

## E Ink ITE Xplained Pro

### Summary

Ineltek has developed a low-cost, simple-to-use E Ink display add-on board for the Microchip Xplained Pro prototyping and evaluation platform. Our Ineltek E Ink ITE Xplained Pro board makes it easy to connect and easy to develop using one of E Ink's more advanced and capable displays, alongside ITE's e-paper display controller, in a Microchip ARM® or AVR® based development environment. Ineltek's support for your e-paper display development includes software libraries, example projects, 2D and 3D CAD for the displays and the PCB data to quickly prototype your own designs.

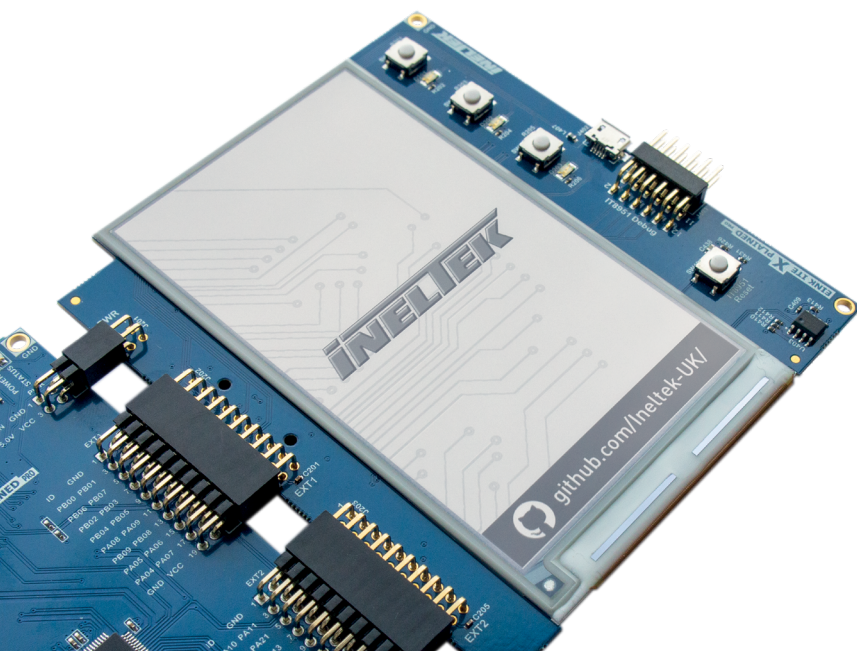
Unlike most smaller sized E Ink displays, the 4.3" display on the E Ink ITE Xplained Pro is externally controlled and gives the user the choice of multiple different controllers, adding lot more flexibility to the functionality of the attached displays.

### E Ink Displays

E Ink displays are ultra-low power displays that retain their image even when power is removed, making them ideal for low-power applications. Originally developed at MIT in 1997 to create a battery powered electronic book that could last for weeks without charging, it was also developed to allow the user to read off the screen for long periods of time without eye strain. E Ink has since branched out and now develops screens of all shapes and sizes for varying markets from shelf labels to outdoor signage. Originally developed in black and white, displays are now available in greyscale, three colour variants - adding yellow or red into the mix - and with E Ink's new Advanced Colour e-Paper (ACeP™) technology, a full colour gamut can be achieved, including all eight primary colors.

### Externally Controlled Displays

Externally controlled displays do not have built-in controllers like traditional All-In-One (AIO) E Ink displays, instead they require an external controller such as ITE's IT8951. Externally controlled displays are larger and more capable than AIO displays (which have a maximum size of 5.7") and are better suited for real time HMI applications and for applications requiring relatively fast update rates. The IT8951 is a powerful e-paper controller that takes a variety of interfaces with some simple commands to easily control displays up to 13" and, by using multiple IT8951s together, displays of up to 42" can be controlled.



### Applications

- ◆ eReaders
- ◆ Smart Thermostats
- ◆ Smart Home
- ◆ Medical
- ◆ Safety
- ◆ Signage
- ◆ Transportation
- ◆ Instrumentation
- ◆ Outdoor

### Info

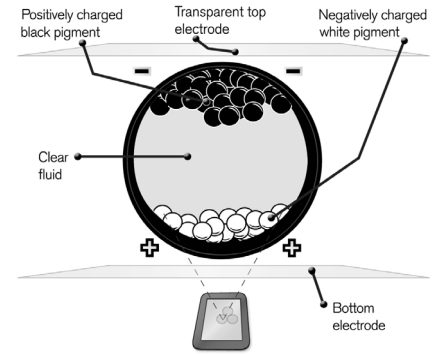
Software available on GitHub:



[github.com/ineltek-UK/](https://github.com/ineltek-UK/)

## Technology

E Ink displays are made of a layer of tiny micro-capsules filled with a clear, viscous liquid, in which are charged coloured particles. Electrodes sit above and below the capsules to form the pixels on the display. When an electric field is applied across the capsules, the charged particles will align accordingly. Once the field is removed, the particles are held in suspension due to the viscosity of the liquid within the capsule. This allows the display to retain its image after power is removed and also ensures that power is only drawn when the orientation of the particles must be changed. The particles will then either absorb or reflect light to create a glare-free display that only gets easier to read in sunlight.



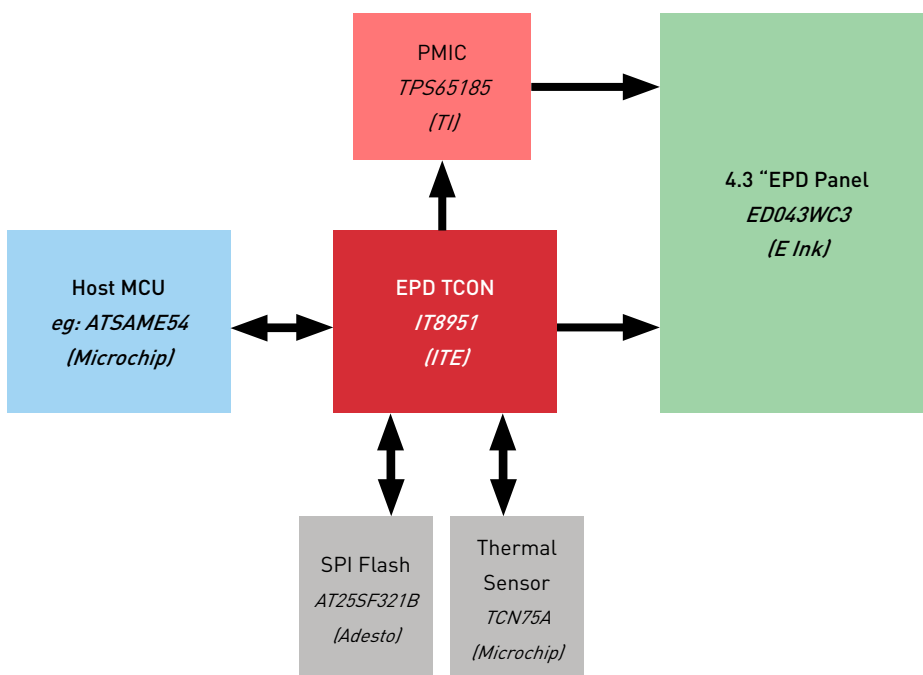
## Getting Started

In order to get started with the E Ink ITE Xplained Pro, a Microchip Xplained MCU board is required. The software can then be downloaded from GitHub. Once extracted, example projects are available for a number of MCUs and can be compiled and programmed to get the demo up and running. Documentation is included with the software library to walk through setting up a new project with the E Ink software library included. For more info contact your local Ineltek office.

## Prototype to Production

The E Ink ITE Xplained Pro is designed to get you up and running with a prototype in a matter of minutes. Once you are ready to move on from evaluation, we aim to get you into production as quickly and as easily as possible. Datasheets are available for the each of the E Ink displays and reference schematics are available to allow you to simply paste into your own project. 2D and 3D CAD data is also available to aid in both electronic and mechanical design. Should you wish to use a different size display, Ineltek can assist in getting you the display best suited to your application. Reference designs can then easily be adapted for your selected display.

## System Overview



### Ordering Info

- ◆ 4.3" Display (4-bit Greyscale)  
EinkITEXplained043bw

Can also be ordered with appropriate  
Microchip MCU board