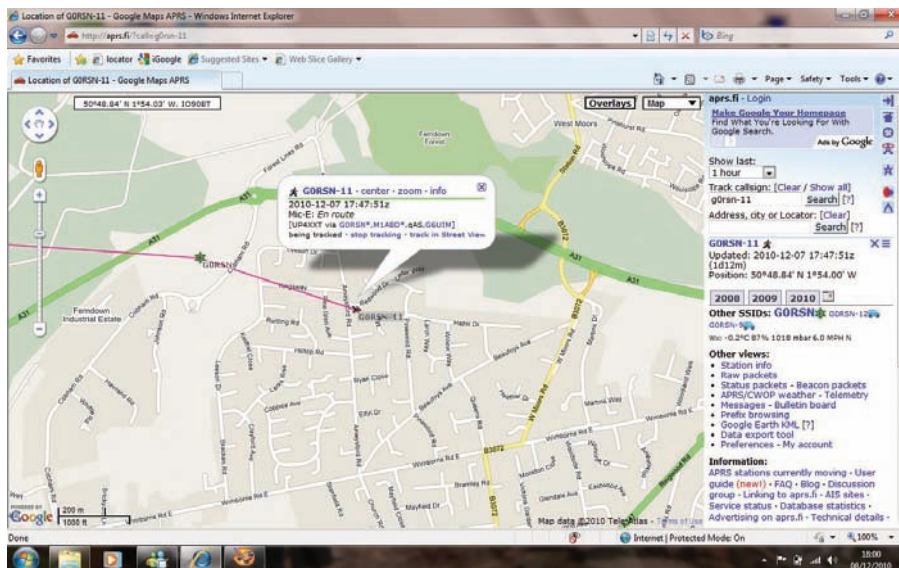
I took the rig up to my Mother's home in Minehead, Somerset and met up with family. Here I used the TH-D72 to chat to my sister-in-law **Carolyn Newton M3CSK** and brother William **G7GMZ** while they were on the way to the house. (I just used the rig on its own helical antenna, and on the internal batteries from my Mum's house).

Interestingly, I first made contact on with William and Carolyn via **GB3FI** on 430.925MHz and I was really pleased because the repeater is situated near Cheddar, about 65km (40 miles) away! We then went to a simplex v.h.f. frequency when they got closer, Carolyn M3CSK commented, "You were very loud and very clear" and "The audio is great."

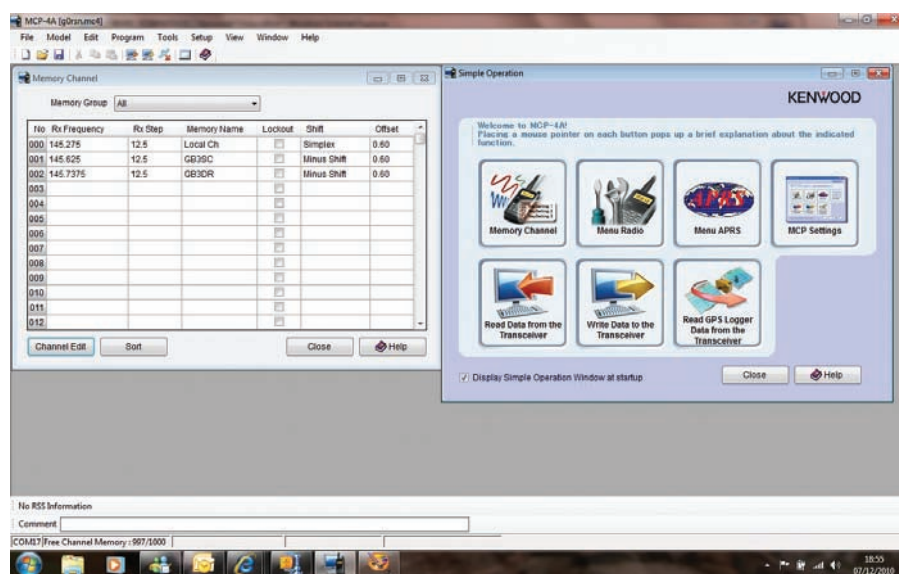
Echolink & GPS Comments

For those Echolink fans out there the TH-D72 has 10 dedicated Echolink Dual-Tone Multiple-Frequency (DTMF) memories to store callsigns or conferences names and node numbers.

I have to say that the internal GPS really impressed me; it locked onto



A screen grab of the APRS in action.



A screen grab of the programming software in action.

satellites really quickly and seemed to work well indoors as well! Admittedly, my shack and operating desk is upstairs and near a window – but the rig was sat next to me while I was typing the review and it was quite happily receiving lots of satellites, and transmitting beacons on APRS while monitoring 145.500MHz.

My Constant Companion!

The TH-D72 was my constant companion for two weeks, but despite this there are so many features I've just scratched the surface of what it could do in this first article. So, I'm planning to have some more fun with the transceiver and report back to readers. Watch this space!

In summing up, I must say that being a modern hand-held, the TH-D72 does everything we would want and expect – plus a lot more. Features range from the Continuous Tone Coded Squelch System (CTCSS) to automatic repeater shift and scanning of memories and VFO ranges. The menus are easy-to-use and navigate

especially when I consider the rig's many functions.

Do you remember the song *Deck of Cards*? It features a Soldier who was seen with a deck of cards in a Church and was reprimanded. In the spoken style reply **Wink Martindale** concludes the song, "So, you see sir, my pack of cards serves me as a Bible, an Almanac, and a prayer book and friends, the story is true, I know, I was that soldier".

Well everyone, I can confirm that the TH-D72 served me as a fully functional GPS, APRS Station with upgradable firmware – and a 'top of the range' Dual-Band handie and friends, that is the truth, I know, I was that lucky reviewer!

It was a long time coming – the Kenwood TH-D72 gets the thumbs up from me!

PW

Next month I'll be enjoying delving even deeper into this complex, multi-function rig. Until then – have fun with your TH-D72!

Manufacturer's Specification

| | | | |
|--|---|---------------------------------------|--|
| Radio frequency output power high: | 5W (approx). | GPS port (NMEA 0183). | |
| Radio frequency output power low: | 500mW | High quality front speaker. | |
| Radio frequency output power extra low: | 50mW (approx). | Key beep On/Off. | |
| Frequency range receive v.h.f.: | 118 - 174MHz | Key Lock. | |
| Frequency range receive u.h.f.: | 320 - 524MHz | Mask unused band: | (A or B Band). |
| Frequency range transmit v.h.f.: | 136 - 174MHz | Memory channel lock-out. | |
| Frequency range transmit u.h.f.: | 430 - 440MHz | Memory channels with Alpha-tagging: | 1000 Memory Channels |
| Antenna Impedance: | 50Ω | Memory name function. | |
| Microphone Impedance: | 2kΩ | Memory shiftFunction. | |
| Operating temperature range: | -20°C to +60°C with standard battery | Menu system for individual set-up. | |
| Power requirements (nominal): | (External)11.73 to 15.87V d.c. | Monitor Function | |
| Receiver circuitry - double superheterodyne. | | MR-Shift | |
| Receiver intermediate frequency: | A-band 1st i.f. 49.95MHz | Multiple Scan Functions | |
| | A-band 2nd i.f. 450 kHz | Multi-scroll Key | |
| Receiver intermediate frequency: | B-band 1st i.f. 45.05MHz | Packet Operation - AX25 and KISS Mode | |
| | B-band 2nd i.f. 455kHz | Programmable Memories | |
| Receiver sensitivity (Main & sub bands): | Band A <0.18μV (At 12dB SINAD:) | Radio Control Program: | (Option) |
| | Band B <0.22μV | Power-On Message | |
| Receiver squelch sensitivity: | <0.13μV | Power-On Password Protection | |
| Transmitter maximum frequency deviation: | < ±5kHz (f.m.) | Programmable Function Keys | |
| Transmitter modulation distortion: | <3% (300Hz to 3kHz) | Reverse Repeater Checker | |
| Transmitter spurious radiation: | > -60dB | Selectable Repeater Offsets | |
| Weight: | 370g (with standard battery, antenna and belt clip) | Separate Squelch for A and B Bands | |
| | | Simultaneous two frequency receive. | |
| | | <i>Sky Command 2:</i> | (In conjunction with a suitable Kenwood h.f. transceiver). |
| | | Time-out timer. | |
| | | USB Port: | Built-in Mini-USB port |
| | | Wide/Narrow deviation selection. | |
| | | COM_AMA_APRS Features | |
| | | Alert on special call. | |
| | | APRS data output: | To external GPS unit such as AvMap Geosat 5 APRS |
| | | Alert to message reply. | |
| | | Decay algorithm. | |
| | | Digipeat function. | |
| | | Message memory: | 100 Messages |
| | | New-N paradigm | |
| | | Packet data output: | (To a PC via the USB Port) |
| | | Proportional pathing. | |
| | | QSY Function. | |
| | | Received packet data pop-ups | |
| | | Relay path display | |
| | | SmartBeaconing.™ | |
| | | State/Section /Region pathing. | |
| | | Station list memory: | Lists up to 100 Stations, with filtering and sorting options |
| | | User Phrases. | |
| | | Visible Message Notifications. | |
| | | Weather Station Function: | Can be connected to suitable Peet Bros. Ltd and Davis Ltd weather stations to receive, transmit and display various weather parameters |
| Amateur Radio General Features | | | |
| 1750Hz Tone Burst Function. | | | |
| 8.33KHz spacing on Air Band | | | |
| Alphanumeric I.c.d. display | | | |
| 13.8 V d.c. input facility. | | | |
| Antenna Socket (SMA). | | | |
| APRS Function (via built-in TNC). | | | |
| Auto Power Off. | | | |
| Automatic Repeater Offset (v.h.f.). | | | |
| Built-in Packet TNC 1200/9600bps. | | | |
| Channel Display Mode. | | | |
| Clock (Time/Date Function). | | | |
| Encoder/Decoder DTMF: | Choice of 42 tones | | |
| Encoder/Decoder DCSS: | Choice of 104 digital tones | | |
| Direct Frequency Entry. | | | |
| DTMF Memory: | 10 Channels, 16 digits | | |
| Dual Receive: | v.h.f. x u.h.f., v.h.f. x v.h.f. or u.h.f. x u.h.f. | | |
| Duplex Operation. | | | |
| DX Cluster monitoring (via built-in TNC). | | | |
| DX Cluster tune function: | Outputs 'Tune data to suitable Kenwood h.f. transceiver | | |
| Echolink memory dialler channels. | Firmware Upgradable | | |
| via USB Port | Yes | | |
| Front panel keypad. | | | |
| Full dual-band operation: | V+V/V+U/U+U | | |