

UK/VRC353 Clansman VHF/FM Vehicle Radio

The Clansman VRC353 VHF/FM radio system was designed primarily for fighting vehicles, although it is suitable for fixed or mobile ground stations, with provision for manual or unattended automatic re-broadcast. It transmits and receives voice or data up to 20 kbits/s.

The radio uses the 30 to 75.975 MHz frequency range providing 1840 channels at 25 kHz channel spacing. Frequency selection is by digital synthesiser with an accuracy better than five parts in one million over 24 months of use.

Use of an elevated broadband end-fed whip antenna mounted on a 10 m mast will provide ranges in excess of 80 km. The radio's 50 W output is also of importance when countering enemy jamming of communications.

Two or more VRC353 radios can be operated at maximum power without mutual interference, provided the antennas are separated by at least 2 m and the frequencies by five per cent.

The automatic rebroadcast facility permits a rebroadcast station to be used as an automatic repeater station to extend the range which can otherwise be achieved between two terminal radios. Remote-control over 3 km of D10 assault cable or 5 km of CT10 cable is possible.

A single frequency selector control allows rapid selection from the 1840 channels available, even when using protective gloves. In darkness the frequency can be selected by click-counting from zero. Failure to select a frequency within the frequency range of the radio will cause the dial light to flash and an alarm to be heard in the earphones.

Tuning is automatically controlled from the synthesiser logic. Retuning time is within 10 seconds, during which time transmission is not possible and the dial light will continue to flash as a warning. The radio reaches operating conditions within a minute from switch-on, after which the frequency stability is within five parts in one million.

Essential parts of the complete vehicle weapon system are the intercommunication and control functions within an armoured fighting vehicle which are provided in the radio-control harness.

A range of control boxes, adaptors, cables and ancillary items are available to make purpose-designed control harnesses. Mechanical interchangeability and common mechanical and electrical interfaces are provided between harness units, radios and audio gear.

Units can be changed and faults can be diagnosed down to subassembly level. After a brief period of instruction it is claimed to be possible to operate the equipment efficiently in the dark or in a vehicle

moving across open country subject to high ambient noise from the vehicle or guns.

Any vehicle radio installation can be created to suit user requirements for one, two or three VRC353 transmitter/receivers in any armoured or soft vehicle. Installations can include built-in or remote loudspeakers, remote-control of operating facilities and provision for rebroadcast. The equipment can be used with the Marconi Type 063 antenna system.

Status

Clansman VRC353 was developed in the mid-1970s and first introduced in 1976. It formed the backbone of British military combat communications anywhere in the world and continued to do so through most of the 1980s. The radio is operationally compatible with the Clansman VHF manpacks, the C42 No 2 Larkspur, the AN/PRC-77, AN/VRC-12 and SEM25. The VRC353 has also been sold to the Royal Netherlands Marine Corps as well as armed forces in Africa and the Middle East.

Technical Specification

Modes

voice: FM narrow with 150 Hz tone, FM wide, FM wide tone with 150 Hz tone, FM wide data, FM narrow data
data: up to 750 baud, input through adaptive telegraph radio (ATR); digital up to 20 kbits/s

telegraph: up to 150 baud using ATR. Wide frequency shift ± 425 Hz at 2 kHz; narrow frequency shift ± 42.5 Hz at 425 and 2805 Hz

facsimile: with appropriate units

Frequency range: 30-75.975 MHz

Power output: 50, 15, 1 or 0.1 W nominal by front-panel switch selection into 50 ohm load. 35 W into load with 2:1 VSWR

Temperature range

operating: -40 to + 55°C

storage: -40 to + 65°C

Height: 210 mm

Width: 240 mm

Depth: 360 mm

Weight: 22.2 kg

Operational Specification

Designed to satisfy DEF-133, L3 environmental standards. Will keep within performance specification when subjected to: ambient working temperatures of -40 to +55°C plus direct solar radiation; shock and vibration in armoured fighting vehicles travelling across open country, impact of non-penetrating shell, or shock of delivery by normal parachute techniques; driving rain, high humidity, dust and immersion to 1.5 m; Variations in 28 V power supply between 21.5 and 32 V with 4 V ripple or ± 600 V spikes; open- or short-circuit conditions on antenna output

Manufacturer

Marconi Secure Radio. Portsmouth.