

Chapter 8

Digital and Analog Interfacing Methods

Lesson 4

Touch screen Controller Interfacing

Touch-screen as an input device.

- Convenient alternative to or keypad or keyboard
- Used in combination with a display system in mobile, Pocket PCs, computers and control panels.
- An input device combined with a display and a PC or other device to make a complete touch based input-output system.

Stylus or Finger for inputs

- Stylus— a pencil shaped object, which is touched at the screen
- Screen displays the keys or menu items, buttons, sliders and wheels on the screen
- Finger used to touch and select when Screen tiles displayed with characters or buttons big in the size (nearly equal to finger thickness)

Display cum touch screen inputs



Numeric
cum
Alpha-
numeric
Inputs pad
on display

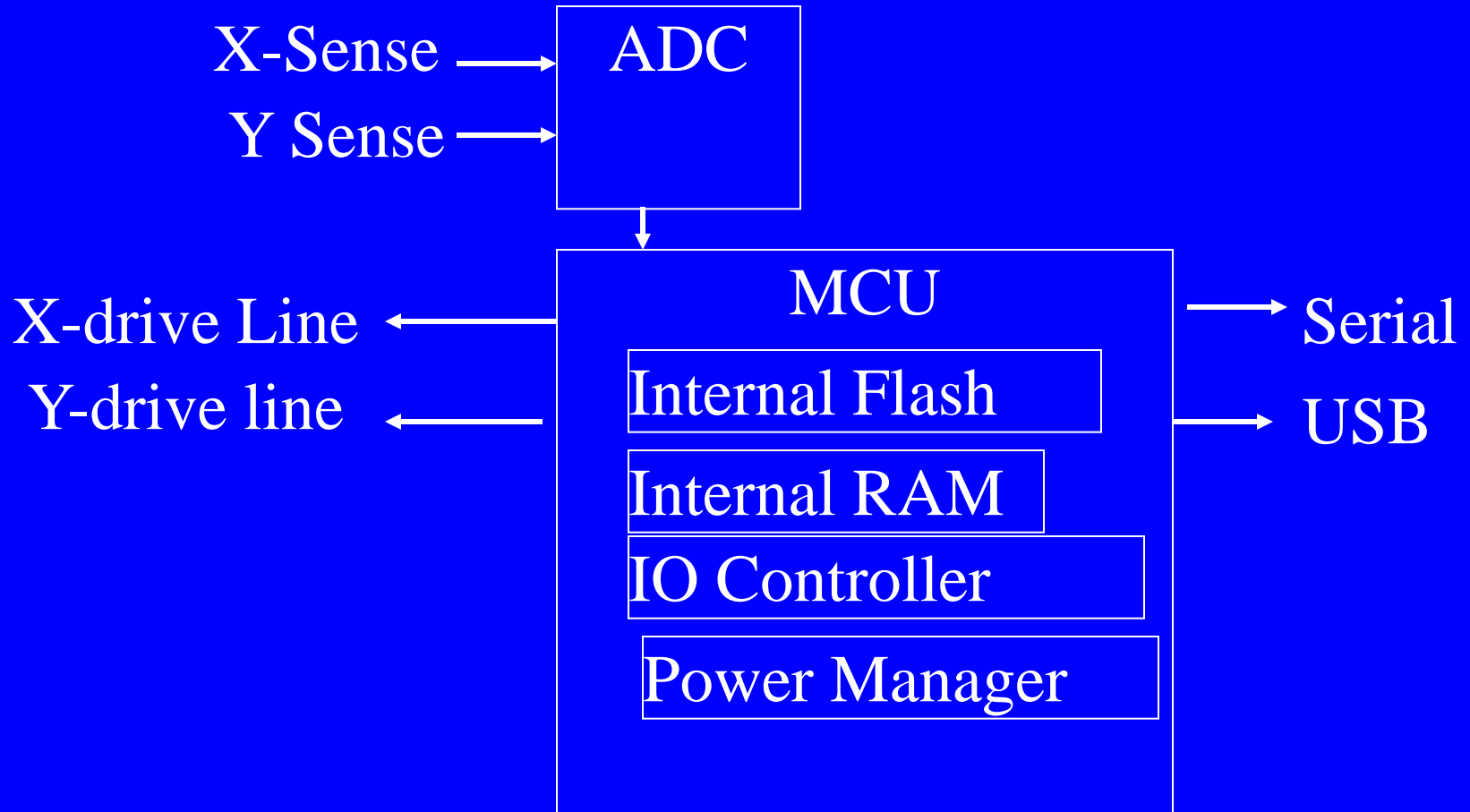
Two types of touch screens

- Single touch and
- Multi-touch

Touch-screen four units

- Touch-sensor unit
- Touch-screen controller
- touch-screen driver software
- Software functions library to enable developing of the applications

2 or 4 Channel ADC data Acquisition for touch position



Sensing unit at touch-screen

- Consists of a transparent glass surface
- Surface sensitive to touch
- Touch sensor unit just over the display screen
- Touch Panel is of same size as of display panel. There are five common methods used for sensing the touch—(1) Capacitive (2) Mutual Capacitive (3) Self capacitance (4) 4-wire resistive and (5) 5-wire resistive

Five common methods used for sensing the touch

- (1) Capacitive
- (2) Mutual Capacitive
- (3) Self capacitance
- (4) 4-wire resistive and
- (5) 5-wire resistive

Touch Screen Controller

- A single-touch device is controlled by Atmel *AT42QT4120* and *AT42AT4160*
- Support screen sizes of up to 4.3” with aspect ratios of 16:9 or 4:3 [Aspect ratio means ratio of height to width of the screen]

Touch Screen Interface

- System connects to the touch-controller through serial or USB interfaces

Touch Screen Software Driver

- Driver enables the touch screen to function along with the existing system
- Facilitates new applications to be developed
- Enables the touch-screen and system to function together

Software functions library to enable developing of the applications

- Atmel released QTouch library version 3.0 since 2009.
- Free software
- QTouch library downloaded from Atmel's touch software product page at www.atmel.com/qtouchlib

Summary

We learnt

- Touch screen
- A Convenient alternative to or keypad or keyboard
- Used in combination with a display system
- A complete touch based input-output system

We learnt

- Touch-sensor unit
- Touch-screen controller
- touch-screen driver software
- Software functions library to enable developing of the applications

End of Lesson 4

Touch screen Controller Interfacing