



CMS
Country of origin:
USA

General view of a CMS in its wooden case with the lid taken off. Calibration charts for receiver and transmitter, and circuit diagrams were attached to the inside of the lid. The two transmitter valves and RF power amplifier tank coil were inserted in sockets located on the top of the transmitter unit when required for use.

DATA SUMMARY

Organisation: US Navy.

Design/Manufacturer: Electronic Research and Mfg. Co., Cleveland, Ohio.

Year of Introduction: Not known.

Purpose: Unknown, possibly envisaged special operations.

Receiver: CMS-R.

Circuit features: Regenerative detector, AF (2x). AM and CW.

Freq. Coverage: 2.5-24MHz in three ranges. **Band 1** 2.5-5.7MHz; **Band 2** 5.7-12MHz; **Band 3** 10-24MHz.

Headphones impedances: 600, 2000 or 8000Ω

Valves: 3S4 (3x).

Transmitter: CMS-T.

Circuit features: Crystal or variable oscillator, RF power amplifier. CW and AM voice.

Frequency Coverage: 3.1-13.5MHz in two oscillator bands: **Low** 3.1-6.5MHz; **High** 6.5-14MHz, and three RF amplifier plug-in tank coils: **Coil 1** 3.1-6MHz; **Coil 2** 6-10MHz; **Coil 3** 10-14MHz.

RF Output: Max 25W using 2x 6L6 and 425V HT.

Valves: 6V6 (2x) or 6L6 (2x).

Power Supply:

Receiver: 3V LT and 45V HT dry batteries.

Transmitter: Dry batteries; unknown type of hand generator; universal Power Supply PP-286/UR.

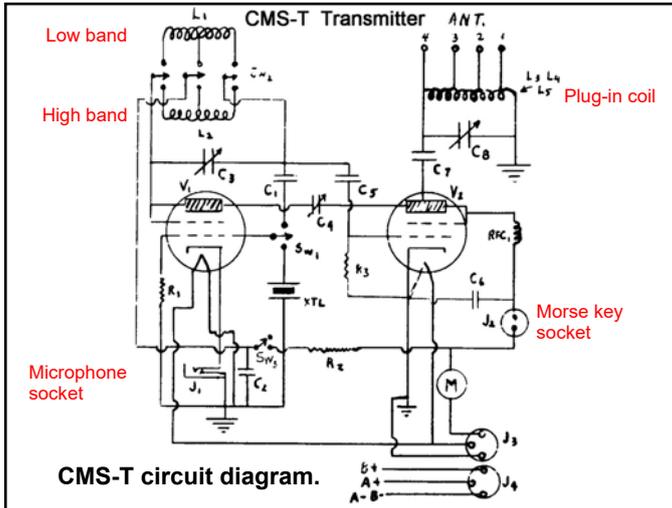
Size (cm) and weight (kg): Height 30, length 12, width 35; 6,4kg. (Set in case)

Remarks

The CMS was a small portable HF transmitter-receiver procured by the US Navy, believed for special operations. The set comprised a separate transmitter and receiver, fitted in a wooden suitcase style 'painters case', along with spares and accessories. The transmitter was primarily intended for CW operation; for improvised AM voice operation a 50-200Ω carbon microphone could be inserted in series with the cathode of the oscillator valve. Along with the simplicity and flexibility of design, easy access to the most components in case of fault finding, and a toolkit, it is generally believed that the CMS was originally intended for partisans or small observation parties operating for a long period in enemy territory, not unlike the Australian coast watchers. The transmitter could operate in two power level modes, just by changing the valves and using a suitable power supply. On low power, using a hand generator, two 6V6's were used; for high power two 6L6 valves. The latter required 425V HT, taken from a power pack. The purpose of the CMS was never fully understood, and is still a source of ongoing debate in various Internet communities. Some sources doubt that any CSM was actually issued for active service.

References:

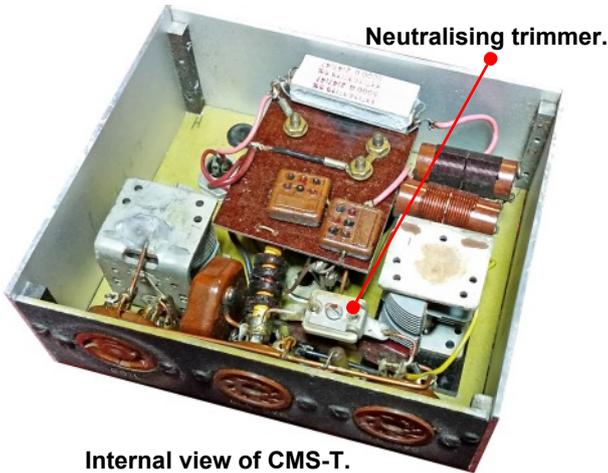
- Instructions for operating type CMS equipment, n.d.
- Photographs and scan operating instructions courtesy Al Klase, N3FRQ, USA. <http://www.skywaves.ar88.net/SPY/spy.htm>
- Radio Set CMS, Equipment data, 1960.
- Instruction book for Power Supply PP-286/UR for use with CMS-R receiver and CMS-T transmitter, 1946. See Richard Brisson's collection for a download at: www.campx.ca
- Correspondence with Tom Höpfe, DJ5RE, Germany; Al Klase, N3FRQ, USA; Hue Miller, USA; Richard Brisson, Canada.
- Photograph of original Morse key courtesy Antonio Fucci, Italy.



The transmitter valves were connected as triodes which gave the CMS the capability to use different valves.



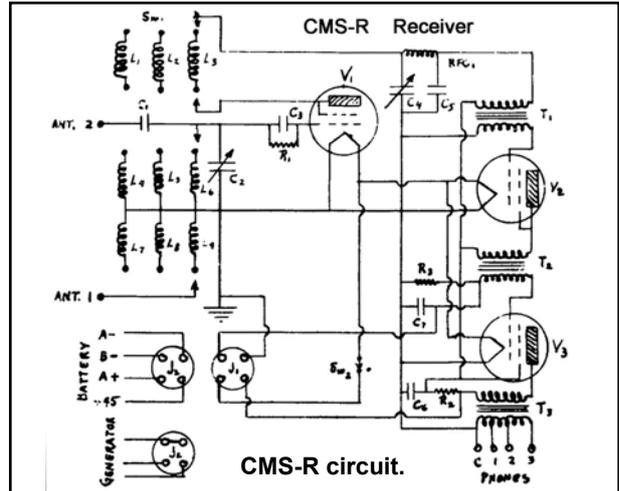
Front panel view CMS-T.



Internal view of CMS-T.



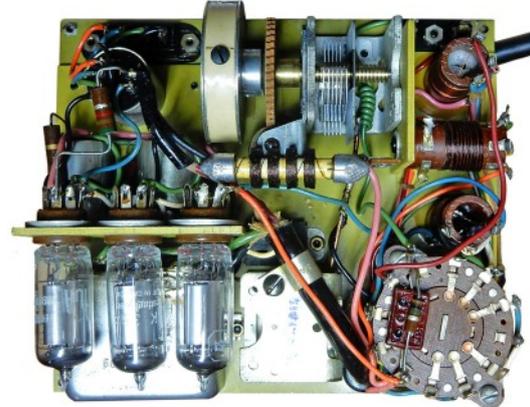
Top view of CMS-T showing valves and coil sockets.



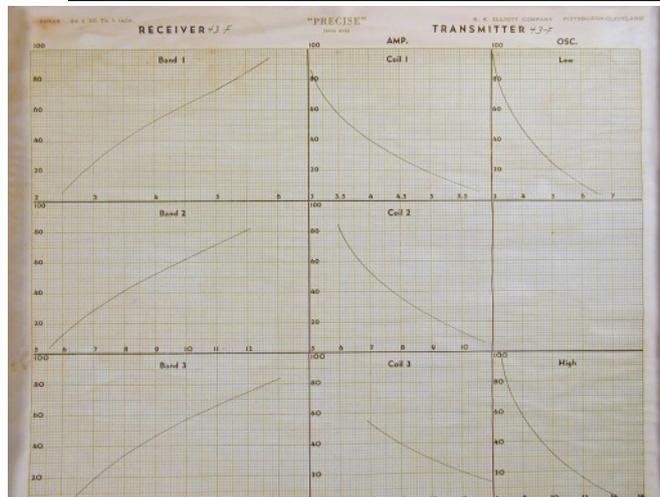
CMS-R circuit.



Front panel view CMS-R.



Internal view CMS-R.



Calibration charts for CMS receiver and transmitter.



An unknown number of CMS radios were issued with a test meter for servicing the radio in the field. Along with a toolkit comprising e.g. soldering facilities, simplicity of design and easy access, it may be concluded that the CMS was probably intended for communication by small parties in enemy territory.

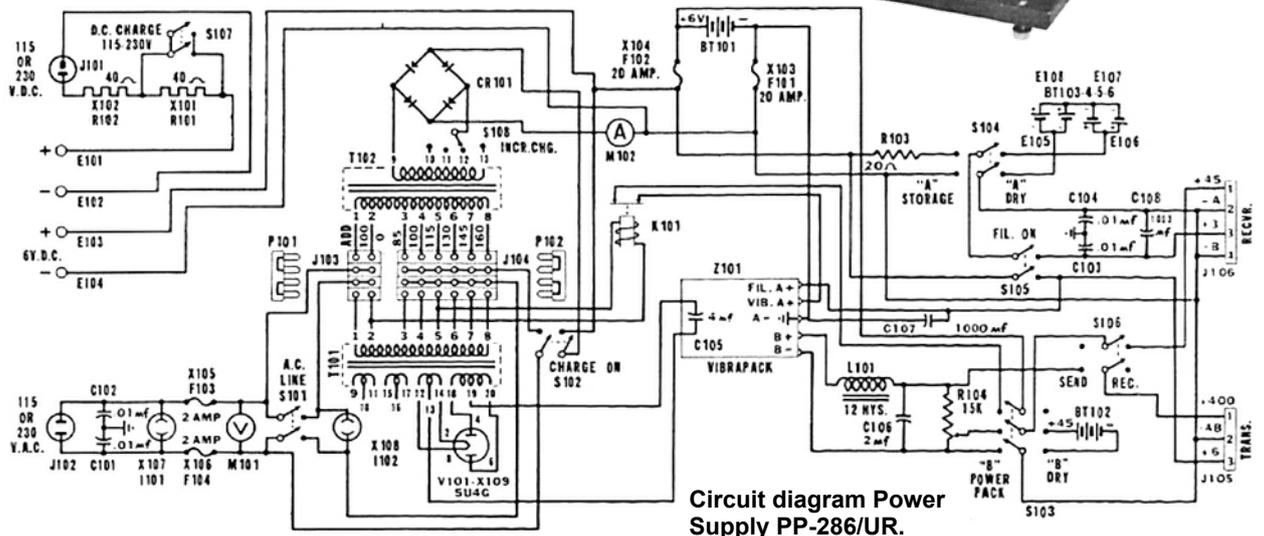


Overview of CMS accessories (left). Missing in this display were 600Ω headphones, a test meter, tool kit comprising side cutters, long nose pliers, screw drivers and soldering iron with solder.

Power Supply PP-286/UR

Power Supply PP-286/UR was developed and produced for powering a CMS receiver and transmitter. It allowed operation of the set from internal dry LT and HT batteries (for the receiver only), and full operation from an internal 6V 25Ah accumulator or AC mains. The internal 6V accumulator could be charged by AC or DC mains, or from an external 6V DC source. The maker was National Electrical Machine Shops, Inc. According to the date on the handbook it appeared to be made after WW2 which may raise questions on the production date of the CMS.

General view of Power Supply PP-286/UR. A hinged door at the right hand side provided access to Willard 6V portable battery.



Circuit diagram Power Supply PP-286/UR.

Further thoughts on the CMS transmitter-receiver.

CMS Morse key

The Morse key issued with a CMS was an inexpensive Speed-X trade practice key No. 300 in the Speed-X series of Morse keys as seen in the 1938 Allied Radio Catalogue, with the addition of a protective finger rest. Note the absence of adjustable bearings.

It was normally used on a bracket fitted at the right hand top of the inner side of the wooden lid. Keying was done in the HT line of the transmitter RF PA valve, which implied that the full HT was always present at the Morse key. As a (rather crude) protection against an electric shock it was covered with a Vinylite shield.

SPEED-X TRANSMITTING KEYS NO. 301 AMATEUR'S KEY

A good standard key, sturdily constructed. Moulded bakelite base. Coin silver contacts. Arm and binding posts nickel-plated.

B7961. NET..... **\$1.26**

NO. 320 HEAVY DUTY KEY

Has 1/4 inch solid coin silver contacts. Well insulated. Black base. All other parts chrome plated.

B7962. List, \$3.25. NET..... **\$1.91**

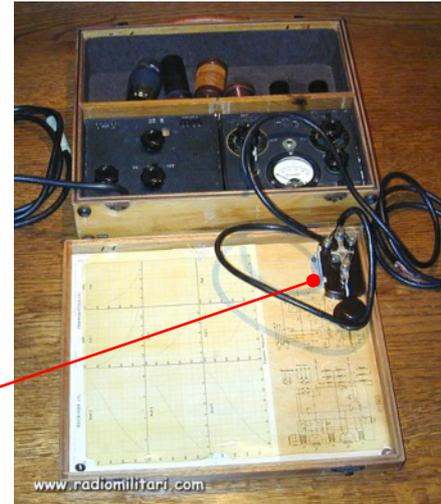
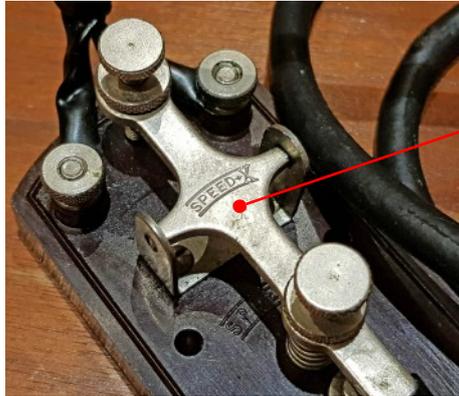
NO. 310 STANDARD KEY

Skeleton design. Well constructed. Coin silver contacts. Black base with chrome plated parts. Has dial adjustments for tension and lever action.

B7963. List, \$2.50. NET..... **\$1.47**



NO. 300
Well-made low-cost practice key.
B7960. NET..... **88c**



Detail view of original CMS Morse key. (Collection Antonio Fucci, www.radiomilitari.com)



This key, still available on eBay, resembles closely the pre-war Speed-X key No. 300.

CMS Morse key information, Speed-X scan and eBay photo courtesy Al Klase.

Unknown receiver with similar design elements.

One may wonder if the 3-valve receiver in the pictures below related to the CMS as it appear to have a number of similar design elements. It may be speculated to be a prototype of forerunner? Photos and text by Al Klase, N3FRQ.

'...this radio came from the estate of an AT&T engineer. It's a regenerative detector followed by two transformer-coupled audio stages. The tubes are type 30's and the five-pin plug-in coil covers 2.5 to 5 MHz. The coil form has a machined slot for each winding. Everything about this set is professional. Top quality components, careful assembly, and good sheet metal suggest it's not homebrew or a one-off. The filament switch places resistors between the 3-volt A battery and the 2-volt filaments. The panel is engraved, and the battery wires are carefully identified. There is a serial number and other cryptic data, but no indication of manufacturer. Yes, the sideways National dial is original.

This receiver reminds me a lot of the CMS. Compare it's physical layout to the CMS transmitter below. While the CMS receiver has internal tubes and band-switched coils, it uses triode-connected 3S4 tubes, a reasonable equivalent to the 30's. Both sets have two banana-jack antenna terminals. Terminal 1 is connected to a primary winding on the coil, and terminal 2 is connected to the detector grid via a gimmick capacitor. Both receivers are simple regen's followed by two audio stages, so the fact that the two circuits are nearly identical may only be a coincidence....'

See also Al Klase's website: <http://www.skywaves.ar88.net/SPY/0-V-2/Unidentified%200-V-2.html>



Unknown 3 valve battery receiver.



The unknown 3 valve receiver compared to a CMS-T transmitter.