

KG-84

Military digital line encryptor

The KG-84 is an electronic encryption device developed by the National Security Agency (NSA) in the USA. It was used for ensuring secure transmission of digital data over a variety of networks, such as landlines, satellites, microwave links and Telex lines. The KG-84 was built by Pulse Engineering, Inc. and Bendix.

Two versions of the KG-84 are known. The KG-84A that was mainly used for point-to-point encryption via telephone lines, microwave links and satellites, and the KG-84C that was a Dedicated Loop Encryption Device (DLED).

Both are able to operate in simplex, half-duplex and full-duplex synchronous and asynchronous modes. This NSA Level 1 crypto device is suitable for secret messages up to the level of TOP SECRET, depending on the key-set that is loaded. It is fully compliant with NSA TEMPEST standards.



Compared to the KG-84A, the KG-84C had some interesting extras. It has a variable update counter, improved HF performance, out-of-sync detection (when in synchronous mode), asynchronous cipher text, plaintext bypass, and the European Telex protocol. When used with a suitable digital telephone unit, the KG-84 could also be used for secure voice transmissions.

Data could be handled by the KG-84 in asynchronous mode at rates between 50 and 9600 baud. In synchronous mode, it could even go up to 32,000 baud (or even 64,000 baud when used in combination with an external clock). A later version of the KG-84, the commercial KIV-7, was suitable for even higher data rates.

The KG-84 was a Controlled Cryptographic Item (CCI) but was UNCLASSIFIED when unkeyed. Although most of the military KG-84 units have now been replaced by commercial-off-the-shelf equipment (COTS), such as the KIV-7, or were superseded by modern IP-Crypto equipment, they are not commonly found in museums. The image on this page was taken from a surplus KG-84 front panel. The rest of the machine is, unfortunately, missing.



Crypto keys

Before operation, the KG-84 had to be loaded with a suitable Traffic Encryption Key (TEK). To allow the unit to be used on different radio nets, up to four TEKs could be stored in separate slots that could be selected with a rotary switch at the bottom left on the front panel. It also has provisions for remote rekeying.

The keys (TEK) were loaded into the KG-84 by means of a DS-102 compatible key fill device, such as the KYK-13, the KYX-15 or the KOI-18. The fill device was connected to the fill-connector at the bottom right of the KY-84 and the MODE selector had to be set to FILL V. The user then has to toggle the INITIATE switch in order to start the transfer.

Whenever the key was compromised, e.g. when being captured by the enemy, the user could wipe the stored keys by pulling the ZEROIZE-key and then briefly pushing it down.



In order to retain the stored keys when the KG-84 is powered down, a standard military 6V lithium battery is used, such as the BA-5372/U or equivalent. The battery compartment is accessible from the front panel and is visible in the image above.

Configuring the KG-84

The KG-84 can be configured for a variety of different communication protocols and standards. Data rate, word format, synchronization, etc. can all be set by means of a series of selector switches that are hidden behind a metal lid that covers about half the front panel.

The lid is actually a 'door' with hinges at its lower side. It can be opened by unscrewing two bolts at the top. After loosening the bolts, the door swings open. The image on the right shows the configuration controls after the lid has been opened.

The possible settings are partly explained on text plates inside the lid. In a later replacement of the KG-84 (the KIV-7) the physical controls were replaced by software-driven menu settings.

