TOUCHSCREEN DISPLAY TECHNOLOGY

YOUR IN-DEPTH GUIDE
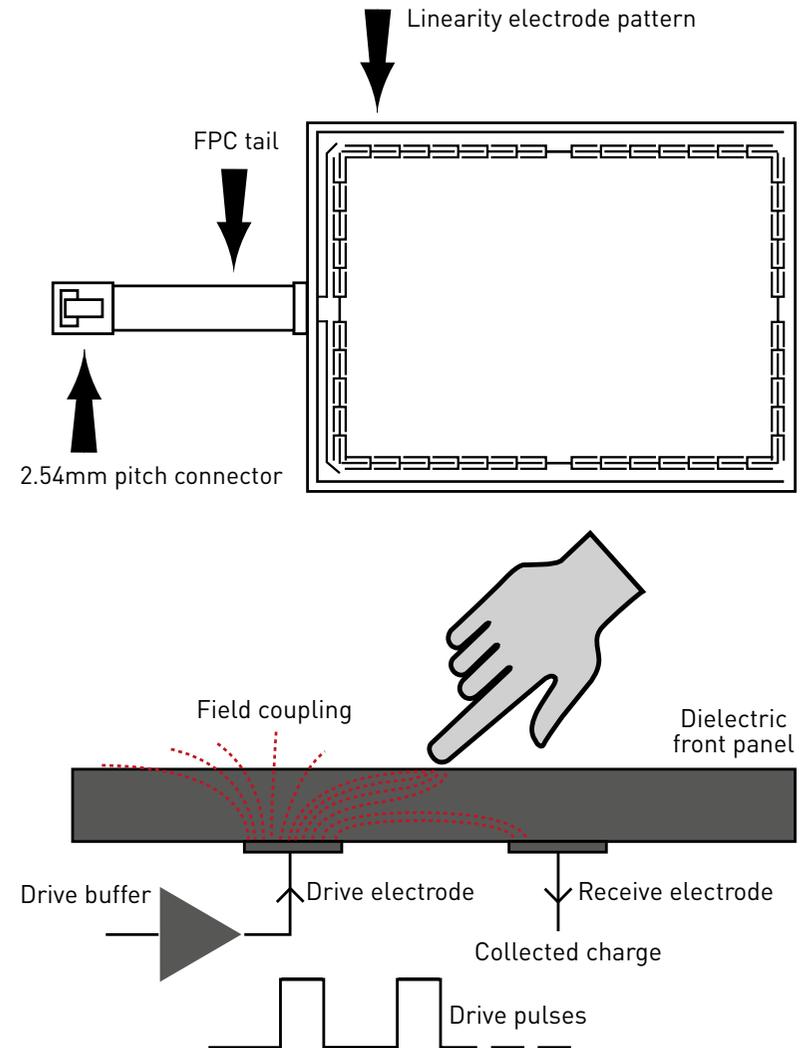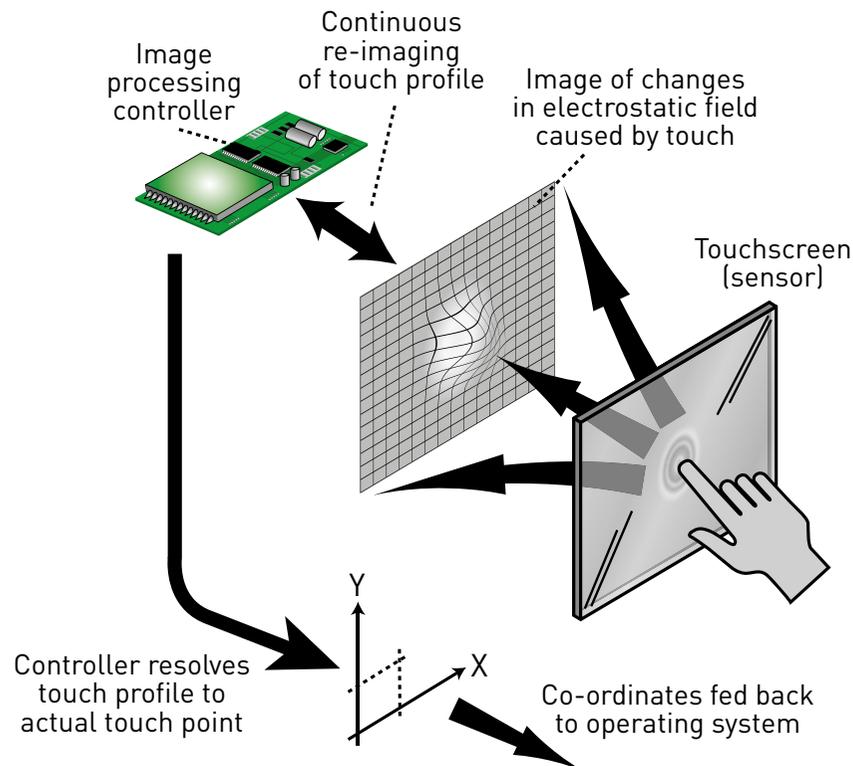
TOUGHBOOK

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.

Linearity electrode pattern

FPC tail

2.54mm pitch connector

Image processing controller

Continuous re-imaging of touch profile

Image of changes in electrostatic field caused by touch

Touchscreen (sensor)

Controller resolves touch profile to actual touch point

Y

X

Co-ordinates fed back to operating system

Field coupling

Dielectric front panel

Drive buffer

Drive electrode

Receive electrode

Collected charge

Drive pulses

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.

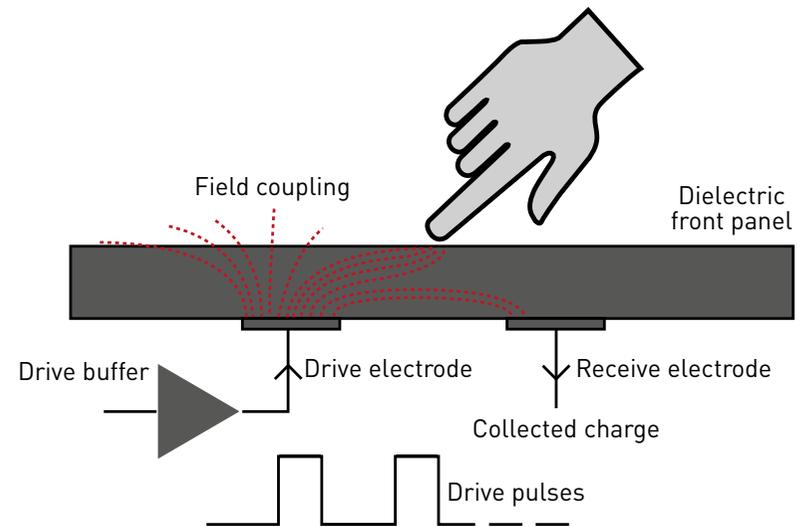Modern arrangements also provide pressure sensitivity and one or more switches (similar to the buttons on a mouse), with the electronics for this information present in the stylus itself, not the tablet.
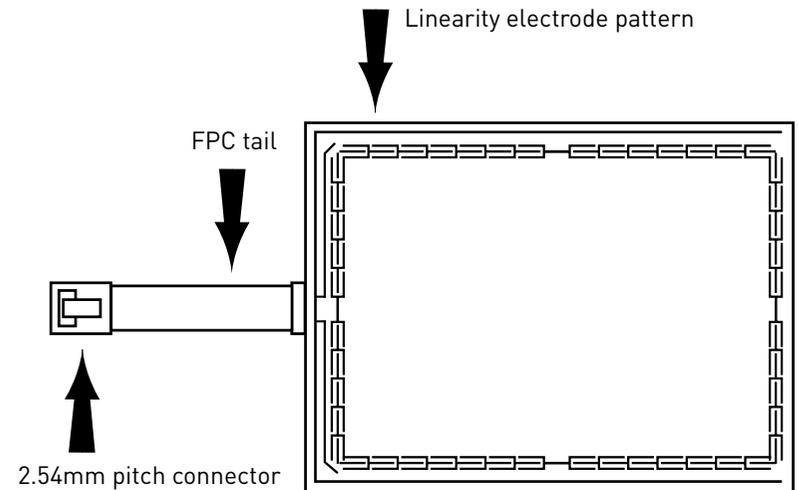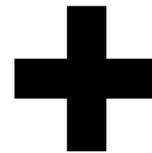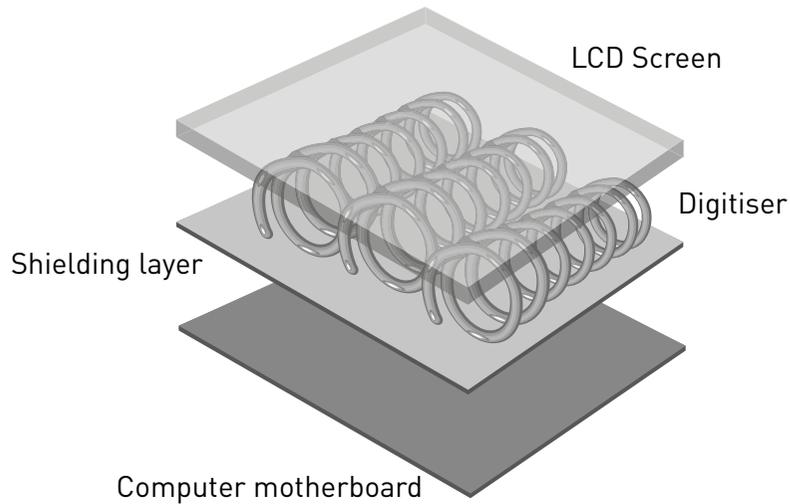
By using electromagnetic signals, the tablet is able to sense the stylus position without the stylus having to even touch the surface, and powering the pen with this signal means that devices used with the tablet never need batteries.

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.

LCD Screen

Digitiser

Shielding layer

Computer motherboard
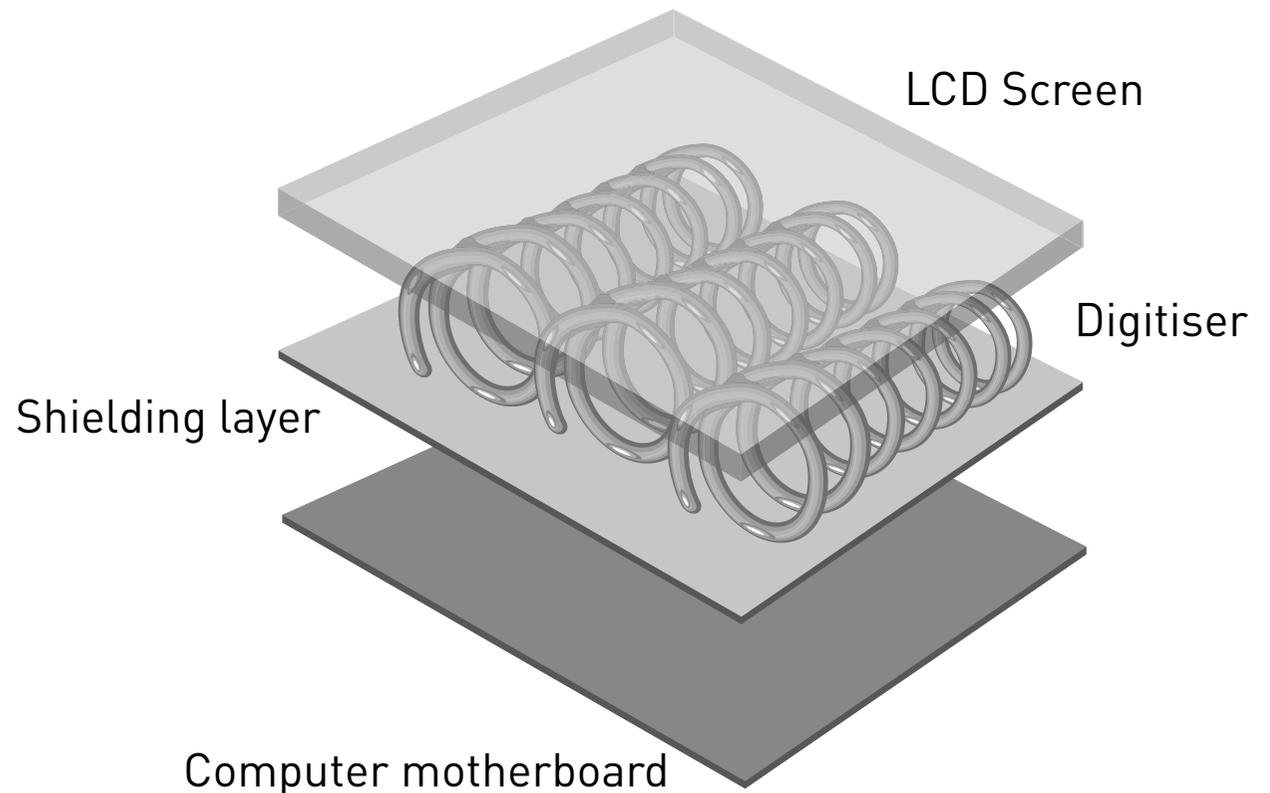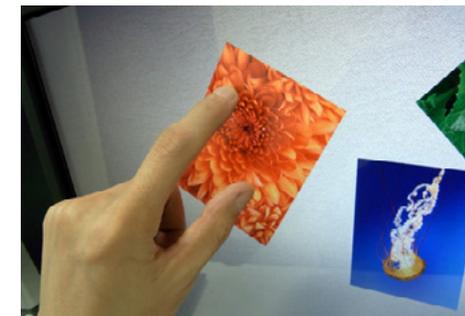
WHAT IS...
DUAL TOUCH?

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 the pen providing the flexibility to choose the right display input mode on demand.

LCD Screen

Digitiser

Shielding layer

Computer motherboard

Linearity electrode pattern

FPC tail

2.54mm pitch connector

Field coupling

Dielectric front panel

Drive buffer

Drive electrode

Receive electrode

Collected charge

Drive pulses

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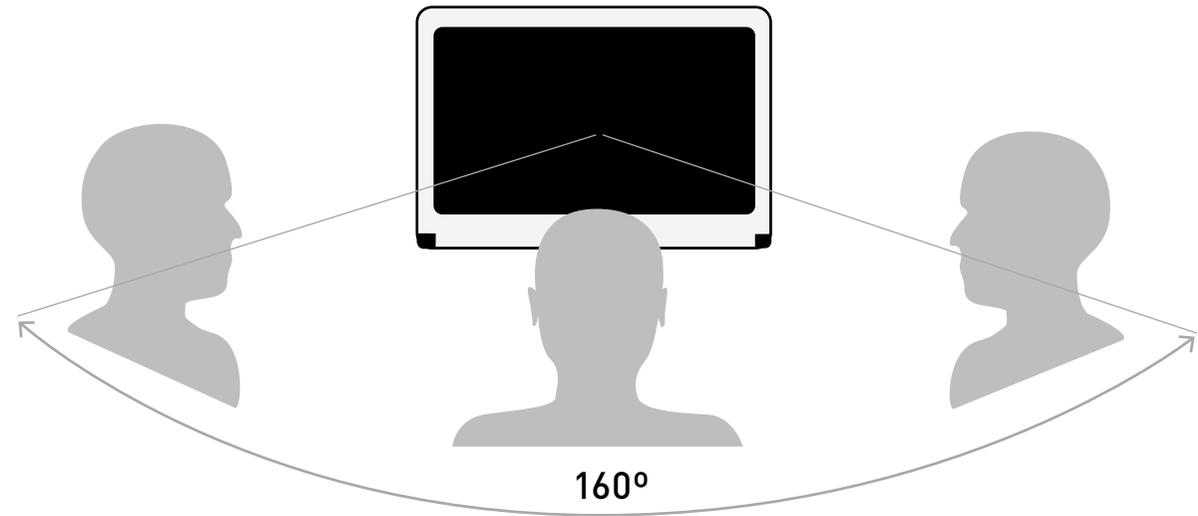
A multi-touch display is pressure sensitive, as well as gesture sensitive, which are predefined motions that are commands to perform an action, such as rotate the object on the z-axis.
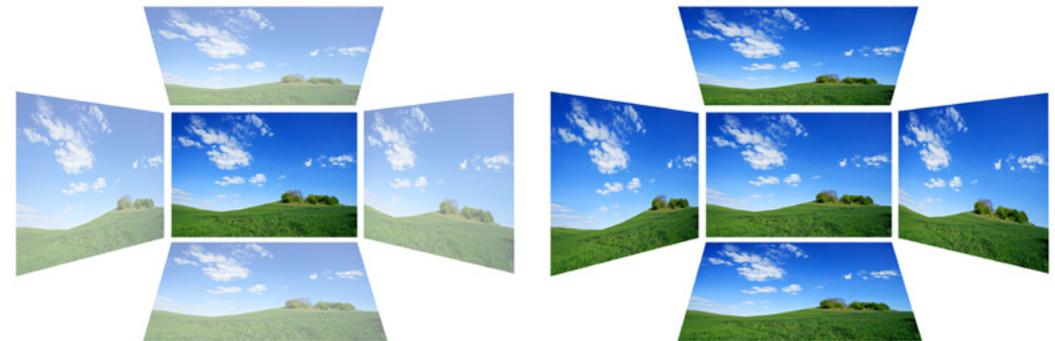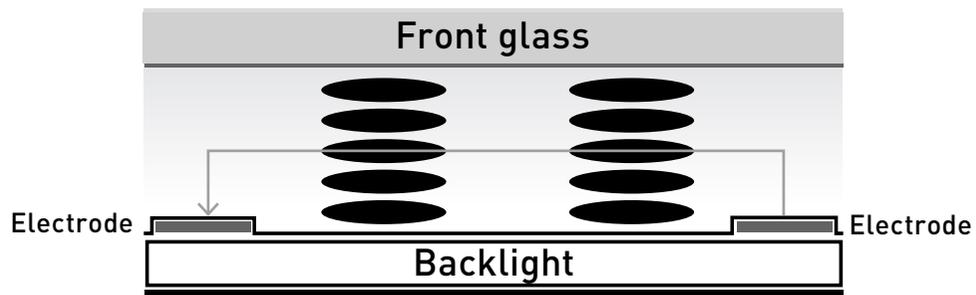
WHAT IS...
IPS?

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.

160º

IPS PANEL DESIGN

Front glass

Electrode

Electrode

Backlight

CONVENTIONAL
Loss of contrast and colours appear washed out.

IPS
Virtually no change in contrast and colour.

WHAT IS...
IPSα?

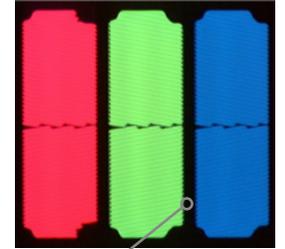|	Transmittance	Point of image quality	Front view of a pixel (red, green, blue)

IPS-PRO   x1.0

- High transmittance
- High contrast ratio
- Wide viewing angle
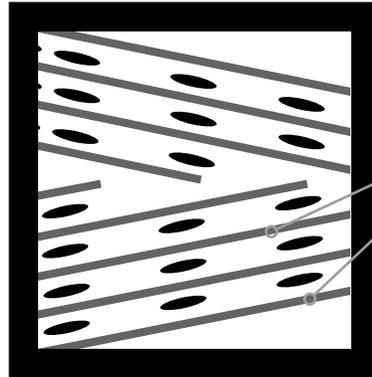
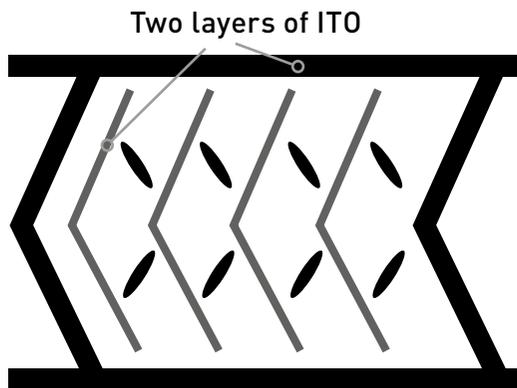Fine pitch ITO
(Indium Tin Oxide)
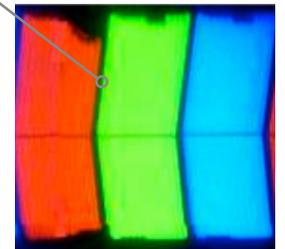
IPSα   x1.5

- **High resolution**
- High transmittance
- High contrast ratio
- Wide viewing angle

Two layers of ITO

Lines are shielded

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 α		
Dual touch	Optional	✔
Anti-glare	✔	✔
Anti-reflection	✔	✔
Protection film	✔	✔
Direct bonding	✔	✔
Multi-touch	Ten-finger	Ten-finger
Standard signatures	✔	✔
High-res drawings and signatures	Optional, Dual Touch	✔
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 G1
	Touchscreen	**Touchscreen**
Input device	Capacitive Multi-Touch	Capacitive Multi-Touch + Digitiser
Display brightness	500 cd/m² typical (800 cd/m² max)	800 cd/m²
IPS	✔	
IPS α		✔
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 G1

THE TOUCHSCREEN RANGE
CONFIGURATIONS

Model	TOUGHBOOK L1	TOUGHBOOK M1
	Touchscreen	**Touchscreen**
Input device	Capacitive Multi-Touch	Capacitive Multi-Touch
Display brightness	350 cd/m²	700 cd/m²
IPS	✔	✔
IPS α		
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 L1

TOUGHBOOK M1

THE TOUCHSCREEN RANGE
CONFIGURATIONS

Panasonic
BUSINESS

Model	TOUGHBOOK N1	TOUGHBOOK T1
	Touchscreen	**Touchscreen**
Input device	Capacitive Multi-Touch	Capacitive Multi-Touch
Display brightness	500 cd/m²	420 cd/m²
IPS	✔	✔
IPS α		
Dual touch		
Anti-glare	✔	✔
Anti-reflection	✔	✔
Protection film	✔	✔
Direct bonding	✔	✔
Multi-touch	Ten-finger	Ten-finger
Standard signatures	✔	✔
High-res drawings and signatures	Optional	
Gloves	✔	✔

TOUGHBOOK N1

TOUGHBOOK T1

121022_PAN_Touchscreen brochure_EN_AW_v03

TOUGHBOOK