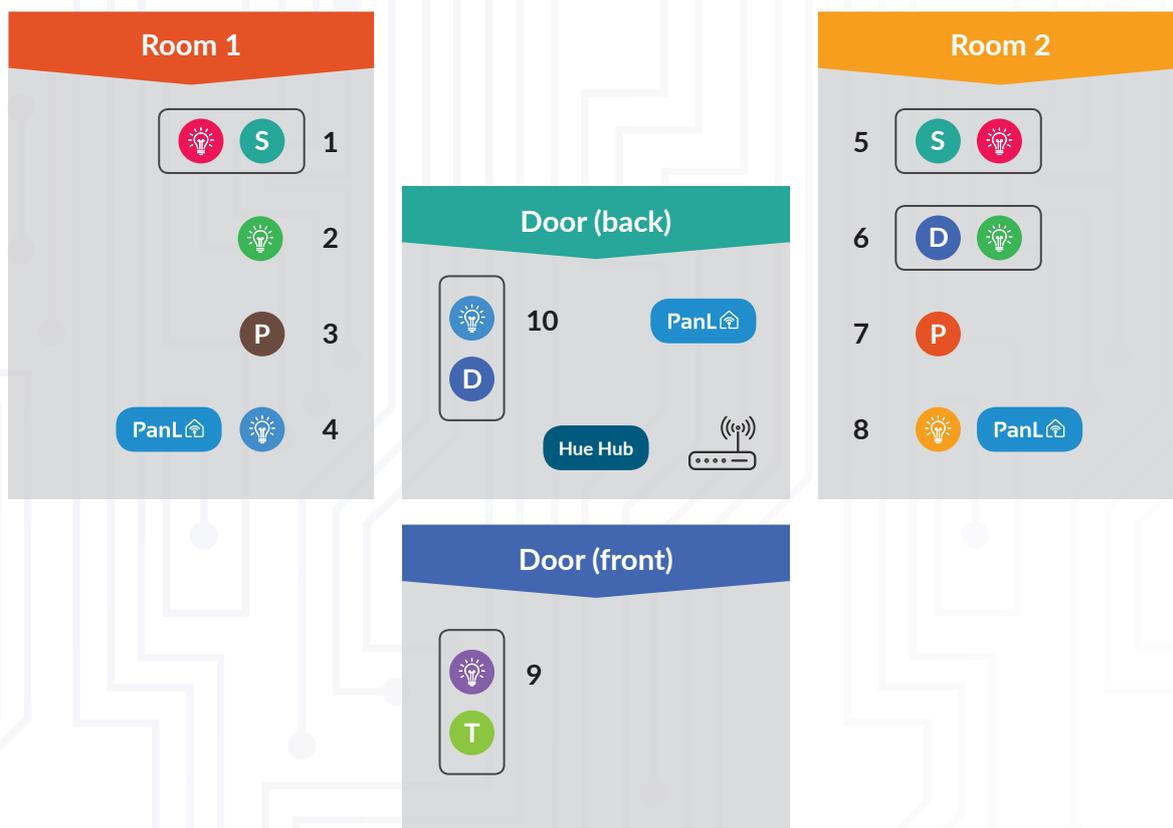


PanL Home Automation Hub

The PanL Home Automation Hub demonstration is a Bridgetek product demonstration which showcases Bridgetek's proprietary light-weight IoT framework for home automation and control. Central to the Bridgetek IoT framework is a network of PanL hubs which relays events and commands from and to objects and sensors within the network. Each hub contains a 7" touch panel display and UI that allows users to directly control objects in the house.

Actions such as switching on and off one or a group of lights, plugs or networked appliance may all be achieved from the hub. Triggers (Presets) maybe set to initiate a sequence of actions when an external real world event or condition is detected. Android™ and iOS™ devices running the PanL Home Automation Control application offers mobile convenience and control of devices on the go. Diverse network transports such as Ethernet, WiFi, Bluetooth Low Energy (BLE) and Zigbee are seamlessly integrated into the framework via a plug-in based extensible architecture. Of special mention is the integration and control of Philips Hue Hub system into the PanL network.

PanL Home Automation Hub



Legend:

- | | | | | | |
|---|---------------------|---|-----------------------|---|--------------------------|
|  | Philips Hue (ZB) |  | PanL Beacon (BLE) |  | PanL Home Automation Hub |
|  | Zengge LED (BLE) |  | Smartenit Plug (ZB) |  | Philips Hue Hub |
|  | GE Link (ZB) |  | PanL SmartPlug (WiFi) |  | WiFi Router |
|  | Cree Connected (ZB) |  | Dimmer (ZB) | | |
|  | Osram Lightify (ZB) |  | Philips Hue Tap (ZB) | | |

PanL Home Automation Hub

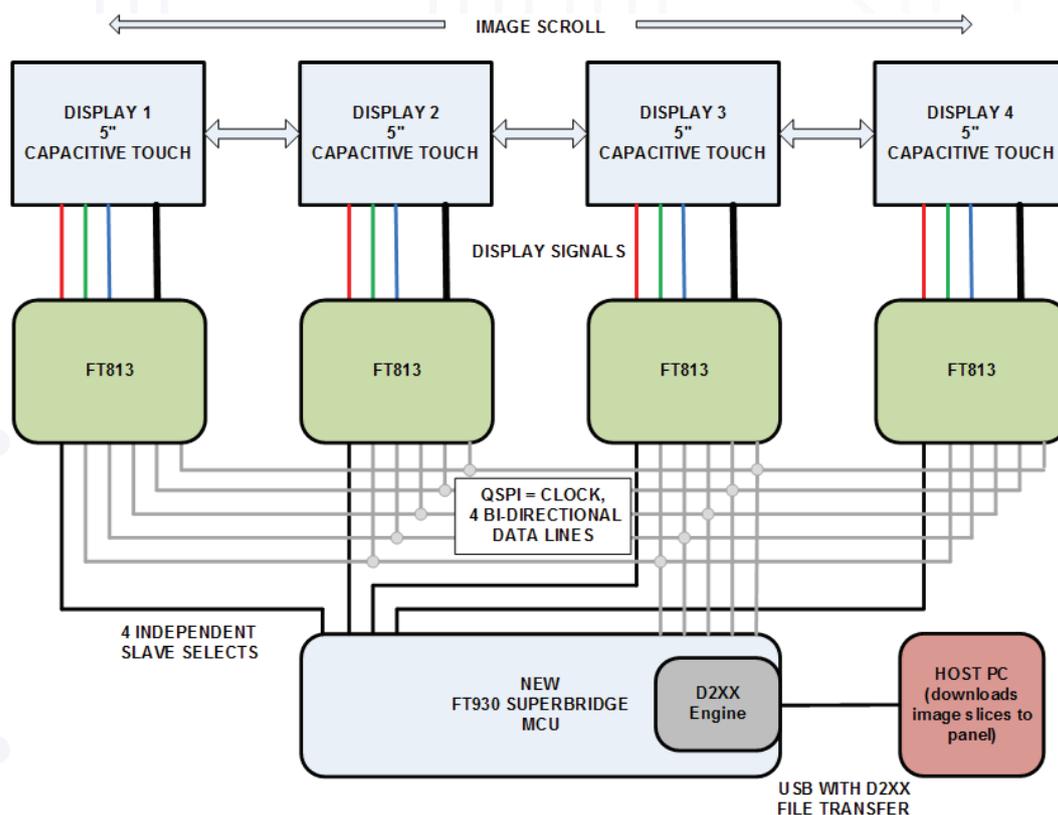


The setup shows Zigbee based lights from Cree, Osram, GE, Philips Hue Hub, Hue Lights and Tap, Zigbee based dimmer, 3rd party BLE lights, Bridgetek Smartplug connected via WiFi and beacon sensors. Devices enclosed in rectangles indicate that a set of rules (called Presets) has been pre-defined such that a triggering event originating from one object will cause a change in the state of another receiving object. The source and destination objects may be connected via different networks.

PanL hubs are powered by Bridgetek FT900 series of MCUs and FT813 series of EVE graphic controllers. Each hub integrates interfaces such as PoE Ethernet (100Base-T), WiFi (802.11 b/g/n), BLE 4.2 and Zigbee communication interfaces. Future hubs shall integrate additional wireless technologies and shall be able to connect to the cloud.

New FT 930 SuperBridge MCU Demo

Building on the experience and market feedback from the FT900 series of 32-bit microcontrollers (MCUs), Bridgetek has developed the new FT930 SuperBridge MCU, a streamlined addition to the series of MCU bridges. This demonstration highlights the ability of the device to create a USB bridge to control 4 separate Quad SPI (QSPI) peripherals via D2xx hardware engine from FTDI Chip. The peripherals in this demonstration are FT813 graphics controller devices (also available from Bridgetek).



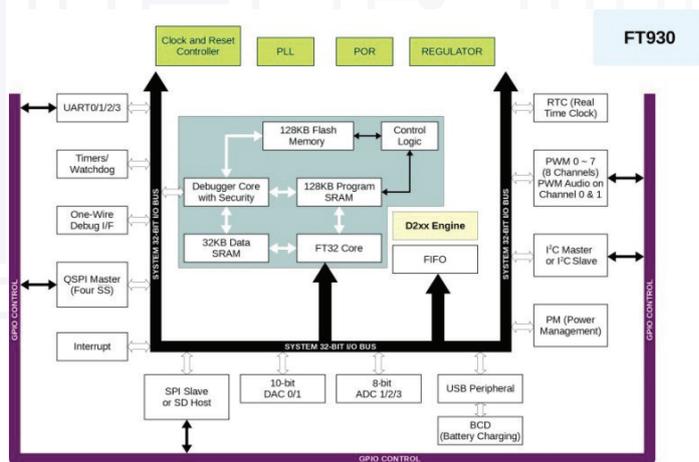
The DEMO in action

- The FT930 MCU controls 4 EVE graphic controllers (FT813) over QSPI interfaces and executes one part of the demo program. Another companion part executes on the host PC and the two pieces of software communicate over a USB2.0 D2XX channel using D2XX API.
- Large panoramic images are divided into slices and stored as JPEG images on the PC. The FT930 MCU sends commands to the PC to fetch these slices and transfers them to the corresponding EVE controller for decode and display.
- The FT930 MCU simultaneously scans the touch panels for user input and handles touches and swipes to speed up and slow down image display. Images may be scrolled horizontally or vertically. At any moment 4 image slices are fetched, downloaded, decoded and displayed to achieve a smooth scrolling appearance.

D2xx: Used under agreement between BRT and FTDI, D2xx is the popular FTDI USB driver used on its FT2xx USB UART/FIFO Bridge platforms. It can be accessed directly or through a virtual COM port.

FT930

Building on the experience and market feedback from the FT900 series of 32-bit microcontrollers (MCUs), Bridgetek has developed the new FT930 SuperBridge MCU, a streamlined addition to the series of MCU bridges. The FT930 has a smaller footprint with 48, 56 and 68 pin QFN package options, and features an improved 100MHz 32-bit RISC core that supports mixed 16-bit and 32-bit instructions for higher storage efficiency. Additionally, the device has 128kBytes of flash and 32kBytes of data RAM on chip



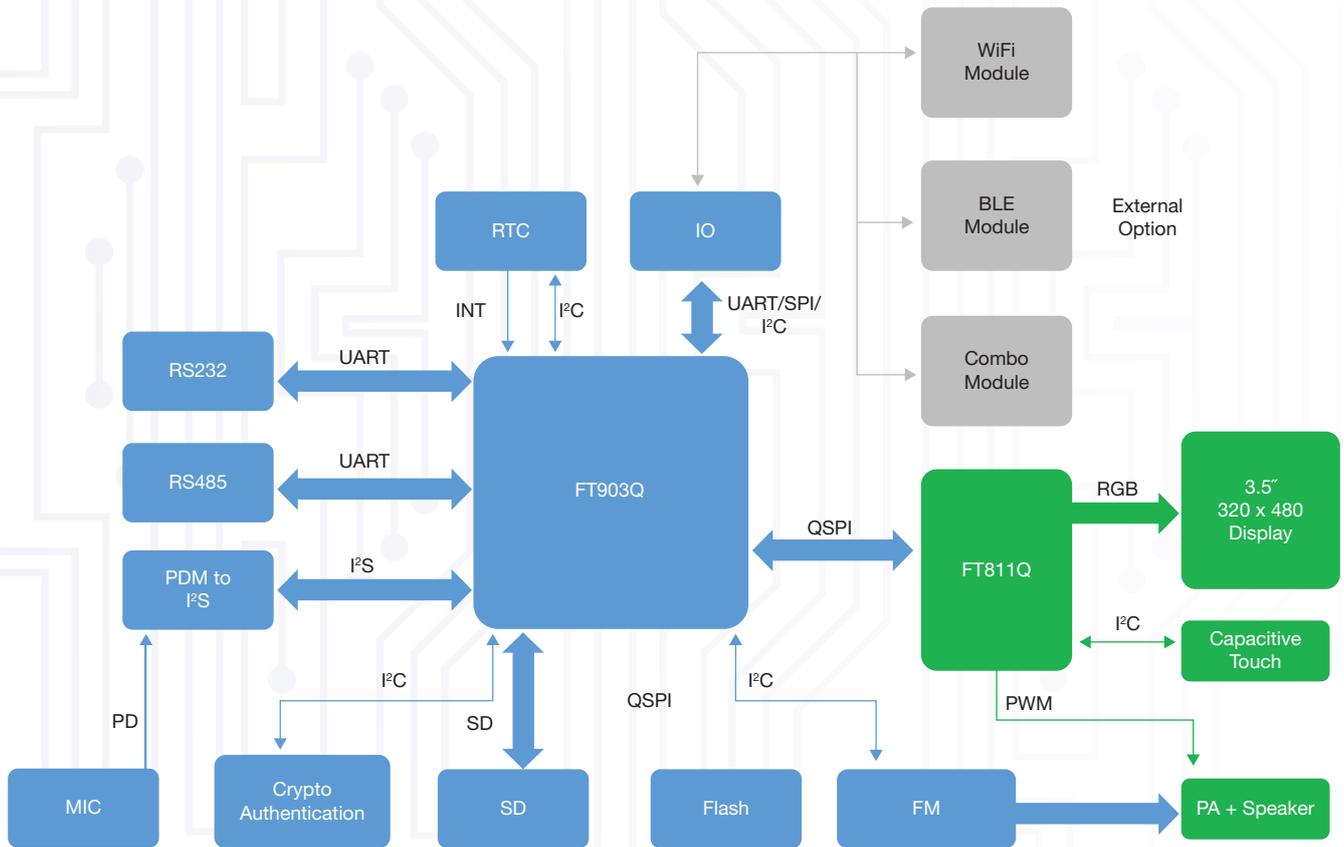
Interface options include:

- UARTS x 4
- QSPI Master (4 channels)
- SD Host Controller
- 10-bit DAC x2
- 8-bit ADC x3
- USB peripheral with D2xx hardware engine and battery charge detection
- I2C Master/Slave
- PWM – 8 channels
- RTC

FT813

The FT813 is a 3-in-1 smart display controller from the EVE 2 product range. The device operates as an SPI/QSPI peripheral to a system MCU offering rich graphic display through an object oriented display list programming methodology. Resolutions up to 800 x 600 pixels in both landscape and portrait orientations are supported. Additional features include inbuilt support for multi-touch control of capacitive displays (up to 5 touch points), and a PWM output for audio beeps and chirps. Image and audio objects may also be stored on chip in a generous 1MByte on-chip RAM.

PanL35 is a smart display module that comes with a brightly lit, crisp 3.5" TFT LCD Panel (320x480 pixels) and capacitive touch. The smart display is packaged with a jet-black polymer cover that fits neatly into metal-clad housings making it suitable for retrofitting existing systems. The module is powered by Bridgetek's Superbridge MCU, FT903 and EVE graphic controller, FT811. Aimed at bridging both modern and legacy communication interfaces, PanL35 is packed with a rich set of interfaces such as RS485, RS232, I2C, SPI and expandable options such as WiFi and BLE. HMI applications that require mic-input, audio, proximity IR sensor and FM output, RTC, SD card flash memory storage will not find the PanL35 lacking. The dedicated security and authentication accelerator on board the PanL35 ensures all communication is secure and authenticated. PanL35 is ideal for use in both residential and industrial applications such as building automation and building management systems, energy management systems, remote monitoring systems and as information and operator interface panels. PanL35 offers a smart and secure panel that is flexible and versatile. Targeted at OEMs, its BOM can be customised to meet end applications.



Example project: The Weather Station features a PanL35 module connected to a PC by a USB-RS485 cable. The PC application interacts with a weather station server (<http://openweathermap.org>) to fetch the weather data for a pre-configured list of cities. The weather data contains information on humidity, temperature, precipitation, wind speed and rainfall for that day and the forecast for the following four days. PanL35 sends touch events to the PC and receives UI formatting and display commands from the PC and acts on them. Users can refresh the weather information by touching the refresh icon (top left hand corner) and switch cities by touching the name of the city or toggle temperature display in Celsius or Fahrenheit units and view that day's or the next four days' weather forecast by touching the various days or times.

