README on the ADC/Touchscreen Controller
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The LH79524 and LH7A404 include a built-in Analog to Digital controller (ADC) that is used to process input from a touchscreen. The driver only implements a four-wire touch panel protocol.

The touchscreen driver is maintenance free except for the pen-down or touch threshold. Some resistive displays and board combinations may require tuning of this threshold. The driver exposes some of its internal state in the sys filesystem. If the kernel is configured with it, CONFIG_SYSFS, and sysfs is mounted at /sys, there will be a directory

```
/sys/devices/platform/adc-lh7.0
```

containing these files.

```
-r--r--r--    1 root     root         4096 Jan  1 00:00 samples
-rw-r--r--    1 root     root         4096 Jan  1 00:00 threshold
-r--r--r--    1 root     root         4096 Jan  1 00:00 threshold_range
```

The threshold is the current touch threshold. It defaults to 750 on most targets.

```
# cat threshold
750
```

The threshold_range contains the range of valid values for the threshold. Values outside of this range will be silently ignored.

```
# cat threshold_range
0 1023
```

To change the threshold, write a value to the threshold file.

```
# echo 500 > threshold
# cat threshold
500
```

The samples file contains the most recently sampled values from the ADC. There are 12. Below are typical of the last sampled values when the pen has been released. The first two and last two samples are for detecting whether or not the pen is down. The third through sixth are X coordinate samples. The seventh through tenth are Y coordinate samples.

```
# cat samples
1023 1023 0 0 0 0 530 529 530 529 1023 1023
```

To determine a reasonable threshold, press on the touch panel with an appropriate stylus and read the values from samples.

```
# cat samples
1023 676 92 103 101 102 855 919 922 922 1023 679
```

The first and eleventh samples are discarded. Thus, the important values are the second and twelfth which are used to determine if the pen is down. When both are below the threshold, the driver registers that the pen is down. When either is above the threshold, it registers then pen is up.