

Army Cyber Institute
One-Time Pad, Random Number Generator



1. Slide the switch in the lower left to the ON position.
2. A message will appear on the display along with a hex-encoded ASCII message.
3. At the end of the message, a number will stay on the display. This is the number for your board, in order of presentation to the owner.
4. While the number is on the display, you have 5 seconds to adjust the brightness of the display by pressing and releasing the Mode button to increases the brightness, and pressing and releasing the Gen button decreases the brightness.
5. After 5 seconds, the RNG LED will light (red LED). This completes the start up sequence.
6. There are two modes of operation for the board, One-Time Pad (OTP), and Random Number Generation (RNG). Pressing and releasing the Mode button toggles between the two modes. The LEDs indicate which mode the board will use to generate numbers.
7. Once the Mode is selected, press and release the Gen button to generate a new number. Digits on the display are 0-9, A, b, C, d, E, F.
8. Modes:

One-Time Pad (OTP): The yellow LED above the letters OTP will light to indicate that the board will generate a sequence of pseudo-random numbers that is exactly the same on every ACI number generator board. Thus, everyone in possession of the ACI number generator board will see the same numbers on the display after each press of the Gen button.

Random Number Generator (RNG): The red LED above the letters RNG will light to indicate that the board will generate random numbers based on the watchdog timer on the microcontroller (AT Tiny85). These numbers will be different on every board.

The battery should last for approximately 20 hours of continuous use, depending on how bright the display is set. The battery can be replaced with a CR2032 3 volt battery.