



# The Trio TS-700

Chris Lorek G4HCL details the Trio TS-700 2m all-mode transceiver.

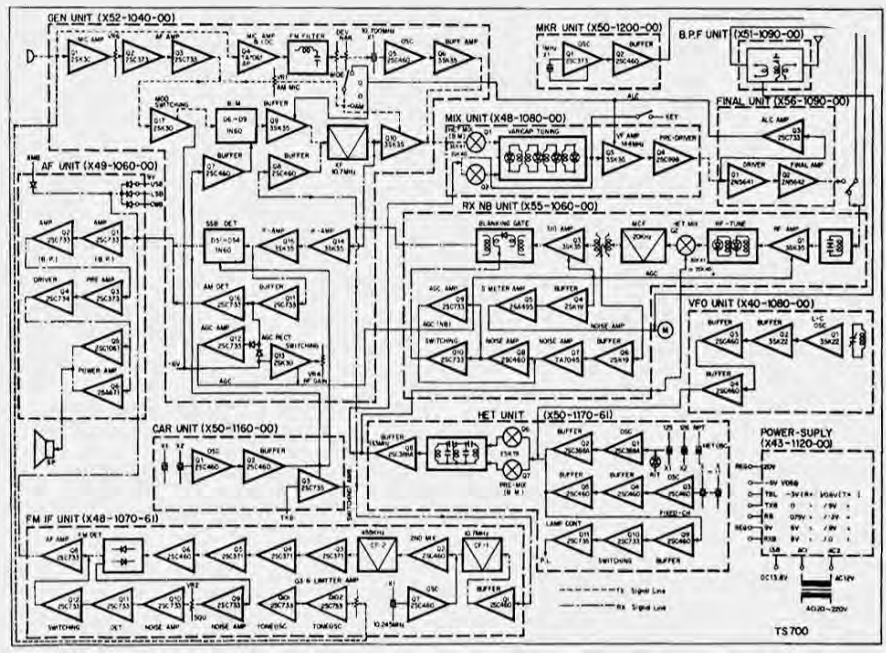


Fig. 1: TS-700 block diagram.

**I bought my first TS-700, the very second batch that had arrived in the UK (I was on a waiting list!) back when I was a teenager.**

As well as using it from home and mobile from my father's car, I took it down from Lancashire to my lodgings in Devon when I started studying for my degree in Plymouth. A year later, **Roger Taylor G8LWV** (now **G4HZA**), still a friend of mine, and licensed amateur **Kevin** (unfortunately I've forgotten his surname and callsign) also used it with relish from our shared basement flat in Plympton near Plymouth with a 2m antenna that we'd installed in our landlord's loft space with his permission. I also used this in during my 'sandwich course' commercial study training in my lodgings in Cambridge. While back in Lancashire, I had daily contacts with **Rod G4BFP** in Liverpool and lengthy evening contacts with **Barry** in Rishton near Blackburn (again I've forgotten his callsign), both of whom also used a TS-700 and both of whom I'd met and visited in their homes.

The Trio TS-700 was launched in around 1974 and immediately became a

'hit', which explains the initial waiting list for them for UK imports from Japan.

### TS-700 Overview

The TS-700 is an analogue VFO-tuned 2m all mode solid-state transceiver. The block diagram appears at **Fig. 1**. Being analogue, there are no channel memory facilities. However, there is the facility for up to 11 switched crystal control channels from a front panel rotary control. I installed crystals in mine for quick channel selection of S20 (145.500MHz), S21 (145.525MHz), S22 (145.250MHz) and S23 (145.275MHz plus my semi-local repeater on R7 (145.775MHz receive). The rig has a built-in AC supply but will also operate from 12V DC. It is really a base-station rig that is primarily intended for SSB/CW operation but FM, including a  $\pm 600$ kHz repeater offset, is available. The TS-700 covers the full 2m band in two switched 1MHz bands, with a 1kHz dial resolution. Operating the TS-700 is much like using an HF radio of its era and I suspect it was Trio's competitor to the Yaesu FT-221R. In my full-time job some years later our company's licensed Administration Director,

**Sheila**, had an FT-221R and when she was eventually selling it I was most tempted because by that time I'd sold my TS-700 to help fund furniture for my first house purchase. But a few years later I managed to buy a further TS-700, second-hand from a semi-local seller to me, for £80, photographed for this article, **Figs. 2, 3** and **4**.

The transmitter power is 10W output, which may be rather low for today's power levels but then we've come a long way since it was made. However, it's certainly enough to drive an external amplifier. The receiver is a little insensitive by modern standards too, and an add-on internal low-noise receive preamplifier is a worthwhile addition. However, it is about as crunch-proof on receive as you're likely to encounter in any modern rig and probably better than most. This is due to the very good front-end filtering and the very clean VFO with no noisy synthesisers in this transceiver's circuitry!

### Worth Considering

If you are looking for a good 2m all-mode starter transceiver, then do consider the TS-700. It doesn't have all the bells and whistles of more modern transceivers but the price when bought second-hand is naturally far lower than newer rigs. It has a built-in AC mains power supply as well as being operable from an external 13.8V DC supply. Operation modes include SSB, FM and AM, a repeater offset, and excellent receiver audio output quality. Although it has a 1750Hz toneburst, there is no CTC-SS encode facility but a homebrew one can be added (there's a planned article on this coming up in *PW* from myself shortly). The transmitter final amplifier and receiver audio stages operate on 20V. These are generated by an internal DC-to-DC inverter circuit to obtain 20V DC from 13.8V DC.

### FM Transmit Audio

On my original TS-700, for SSB I added an external in-line Datong RF speech processor, which helped for DX work. But on FM I still suffered from reports of quiet and muffled audio. To improve this, find the C15 0.01µF capacitor in the micro-

phone transmit audio section, which is fed via a series 4.7kΩ resistor R12. Replace it with a 0.001μF capacitor to boost the higher frequencies as well providing a more 'punchy' transmit audio on FM. You may, however, have to experiment with the value of this capacitor to suit your preferences. I found it made a tremendous difference and the first time I went on air with my 'regulars', everyone commented on the far better audio quality and readability.

### Receiver Preamp

As I mentioned earlier, the addition of an internal receiver preamplifier, which you'll need to fit following the RX/TX switching circuitry, is a useful addition. This can make a great improvement to the receive performance.

### 4m (70MHz) Conversion

Quite by chance while I was preparing this article, I also received an e-mail from **Steve GOAIN** regarding his ongoing work at converting his TS-700 to 4m (70MHz). You'll find details at: [www.g4izh.co.uk/trio-ts-700-conversion-to-4m.html](http://www.g4izh.co.uk/trio-ts-700-conversion-to-4m.html)

### An Unusual Tale of a TS-700

In my first job in Cambridge, my first car, a Ford Capri 1600GT XLR (remember those?), with my TS-700 on the seat, was stolen from my work's car park one lunchtime. Two youths (I still have their full names and addresses in my memory but won't name them in print because I don't know whether the Rehabilitation of Offenders Act is valid from then) were caught with the car parked up and with both of them inside, just down the road from the main Cambridge police station (idiots!). My TS-700 had a Dyno-tape label (remember those also?) with my then callsign, G81YA, stuck onto the front, and it was still monitoring the local repeater GB3PI in Barkway, Hertfordshire. After a break following a QSO, the arresting police officer took the microphone and called, "G Eighty One YA, G Eighty One YA, this is Cambridge Mobile Panda 21 calling". My friend **Mark G8FRL** (who knew my car had been stolen) replied on air, countywide to all listening, to say that I wasn't on the air at that moment. The officer answered via the GB3PI repeater to say that, "Yes, his car has been stolen but we've recovered it and apprehended the two people inside it. We're taking the car back to the central police compound". "OK, I'll let him know, thank you", replied Mark. I recovered my



**Fig. 2: The TS-700 from the front.**



**Fig. 3: Rear panel view.**

car that evening, with my grateful thanks to the Cambridge police. The two youths each received custodial one-year plus committal borstal sentences after also admitting 12 other earlier TWOC (Taking Without Owner's Consent) offences. Apparently, the police had been after them for some time.

### Further Information

If you'd like a full user manual (2.5Mb) for the TS-700 and/or a service manual (10.5Mb), I'd be happy to oblige by e-mail (see top of column). Just let me know and it'll be on its way to you.

### Next Month

I'll be back next month with a further bi-monthly *Emerging Technology* column with lots of new information, and the following



**Fig. 4: A look inside.**

month with another *Buying Second-hand* column. If you'd like me to cover a specific topic or equipment type in *Buying Second-hand*, then please let me know and I'll be happy to oblige. See you soon! 