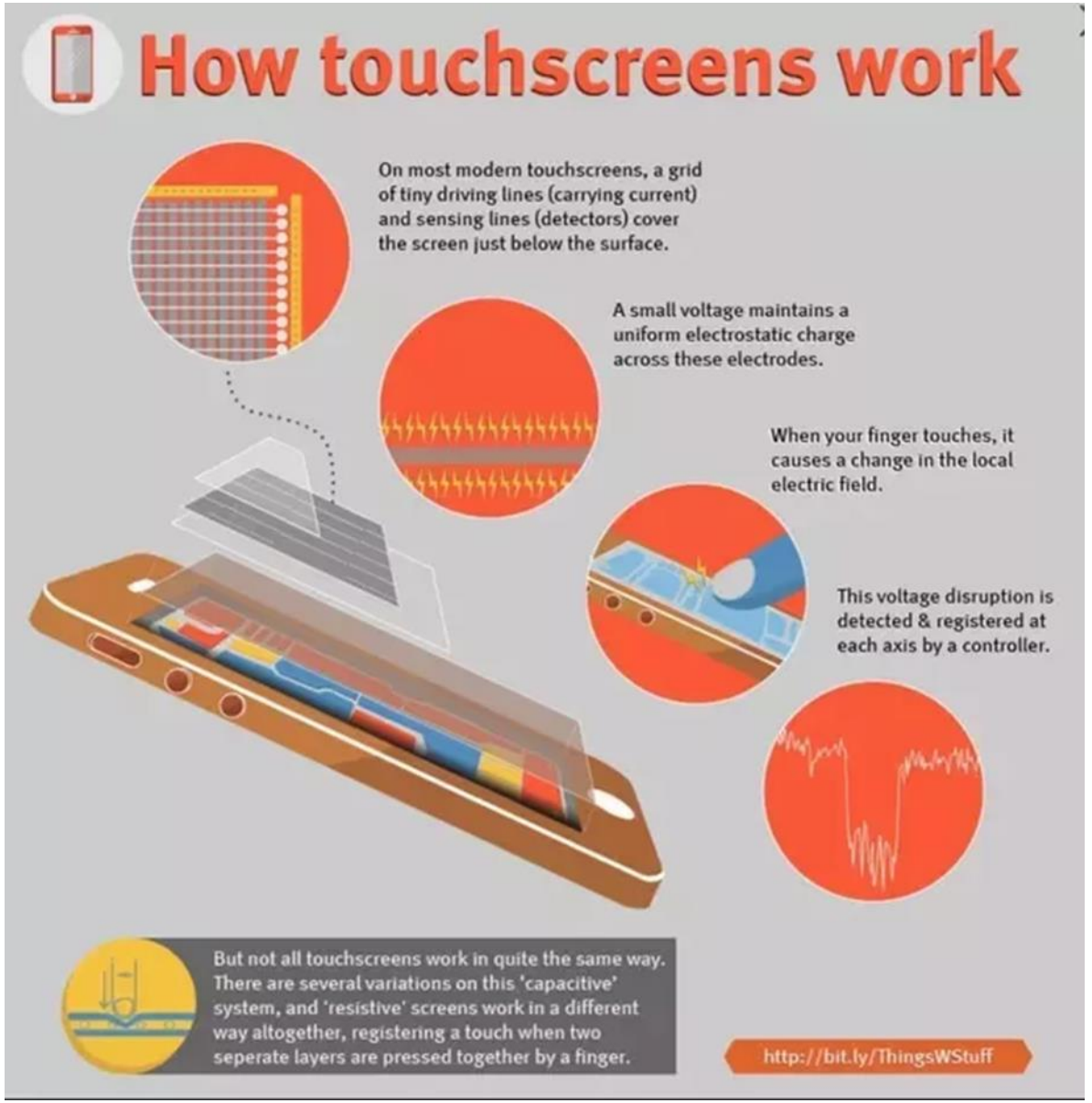
Touch (screen) sensors

What is a Touch Screen?

A touch screen is an electronic input device, usually layered on top of the visual display of an information processing system, that gives a user control of the device through simple or multi-touch gestures. Touch screens allow a user to control a device by interacting with the display itself, rather than requiring an external controller such as an attached mouse or trackpad.

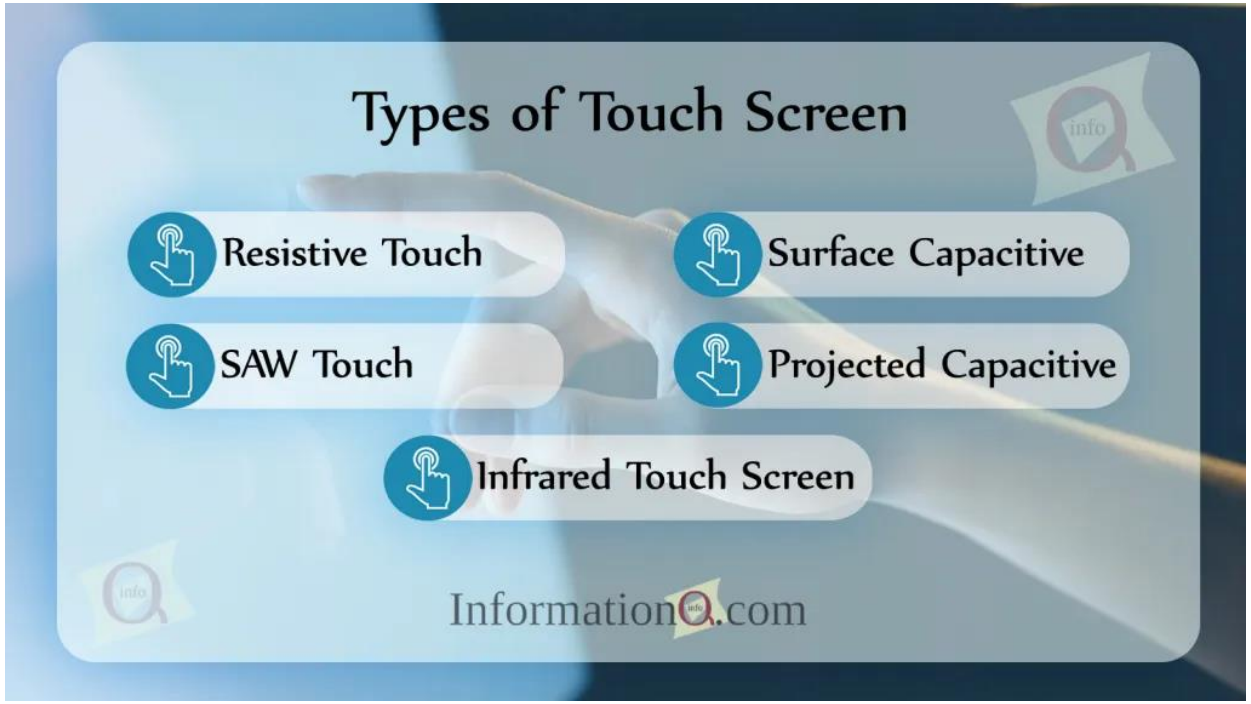
https://butlertechnologies.com/blog/types-of-touch-screens



Types of touch screens

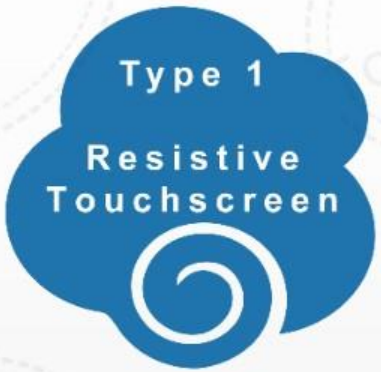
- Wire resistive
- Surface capacitive
- Projected capacitive

- Surface acoustic wave (SAW)
- Infrared
- Electromagnetic

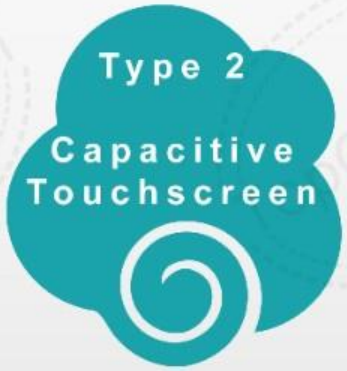


Touchscreen Technology Classification & Main Application Scenarios

TopOneTech®



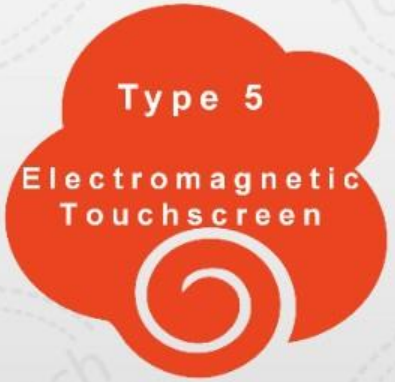
Main application scenarios:
Low-end Mobile Phones
Tablet
Mechanical Equipment



Main application scenarios:
Cell Phone
Tablet
Public Equipment

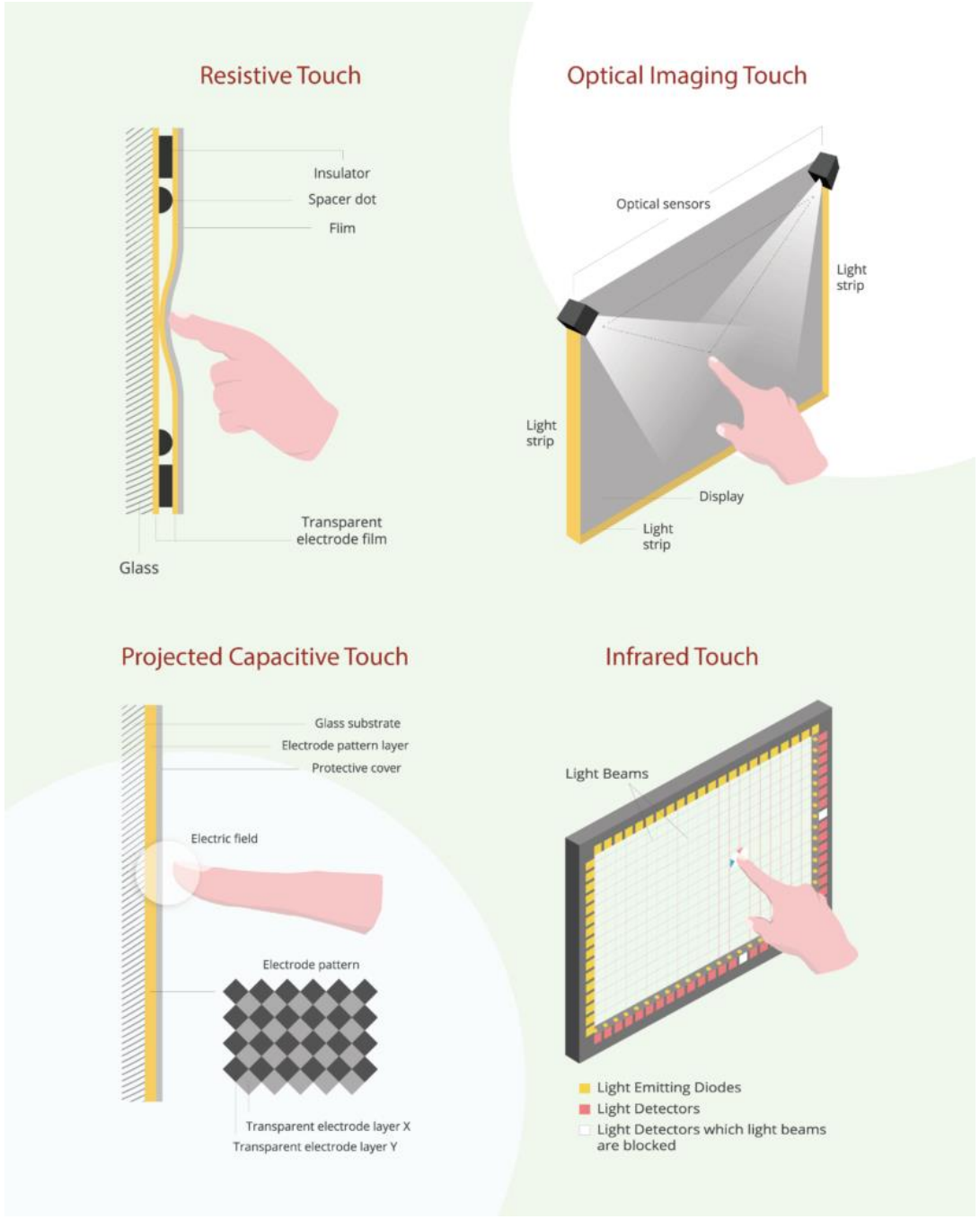
Main application scenarios:
Public Service Equipment
Self-Service Equipment
Electronic Whiteboard
Video Conference

Main application scenarios:
Pos Machine
Vending Kiosk



Main application scenarios:
E-Dictionary
Writing Board
PDA

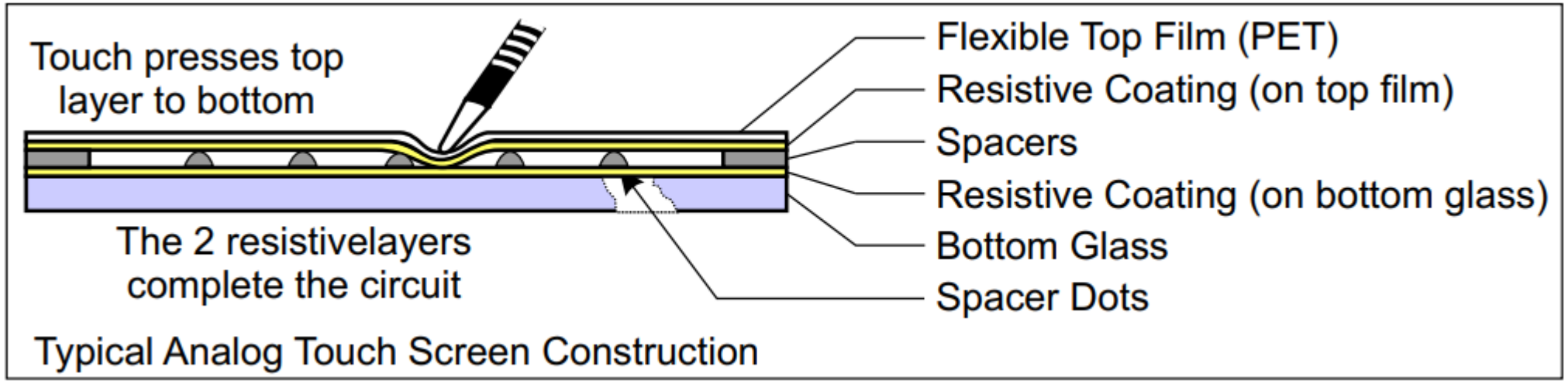
https://www.toponetechdisplay.com/touch-screen-technology-application-and-classification

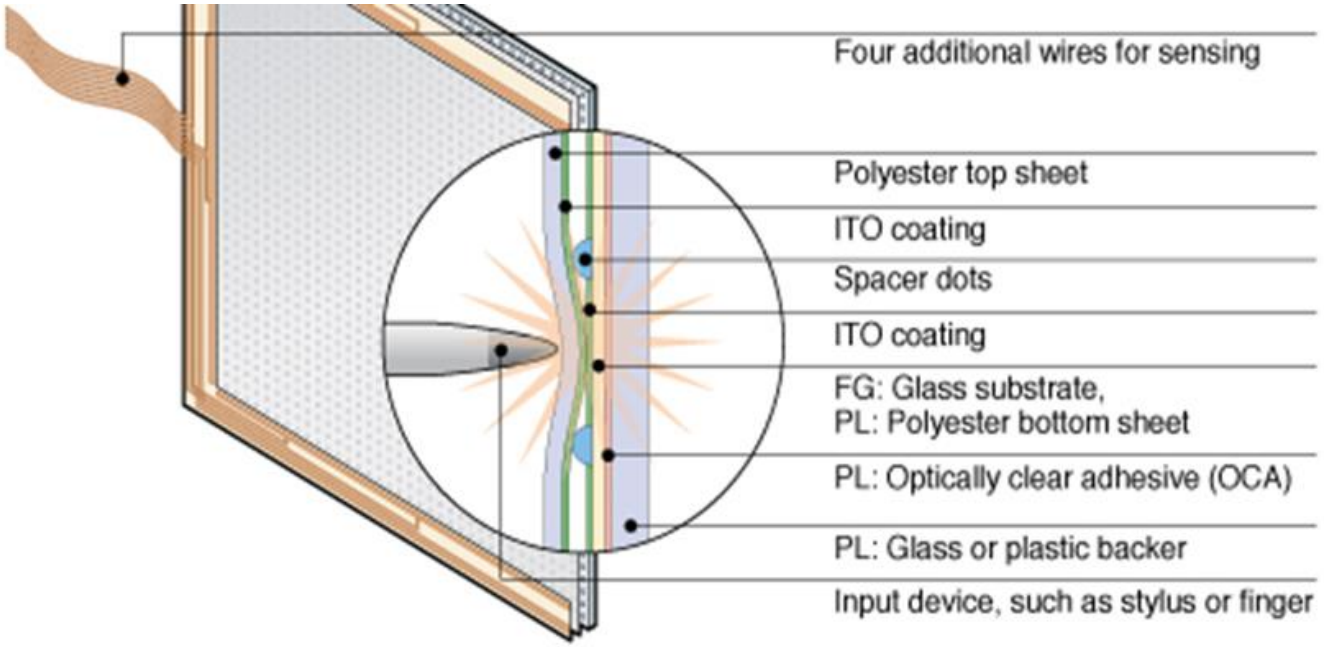


Types of touch screens

- **Resistive touch** – works by “completing a circuit” when two electrodes touch each other
- **Optical touch** – works by interrupting the transmission of light to a sensor
- **Capacitive or projected capacitive touch** – works by allowing the interaction of electric fields on the screen and in the hand
- **Infrared touch** – technically an optical touch but using low frequency light
- **Surface acoustic wave** – works by interrupting sound waves propagated across the surface

Wire Resistive Touch Screen





https://www.sparkfun.com/datasheets/LCD/HOW%20DOES%20IT%20WORK.pdf

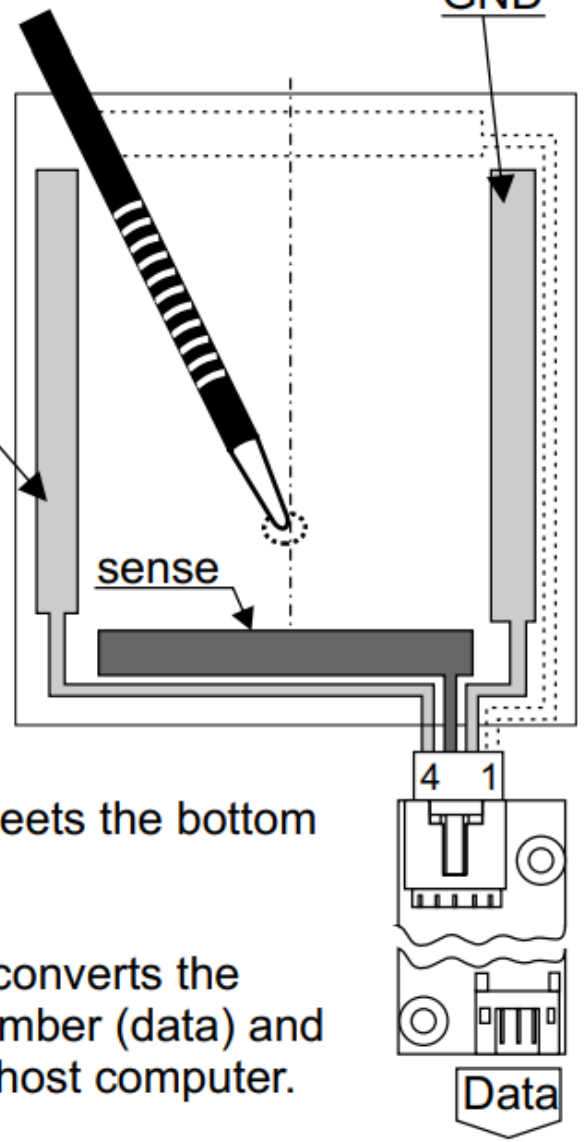
Capturing the “X” Touch

To get the “X” touch position, the controller sets Pin4 to +5V and Pin2 to GND (0V).

Pin1 is left unconnected.

The controller uses Pin3 to read the voltage where the top layer meets the bottom layer.

The controller converts the voltage to a number (data) and sends it to the host computer.



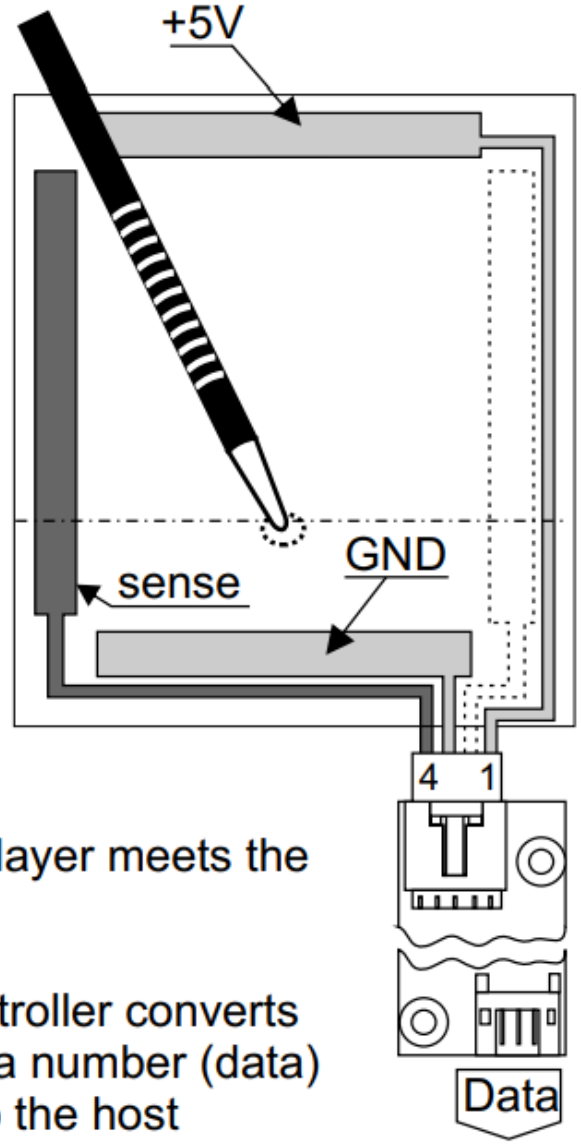
Capturing the “Y” Touch

To get the “Y” touch position the controller sets Pin1 to +5V and Pin3 to GND (0V)

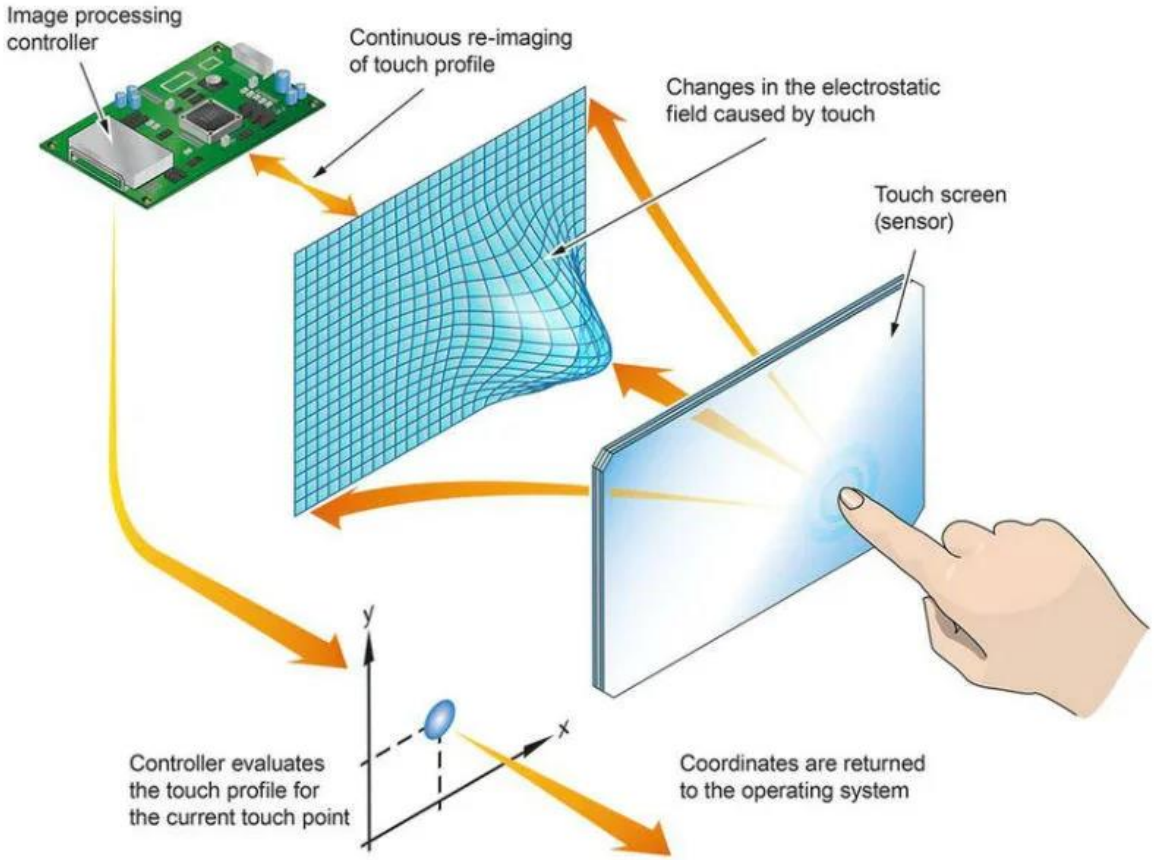
Pin2 is left unconnected.

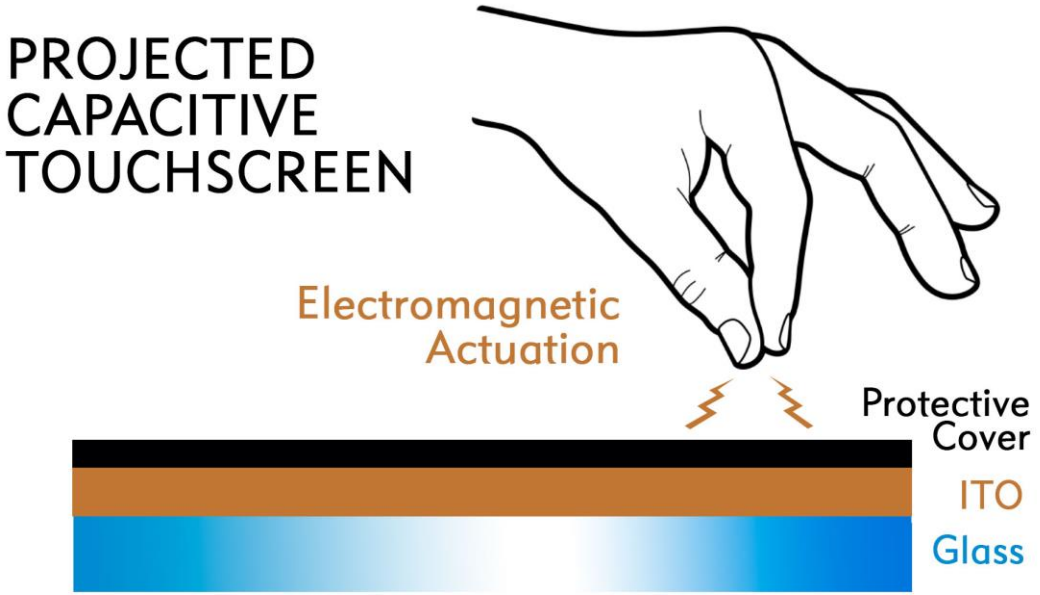
The controller uses Pin4 to read the voltage where the top layer meets the bottom layer.

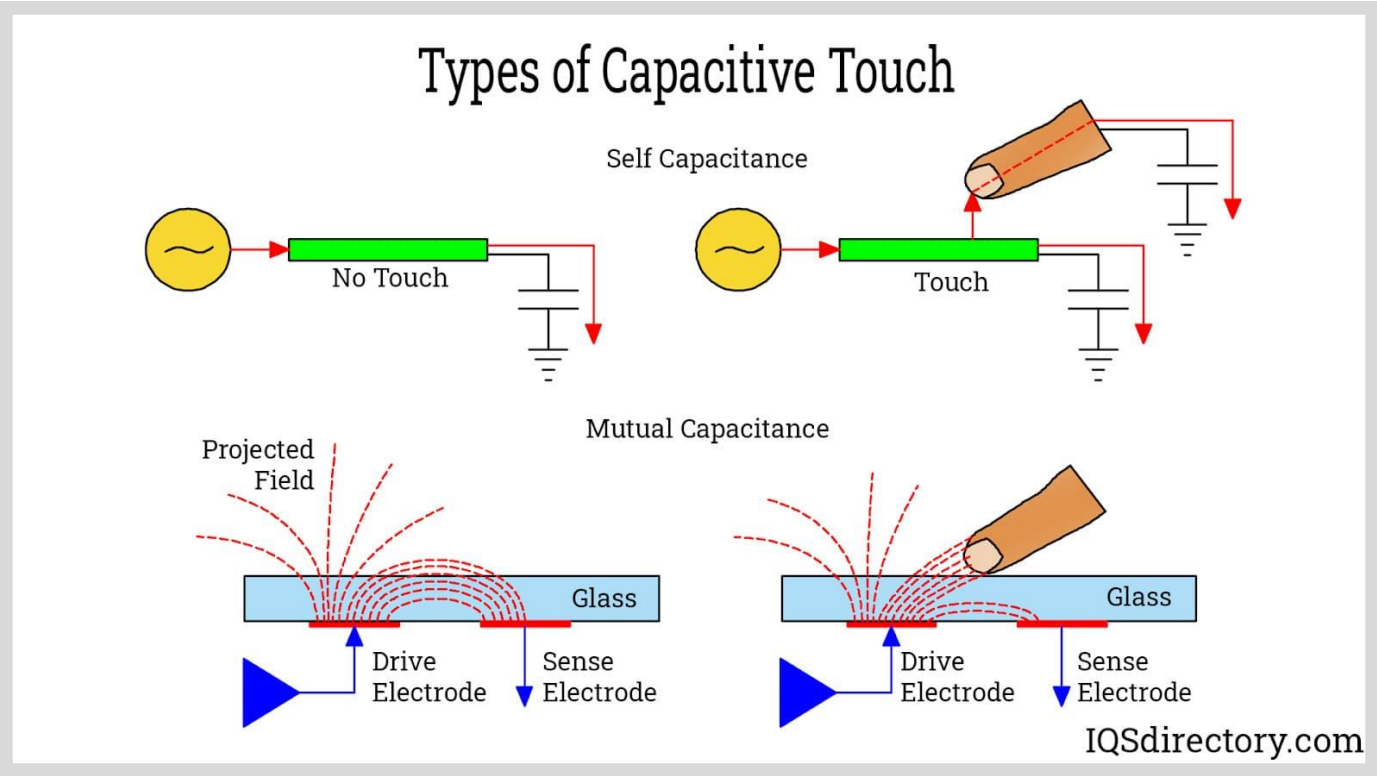
Again, the controller converts the voltage to a number (data) and sends it to the host computer.

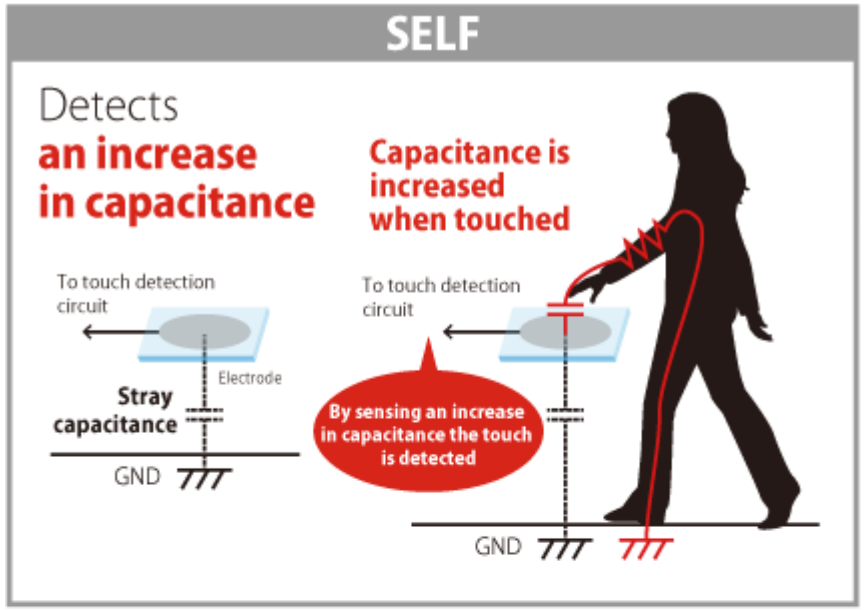


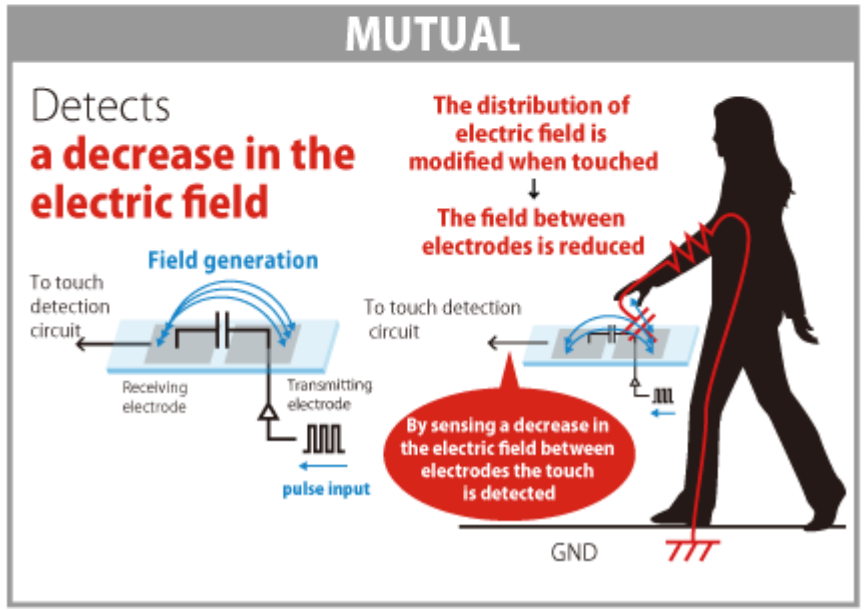
Surface Capacitive Touch Screen



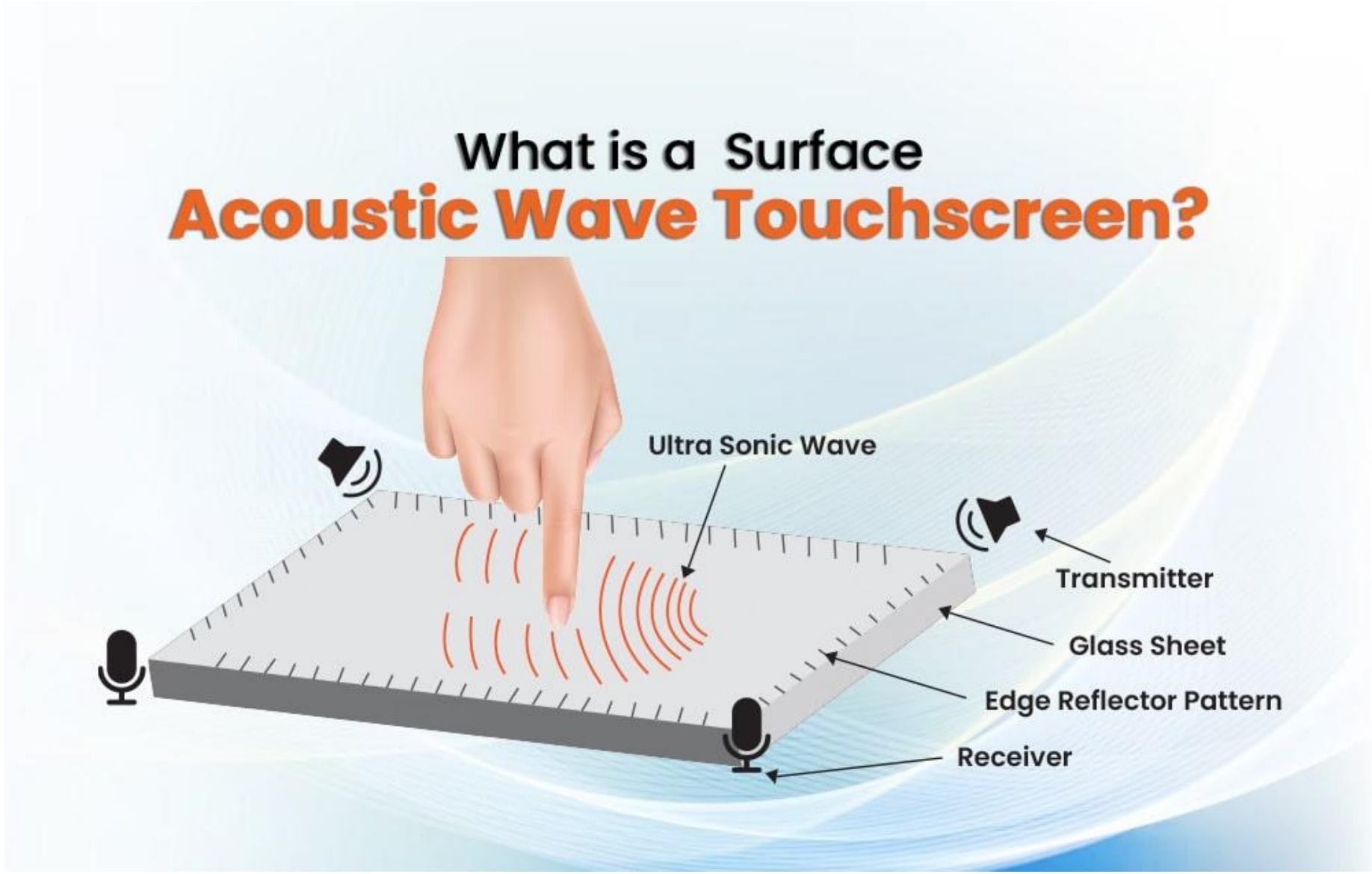






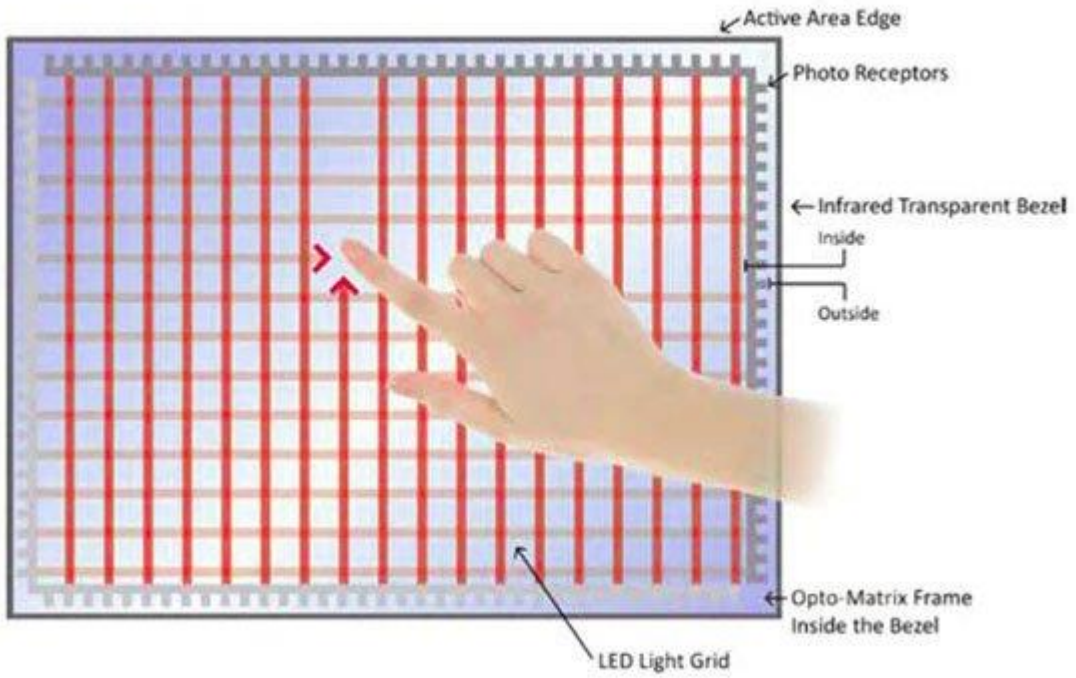


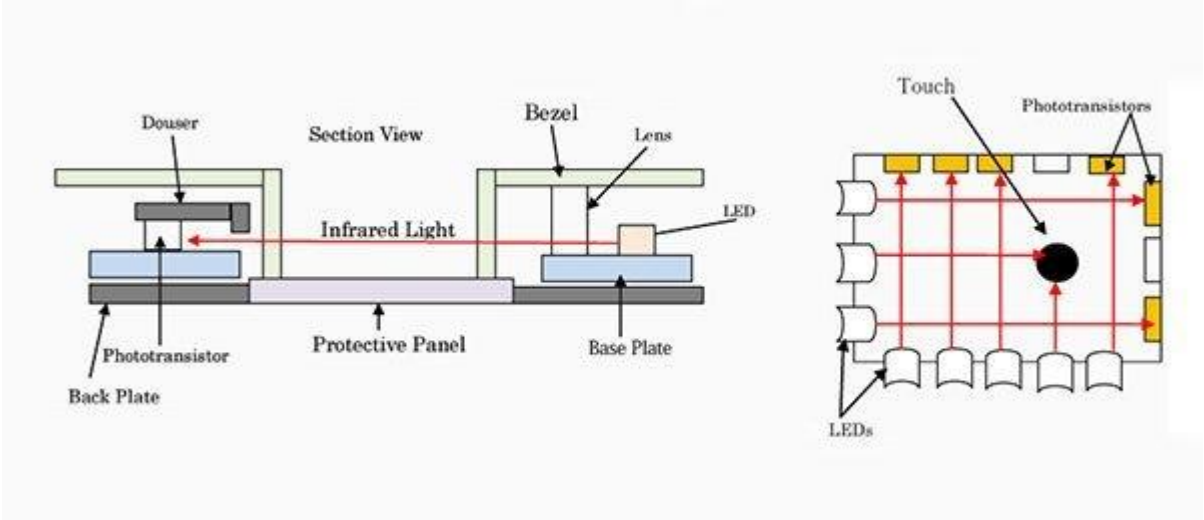
https://www.noritake-elec.com/featured-articles/different-types-touchscreens-used

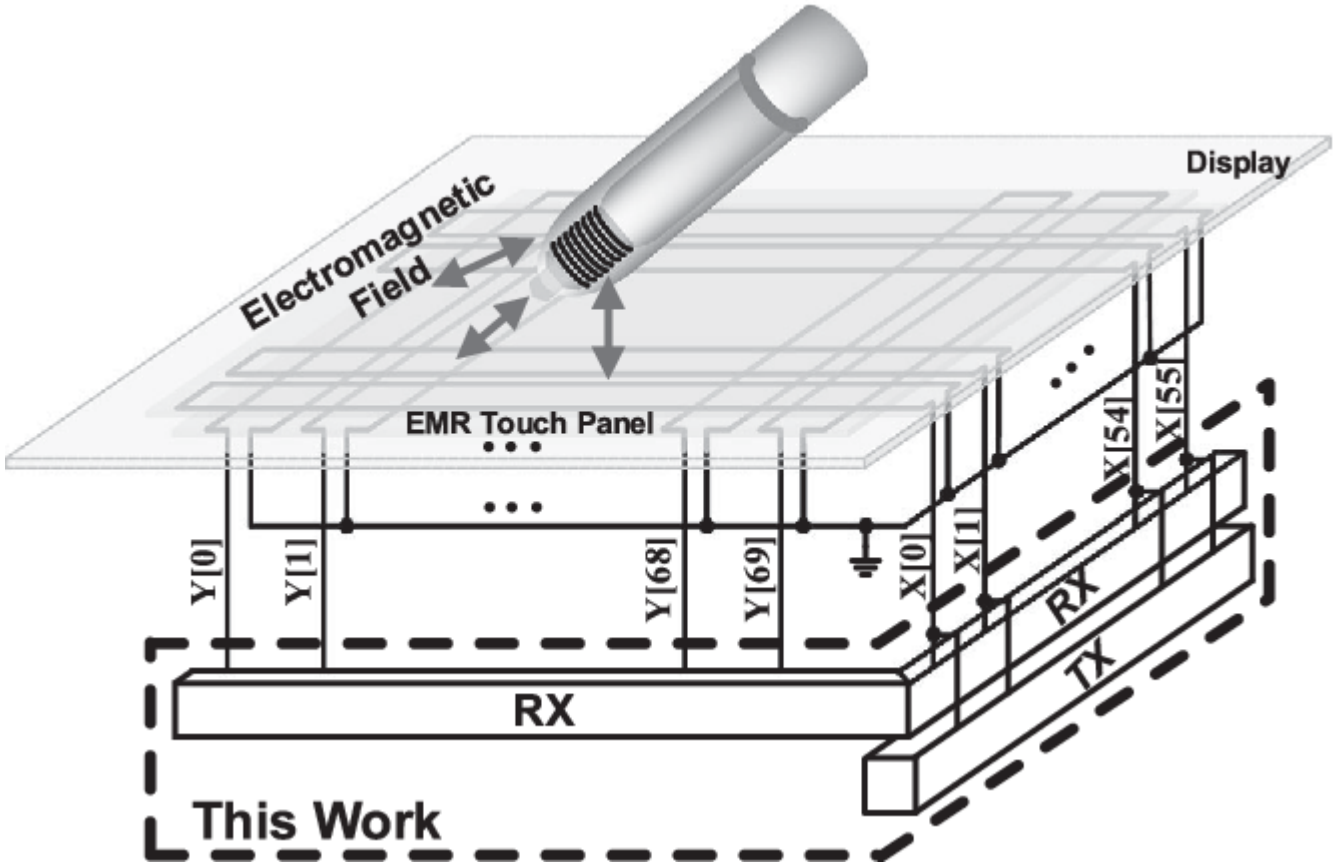


https://baobao-industries.com/news/surface-acoustic-wave-touchscreen/

Infrared Touch Screens





https://okdigitalsignage.com/infrared-touch-screen/

Electromagnetic Touch Screen