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How to choose between capacitive & resistive touch displays

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How to choose between capacitive & resistive touch displays

Normally you buy a phone or a touchscreen device based on the features it offers in terms of memory, battery life, camera, operative system and so on. However, you don't give much thought to the touchscreen itself.

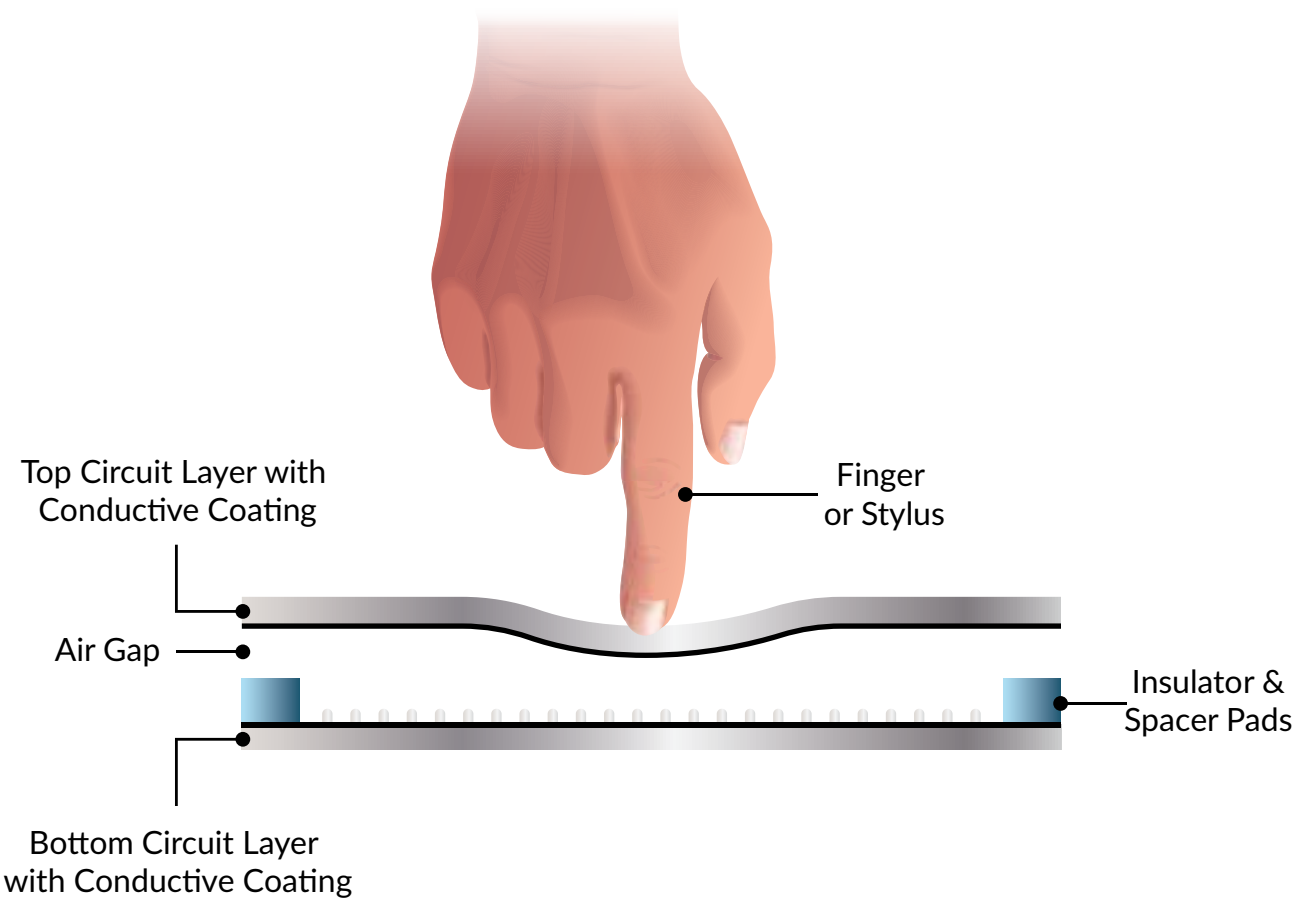
This could be because it is not always mentioned in the product description whether the touchscreen is capacitive or resistive. Additionally, both types of touchscreens are available on various devices across the electronics industry. So, what are the factors to consider before you choose one over the other?

Capacitive vs. Resistive display

Although to the layman the touchscreens look all similar at first glance, there are ways to differentiate them. On closer observation, you can find that the two are different. To put it simply, the most expensive tablets and smartphones you carry are more likely to feature a capacitive display. On the other hand, the older models in your collection would be one with a resistive touch display.

So, what is the difference between the two? The basic difference is the technology underlying the working of both screens. Let's look at them closely.

Resistive touchscreen



The resistive touchscreen was one of the most common touchscreens used in industrial electronics. One of the main reasons for this was its cost-effectiveness. As the name itself implies, it works on the principle of resistance. In resistive touchscreens, two very thin layers of material are separated by a thin gap or air. PET film and glass are typically used as layers.

The upper and bottom layers of resistive touchscreens are lined with conductors such as indium tin oxide (ITO). The conducting sides are placed facing one another. However, there is a thin gap between the two layers that would prevent them from touching when the screen is not in use.

So, when you press your finger or a stylus against the screen, it creates a change in resistance (an increase in voltage). The sensor layer detects this change, and the processor calculates the coordinates of that change and determines the position of the touch.

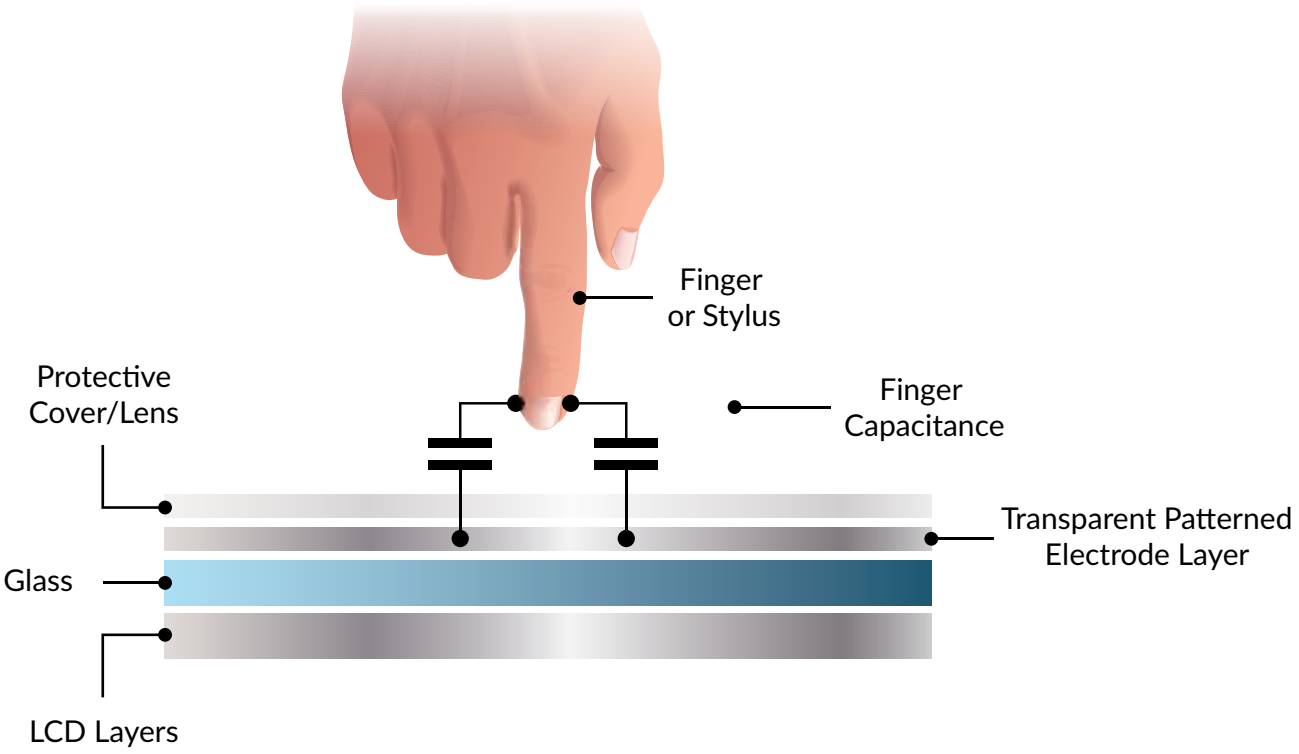
Advantages of resistive touchscreen:

- Low cost
- Works well at different angles
- Less chance of accidental touch
- Can sense any object if touched with adequate pressure
- Higher sensor resolution

Disadvantages of resistive touchscreen:

- Cannot respond to multi-touch sensing
- Less sensitive and so need some pressure to be applied for it to work
- Thick top layer results in lower clarity of display
- The screen is more easily scratched or damaged
- Will not work even if there is a small crack on the screen
- Difficult to repair

Capacitive touchscreens



Capacitive touchscreens, on the other hand, respond directly to the touch of your finger or an input device such as a stylus. Although they were invented almost a decade before the first resistive touchscreen, they became popular only recently.

Unlike the resistive touch displays that relies on mechanical pressure applied to the surface, capacitive touchscreen makes use of human body's natural conductivity to operate. These screens are made of transparent, conductive material—usually ITO—coated onto a glass material.

As you touch the glass material with your finger, the static electricity stored in it transfers to the finger. The sensors in the processors use this change in electricity to determine the position of the touch. These sensors are very sensitive and can track even the slightest of touch, making capacitive touchscreens more receptive than resistive types.

Advantages of capacitive touchscreen:

- Durability
- Better display
- Easy to use
- Supports customisation
- More sensitive to touch
- Offers multi-touch sensing functions
- Ease of cleaning

Disadvantages of capacitive touchscreen:

- Costlier than resistive touchscreen
- Highly sensitive means it can be activated at the lightest of touch – may lead to accidental touch
- Views are best from the front

Conclusion

From the above details, it is clear that capacitive touch displays are better than the resistive touch displays in more ways than one. Although they are costlier the benefits offered by capacitive touch displays outweigh the cost.

Furthermore, touchscreens are liable to develop cracks if they fall or come into contact with a hard substance. While the resistive touch displays cease to work even in case of a small crack, the capacitive touch displays can work even in the event of a cracked screen.

Armed with such practical information, you would be better off choosing a capacitive touch display device with a high touch-sensitive screen that requires no effort to operate. Sharp pictures would be an added advantage.

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