Panasonic CONNECT

# TOUCHSCREEN DISPLAY TECHNOLOGY

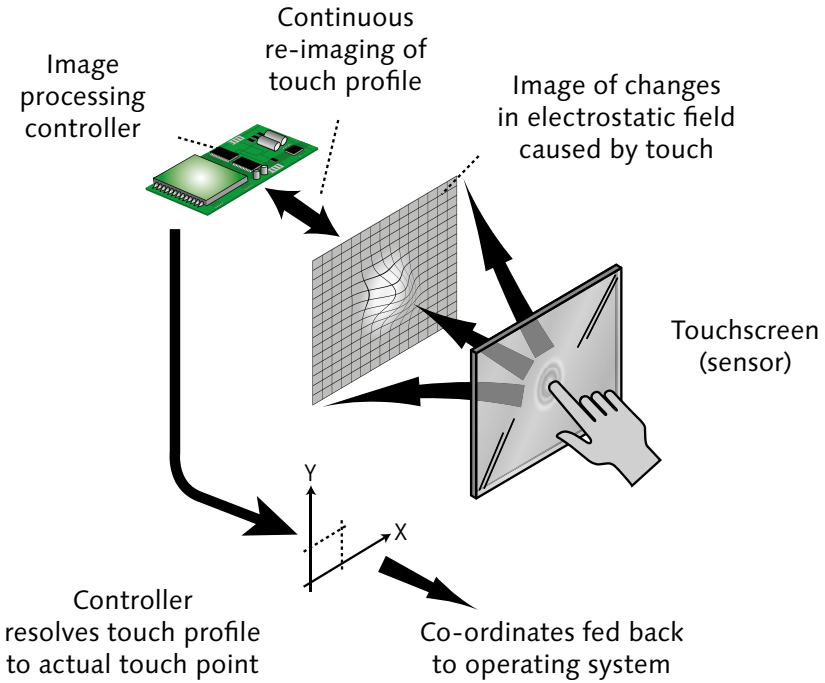
## YOUR IN-DEPTH GUIDE

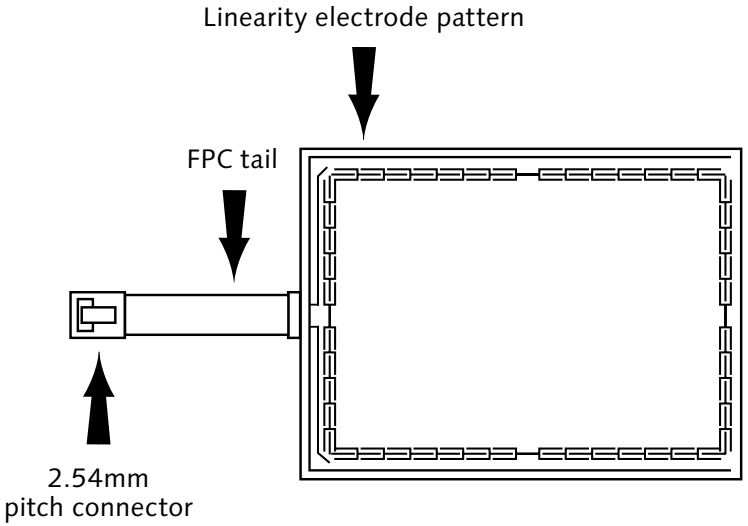

TOUGHBOOK

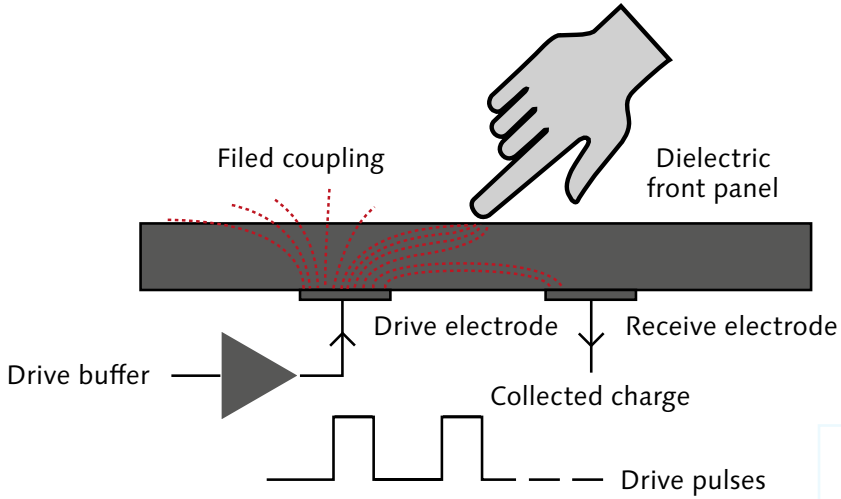
# WHAT IS…
# A CAPACITIVE TOUCHSCREEN?

**A capacitive touchscreen panel is coated with a material that stores electrical charges. When the panel is touched, a small amount of charge is drawn to the point of contact. Circuits located at each corner of the panel measure the charge and send the information to the controller for processing.**

Capacitive touchscreen panels must be touched with a finger, unlike resistive and surface wave panels that can be operated by either fingers or stylus. Capacitive touchscreens aren't affected by outside elements and have high clarity.



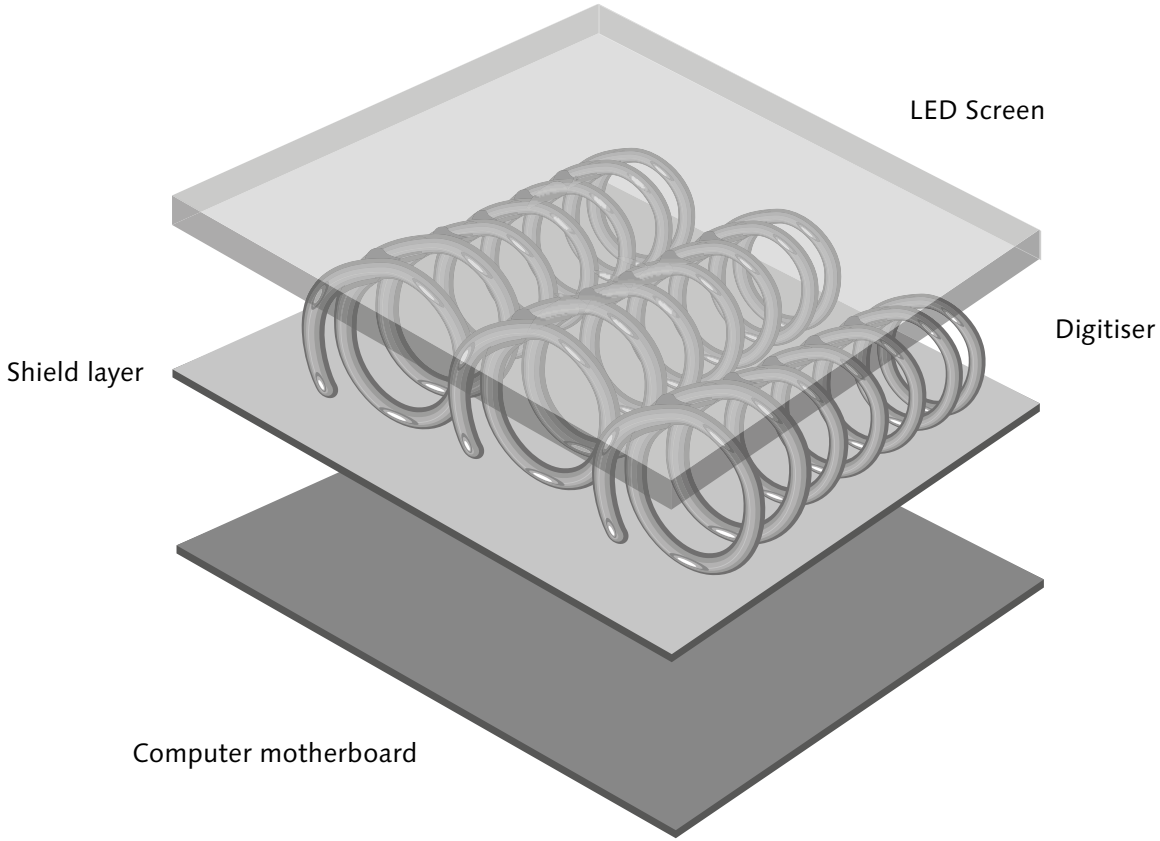
# WHAT IS...
# A DIGITISER TOUCHSCREEN?

**Digitiser touchscreens make use of electromagnetic induction technology, where the horizontal and vertical wires of the screen operate as both transmitting and receiving coils. The tablet generates an electromagnetic signal, which is received by the stylus. The wires in the tablet then change to a receiving mode and read the signal generated by the stylus.**

Modern arrangements also provide pressure sensitivity and one or more switches (similar to the buttons on a mouse), with the electronics for this information present in the stylus itself, not the tablet.

By using electromagnetic signals, the tablet is able to sense the stylus position without the stylus having to even touch the surface, and powering the pen with this signal means that devices used with the tablet never need batteries.

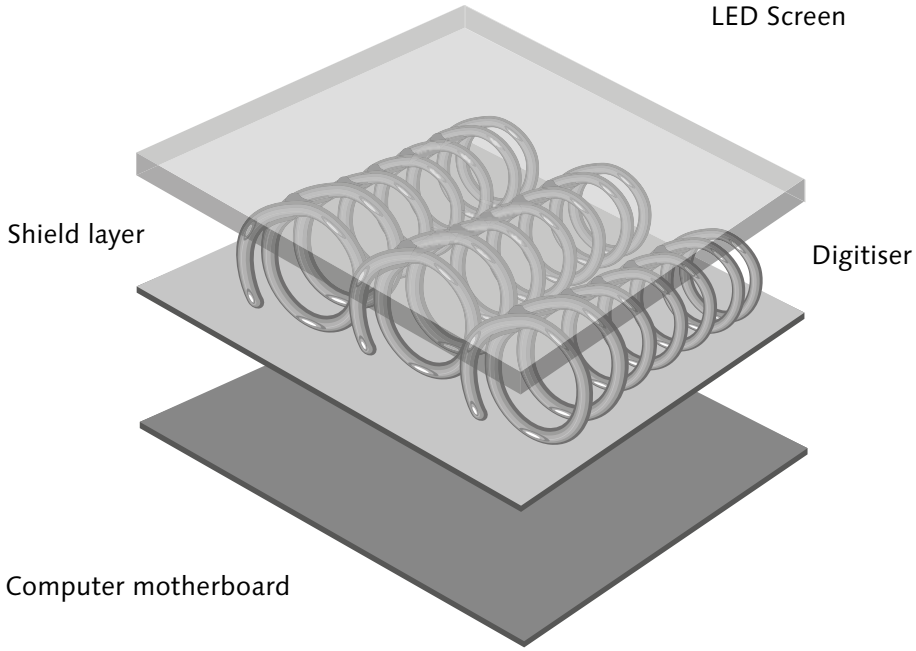
The core benefit of this type of screen is the accuracy of the digitiser pen. So detailed drawings and signatures are possible. What's more, because a special digitiser pen is needed, the touchscreen can't be used with fingers or hands, eliminating accidental input errors.

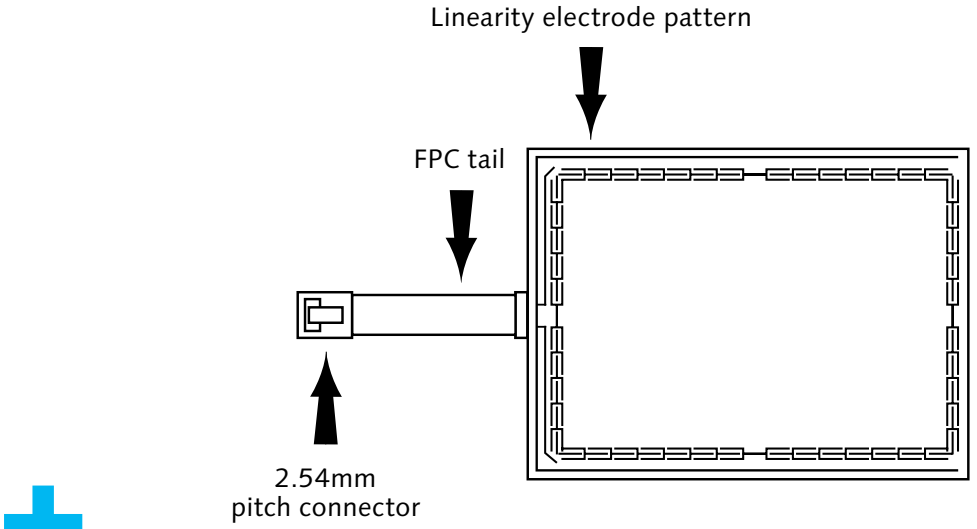


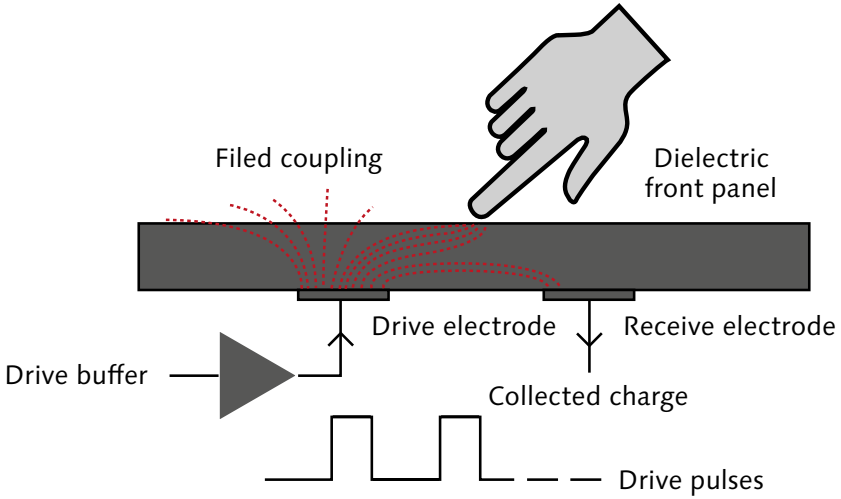
# WHAT IS...
# DUAL TOUCH?

**Dual touch is the combination of capacitive touchscreen and digitiser technology. It enables the operator to use the GUI with fingers, as well as with a digitiser pen.**

The key benefit of this combination is the intuitive handling via finger and the accuracy (signature capture, handwriting recognition) of thepen providing the flexibility to choose the right display input mode on demand.



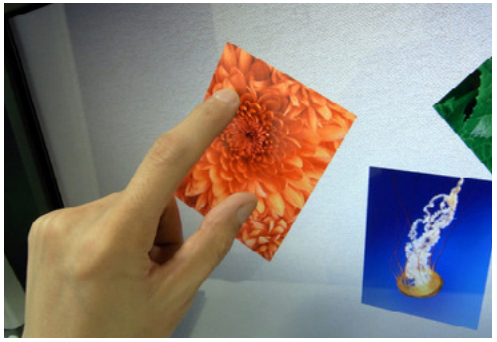



# WHAT IS…
# MULTI-TOUCH?

**Multi-touch is a method of input on a touchscreen that allows two or more fingers to be used on the screen at one time. Multi-touch allows pinching and stretching gestures on the screen to control zooming.**

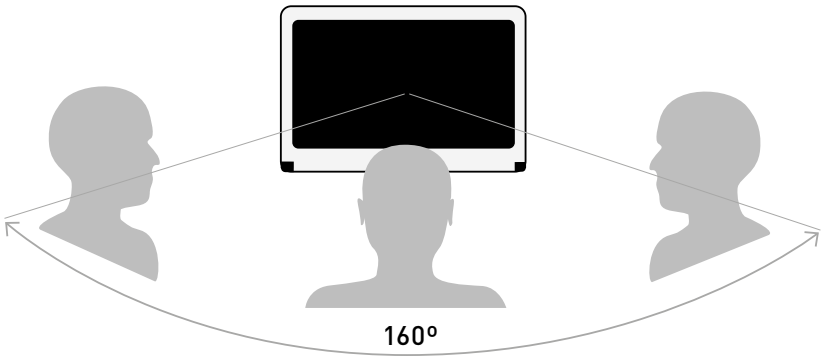
A multi-touch display is pressure sensitive, as well as gesture sensitive, which are predefined motions that are commands to perform an action, such as rotate the object on the z-axis.

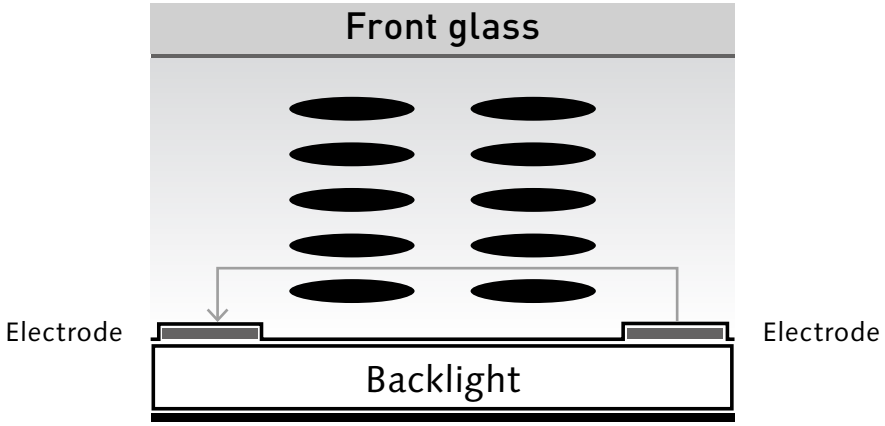
# WHAT IS...
# IPS?

**In IPS (In-Plane Switching) technology the liquid crystal runs horizontally, giving it a wide viewing angle, fast response speed and a simple pixel structure.**

IPS panels employ pairs of electrodes at the sides of each cell, running the electric field horizontally through the material. This approach keeps the liquid crystals parallel to the front of the panel, increasing the viewing angle.




## IPS PANEL DESIGN



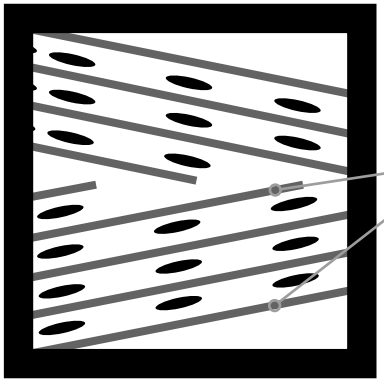

CONVENTIONAL
Loss of contrast and colours appear washed out.

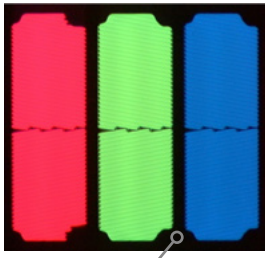
IPS
Virtually no change in contrast and colour.

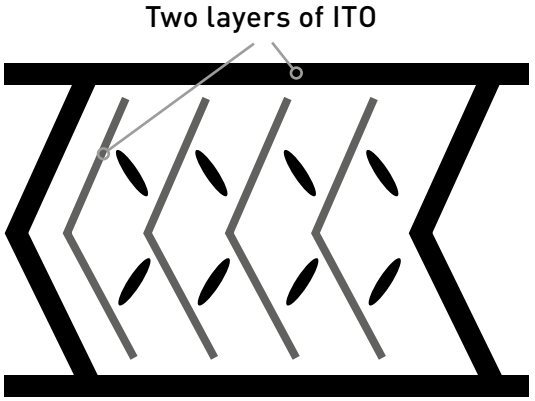
# WHAT IS...
# IPS*a*?

| Transmittance | | Point of image quality |
|---|---|---|
| **IPS-PRO** | x1.0 | • High transmittance<br>• High contrast ratio<br>• Wide viewing angle |
| **IPSa** | x1.5 | • High resolution<br>• High transmittance<br>• High contrast ratio<br>• Wide viewing angle |

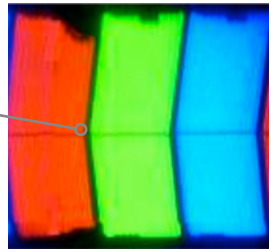
**Front view of a pixel (red, green, blue)**






Black space
is smaller than
IPS-Pro II



# THE TOUCHSCREEN
# RANGE CONFIGURATIONS

| MODEL | TOUGHBOOK 20 | TOUGHBOOK 33 |
|---|---|---|
| | Touchscreen | Touchscreen |
| Input device | Capacitive Multi-Touch | Capacitive Multi-Touch + Digitiser |
| Display brightness | 800 cd/m² | 1.200 cd/m² |
| IPS | ✔ | ✔ |
| IPS *a* | | |
| Dual touch | Optional | ✔ |
| Anti-glare | ✔ | ✔ |
| Anti-reflection | ✔ | ✔ |
| Protection film | ✔ | ✔ |
| Direct bonding | ✔ | ✔ |
| Multi-touch | Ten-finger | Ten-finger |
| Standard signatures | ✔ | ✔ |
| High-res drawings and signatures | | ✔ |
| Gloves | ✔ | ✔ |

TOUGHBOOK 20

TOUGHBOOK 33

# THE TOUCHSCREEN
# RANGE CONFIGURATIONS

| MODEL | TOUGHBOOK 55 |
|---|---|
| | Full HD Model with Touchscreen |
| Input device | Capacitive Multi-Touch |
| Display brightness | 1.000 cd/m² |
| IPS | ✔ |
| IPS *a* | |
| Dual touch | |
| Anti-glare | ✔ |
| Anti-reflection | ✔ |
| Protection film | ✔ |
| Direct bonding | ✔ |
| Multi-touch | Ten-finger |
| Standard signatures | ✔ |
| High-res drawings and signatures | |
| Gloves | ✔ |


TOUGHBOOK 55

# THE TOUCHSCREEN
# RANGE CONFIGURATIONS

| MODEL | TOUGHBOOK A3 | TOUGHBOOK G2 |
|---|---|---|
| | Touchscreen | Touchscreen |
| Input device | Capacitive Multi-Touch | Capacitive Multi-Touch + Digitiser |
| Display brightness | 500 cd/m² typical (1.100 cd/m² max) | 1.000cd/m² |
| IPS | ✔ | |
| IPS *a* | | ✔ |
| Dual touch | | ✔ |
| Anti-glare | ✔ | ✔ |
| Anti-reflection | ✔ | ✔ |
| Protection film | ✔ | ✔ |
| Direct bonding | ✔ | ✔ |
| Multi-touch | Ten-finger | Ten-finger |
| Standard signatures | ✔ | ✔ |
| High-res drawings and signatures | | ✔ |
| Gloves | ✔ | ✔ |


TOUGHBOOK A3


TOUGHBOOK G2

# THE TOUCHSCREEN
# RANGE CONFIGURATIONS

| MODEL | TOUGHBOOK S1 | TOUGHBOOK M1 |
|---|---|---|
| | Touchscreen | Touchscreen |
| Input device | Capacitive Multi-Touch | Capacitive Multi-Touch |
| Display brightness | 500 cd/m² | 700 cd/m² |
| IPS | ✔ | ✔ |
| IPS *a* | | |
| Dual touch | | |
| Anti-glare | ✔ | ✔ |
| Anti-reflection | ✔ | ✔ |
| Protection film | ✔ | ✔ |
| Direct bonding | ✔ | ✔ |
| Multi-touch | Ten-finger | Ten-finger |
| Standard signatures | ✔ | ✔ |
| High-res drawings and signatures | | |
| Gloves | ✔ | ✔ |


TOUGHBOOK S1


TOUGHBOOK M1

# THE TOUCHSCREEN
# RANGE CONFIGURATIONS

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| MODEL | TOUGHBOOK N1 |
|---|---|
| | Touchscreen |
| Input device | Capacitive Multi-Touch |
| Display brightness | 500 cd/m² |
| IPS | ✔ |
| IPS *a* | |
| Dual touch | |
| Anti-glare | ✔ |
| Anti-reflection | ✔ |
| Protection film | ✔ |
| Direct bonding | ✔ |
| Multi-touch | Ten-finger |
| Standard signatures | ✔ |
| High-res drawings and signatures | Optional |
| Gloves | ✔ |

TOUGHBOOK N1



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TOUGHBOOK

122860_PAN_Touchscreen brochure_EN_v03