

## Primer Instructions

Thank you for buying Primer. It will give you many years of effortless, prime number generating service. Simply plug its power supply into any convenient wall outlet, and plug the jack coming from the power supply into the bottom, rear of Primer, and you're ready to go. Tap (i.e. press and release) the red button, and Primer will count up to the next prime number following the one displayed when you pressed the button. If it ever rolls over from 999,999 (or 9,999,999 for 7-digit Primers), it will count to 2 (the first prime number) and stop, ready to start all over again.

### Resyncing

The microcontroller inside Primer (an Atmel ATTiny85, if you just have to know) has no way of knowing what's actually in the display; it simply keeps track of what it was told was there during manufacturing and how many times it's been incremented since (and it won't forget if it's unplugged). The only way the display can get out of sync with the microcontroller is if power is interrupted while the counter is incrementing. As you might imagine, this is very unlikely to happen, but if it does, you may use the procedure below to resynchronize the counter and microcontroller. I suggest you read the entire procedure before beginning.

1. Write down the number in the display.
2. Press and hold the red button. After 5-10 seconds Primer will increment the display once to indicate it is now in re-sync mode. Release the button.
3. Tap the button a number of times corresponding to the least-significant (rightmost) digit you wrote down. E.g., if you wrote down 001234, tap the button 4 times. After you have stopped tapping for 5 seconds, Primer records your entry for the first digit and increments the display indicating it is awaiting your entry for the next digit (moving right-to-left in the display).
4. Repeat for the remaining digits. To enter a 0, do nothing. After 5 seconds Primer will interpret the lack of an entry as a 0 and increment in acknowledgement. Proceed with entering the next digit. Note that you are always entering the number you wrote down, not what's in the display during the re-sync process. You may find it easier to not even look at the display and tick off the digits you wrote down as you enter them.

5. After accepting your entry for the last (leftmost) digit, Primer will advance to the next prime number. This concludes the re-sync process.
6. If you make a mistake at any point, just unplug Primer, plug it back in, and start again with step 1.
7. You'll be able to tell if you ever inadvertently put Primer into re-sync mode (e.g. by accidentally keeping the button pressed for too long) because it will no longer respond to button presses by generating prime numbers (it will be thinking you're entering digits). You'll now have to restart the re-sync process as in 6., above.

You're probably not going to be able to find these instructions when you need them, so I've placed a copy at [www.karllautman.com/primer\\_inst.pdf](http://www.karllautman.com/primer_inst.pdf). Now would be a good time to copy this link, and the contact info below, to your address book.

### Cleaning

Primer's aluminum body can show fingerprints, but these may be easily removed with any liquid, non-abrasive, household cleanser. Glass cleaner (e.g. Windex) works best, but Formula 409, isopropyl alcohol, stainless steel cleaner, and soapy water also work well. It's important, however, to apply the cleanser to a paper towel or cloth and rub that on the body instead of applying the cleanser directly to the body; the latter increases the chance of drips getting inside. You should also keep any cleanser (other than soapy water) away from Primer's non-aluminum parts since they may not respond well to what you're using.

Finally, if you'd like another Primer (or if a friend has asked about one of their own), they're available on my web site.

Thanks again!

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