

SENSE • CONNECT • CONTROL



FUTURE
Connectivity Solutions

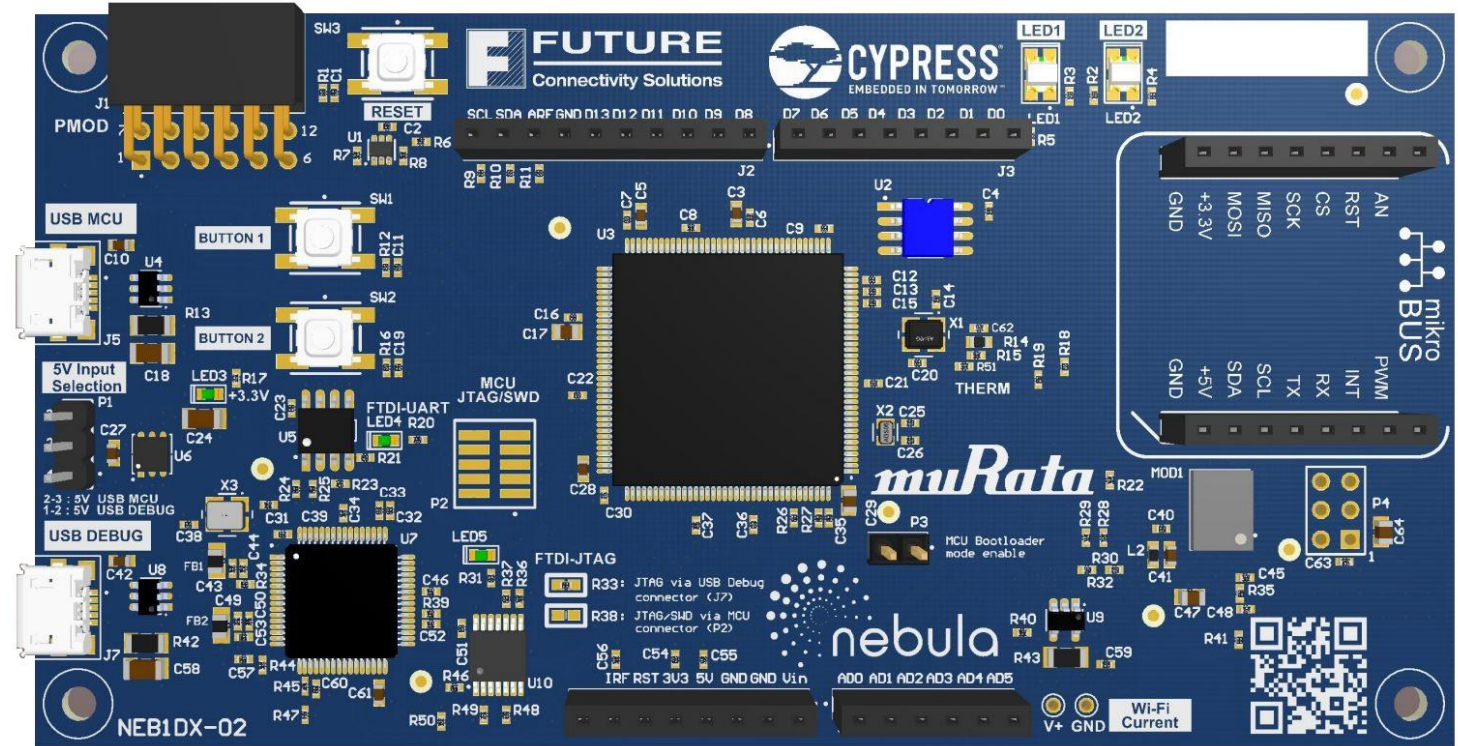
Nebula IoT Reference Design Board

- The Nebula board is an IoT cloud ready board which allows developers to quickly prototype and deploy their IoT ecosystem
- Developed in-house by the System Design Center, Cypress and Future Connectivity Solutions
- The default wireless connectivity is supported via a Wi-Fi+Bluetooth Combo solution on the main board.
- The Nebula board features the following solutions:
 1. Murata 1DX certified module based on the Cypress CYW4343W Wi-Fi and Bluetooth (v.4.2 +EDR) chipset radio.
 2. STMicro STM32F429 180MHz ARM Cortex-M4, with 32 bit RISC core, 2MB Flash and 256kB SRAM.
- The board is equipped with 4 different interfaces to access the STM32F429 peripherals to enable developers to create any IoT application:
 1. Arduino™ Shield
 2. mikroBUS™ Socket
 3. Pmod™ Type 2A
 4. USB Device
 5. PCM interface
- The board is designed for users to explore the vast opportunities in IoT applications such as asset tracking, energy management, fitness, lighting controls, HVAC, portable controls, security and building automation.

Nebula IoT Reference Design Board

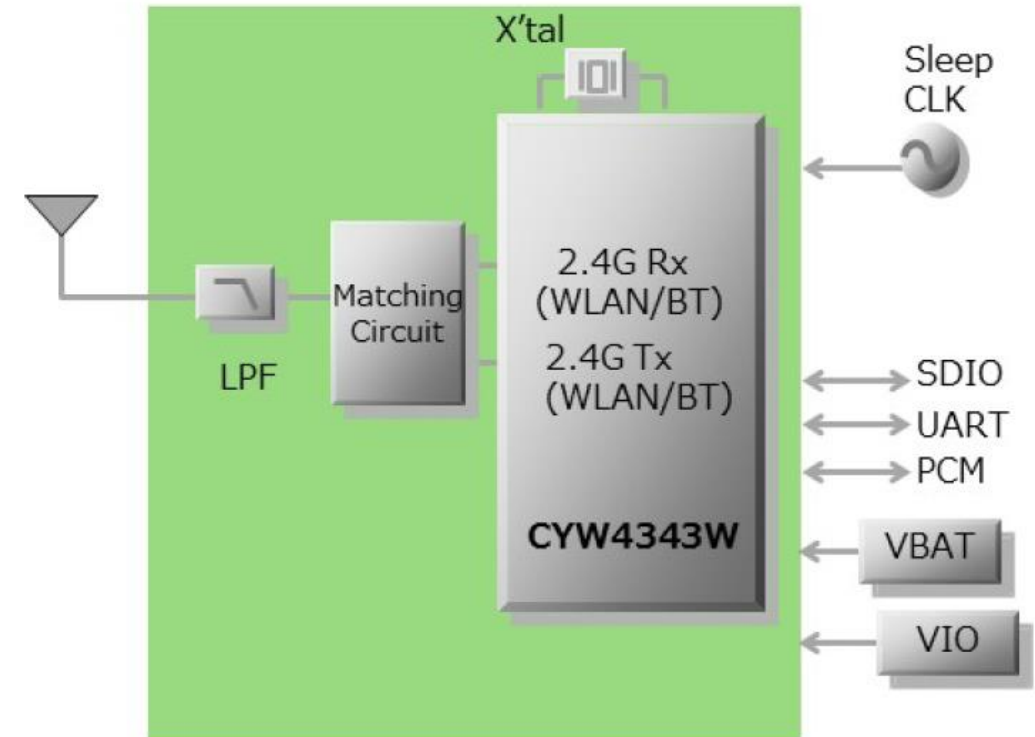
The possibilities are endless!

- Use the different interfaces to add on development boards from our growing list of Future IoT ready boards
- Application Examples:
 - Sensors
 - Proximity
 - Ambient light
 - Motion
 - Temperature
 - Humidity
 - Pressure
 - Gesture Recognition
 - UVA/UVB
 - Motor Control



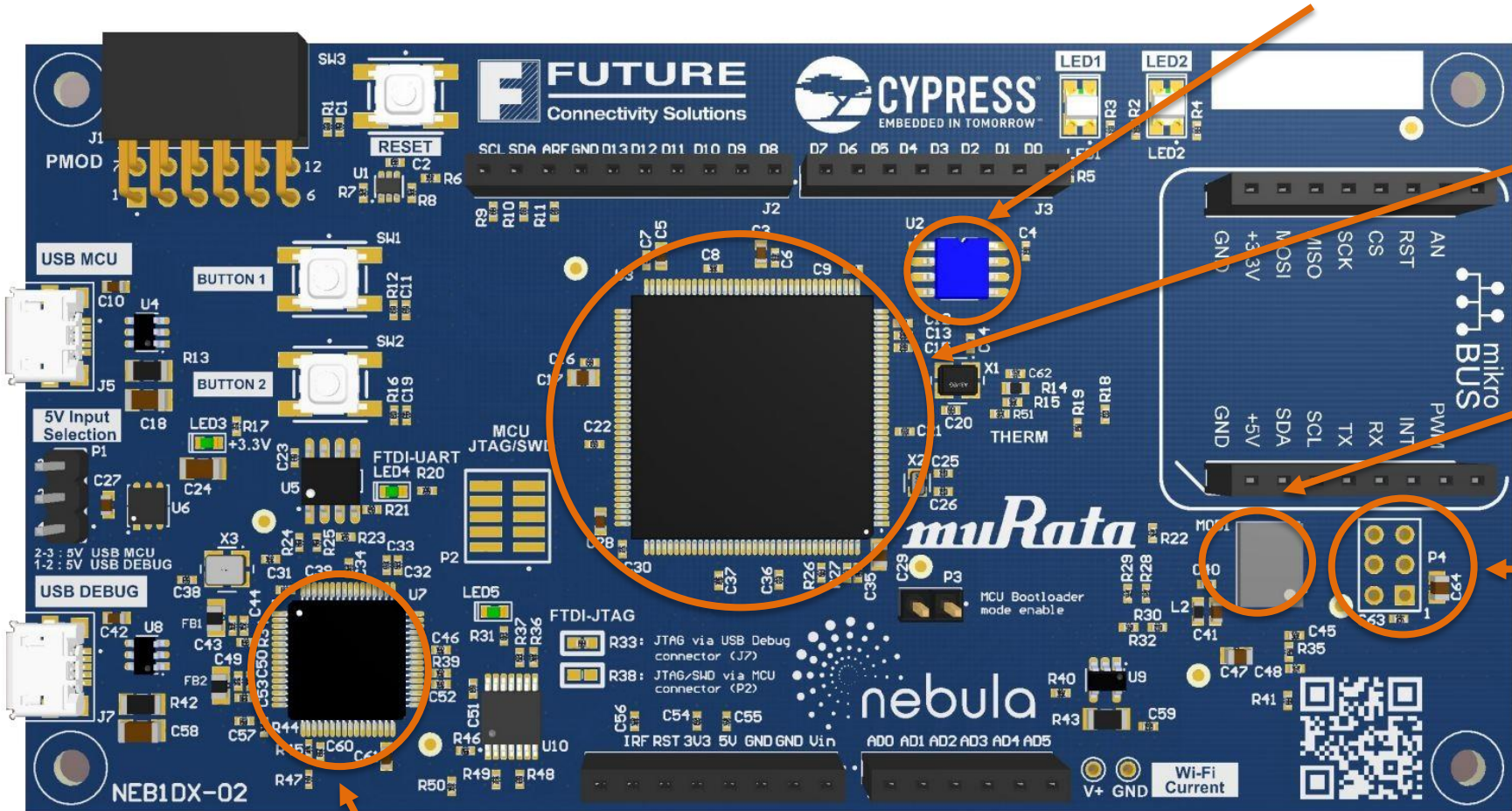
Cypress Murata Certified Wi-Fi + Bluetooth Combo Module

- Murata 1DX certified module - Part Number LBEE5KL1DX-883
- Inside is a Cypress CYW4343W Wi-Fi and Bluetooth chipset radio
- Single Band 2.4GHz 802.11 b/g/n
 - Over SDIO Interface
- Dual Mode (Classic BT + BLE) Bluetooth v4.2 + EDR Radio
 - Over UART Interface
- Single ended RF port using single antenna
- Radio Regulatory Certifications
 - USA/Canada FCC ID : VPYLB1DX IC : 772C-LB1DX
 - Europe EN300328 v1.9.1
 - 4.2. Bluetooth® Qualification QDID: 7306
- Size: 6.95 x 5.15 x 1.1 mm



Nebula Main Components

16 Mb of serial flash



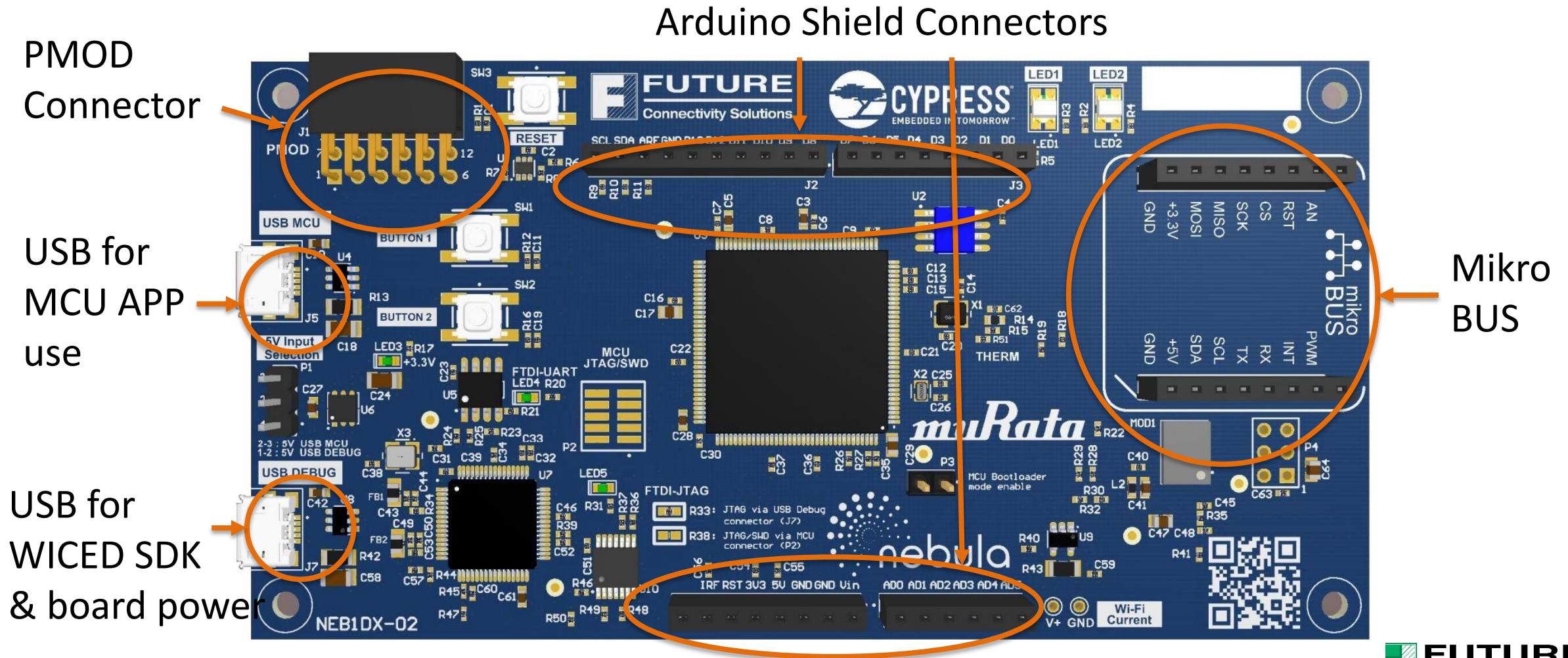
STMicro STM32F429
MCU

Murata Wi-Fi + BT
Certified Module

PCM Interface

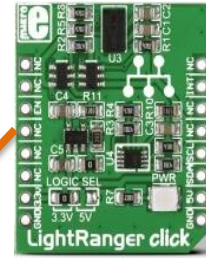
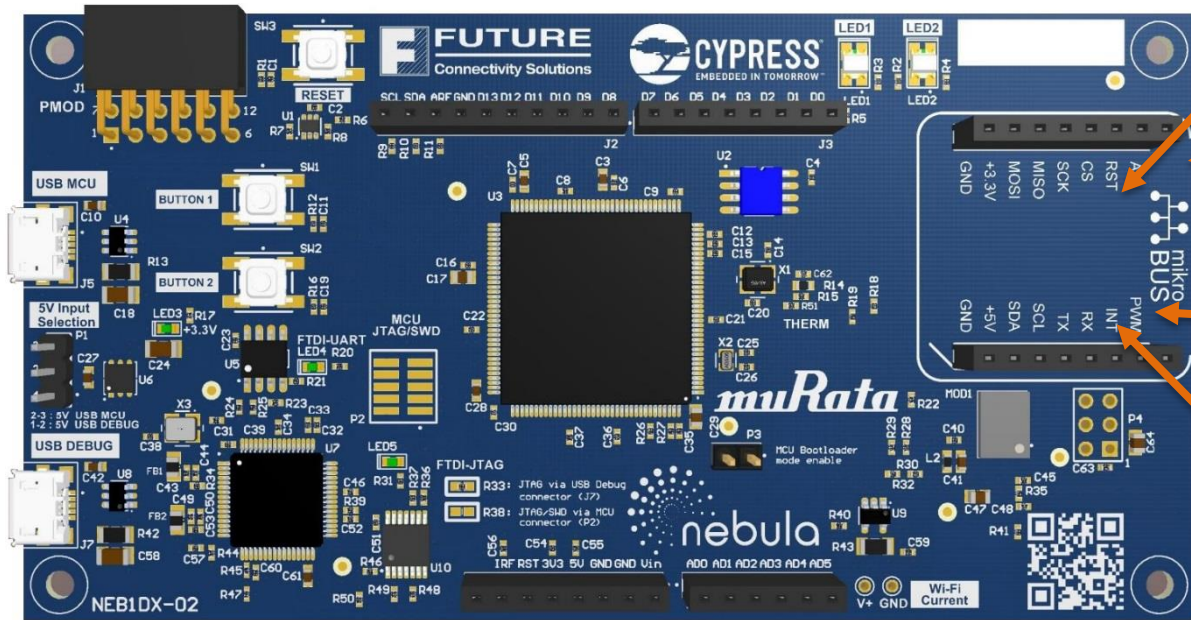
FTDI USB DEBUG to
UART/JTAG

Nebula Main Connectors & Interfaces

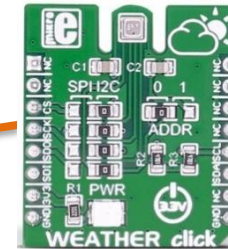


Sensor add-on Shields-MikroBUS™ boards

MikroBUS™ Sensor Shield Example



Proximity Sensor Shield
MIKROE-1897



Weather Click
MIKROE-1978



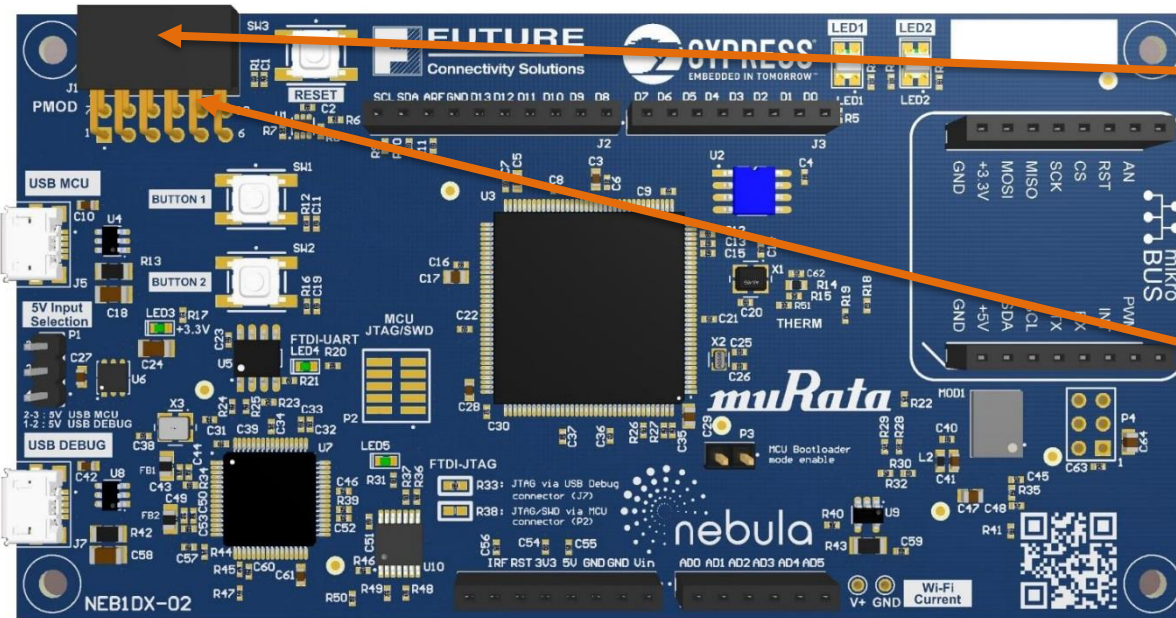
Magneto 2 Click
MIKROE-1938



SHT Click Sensor Shield
MIKROE-2101

Sensor add-on Shields-PMOD boards

Sensor Shield Example



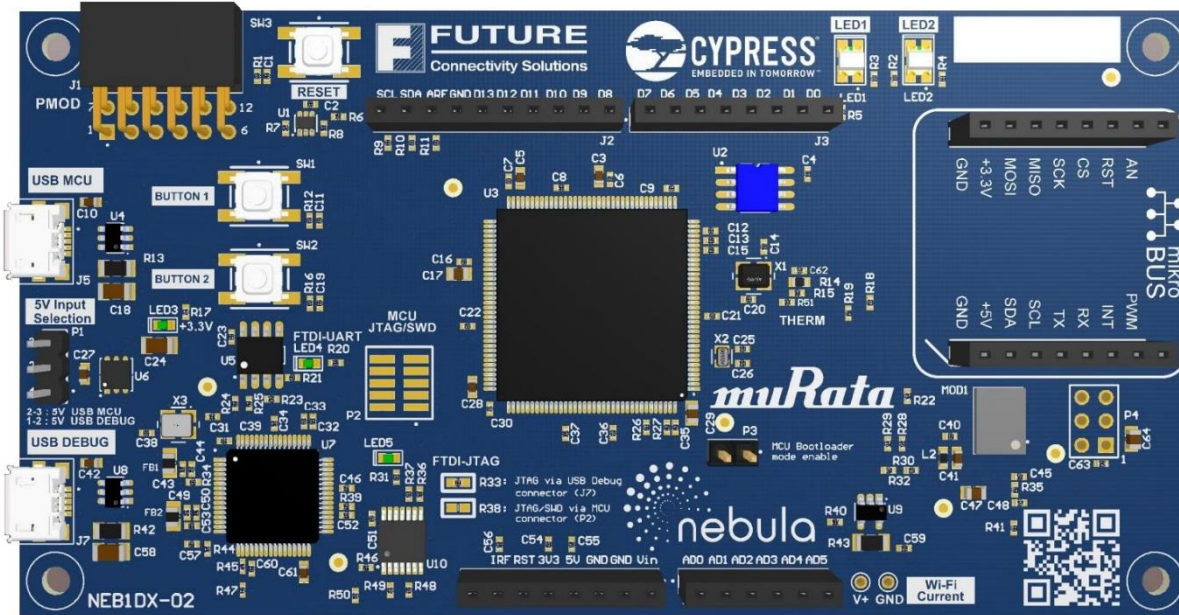
Temperature Sensor
MAX31723PMB1



Thermocouple to
Digital Sensor
MAX31855PMB1

Sensor add-on Shields

ON Semiconductor Sensor Shield Example



Smart Passive Sensor Reader Board using the Arduino Shield: SPS-READER-GEVK



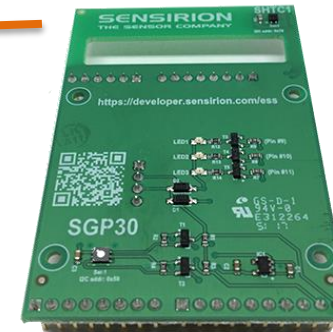
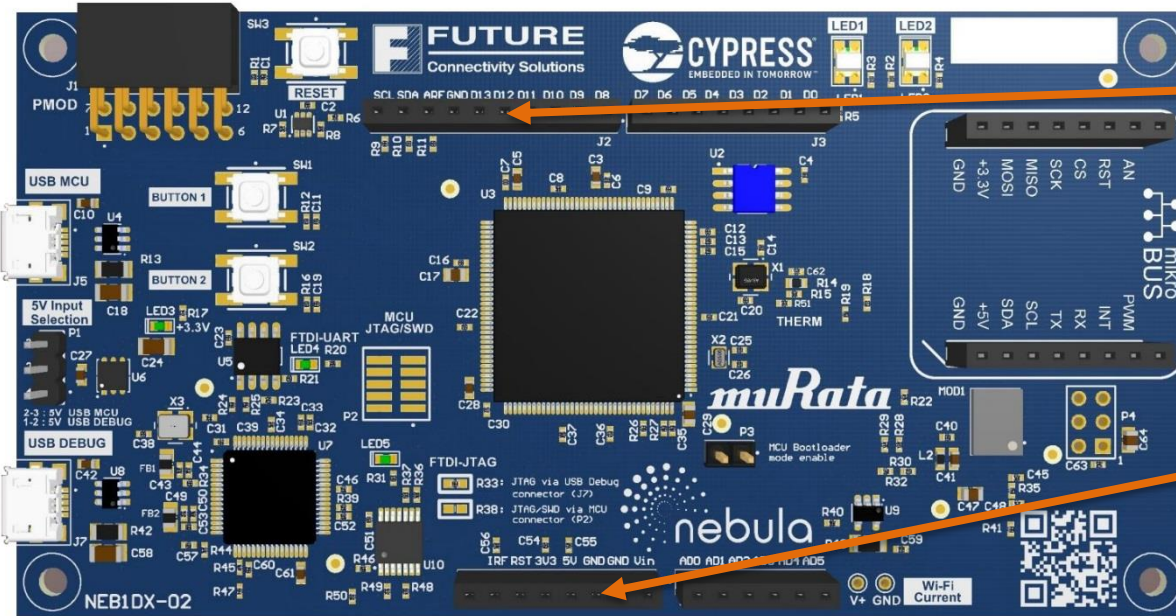
Passive Infrared Sensor shield using I²C interface PIR-GEVB



Motor Driver Shield using Arduino interface BLDC-GEVK

Sensor add-on Shields

Sensirion Sensor Shield Example



Sensirion Environmental Sensor shield using Arduino interface

Nebula on Cypress Developer Community Site

- **WICED 5.2 and later versions** built-in support for Nebula.
- Additional documentation and tools for download will be hosted on the Cypress Community Portal
- <https://community.cypress.com/community/partners/future-connectivity-solutions>
- Priced at \$59

**Orderable Part Numbers:
NEB1DX-02**



The screenshot shows the Cypress Developer Community website. At the top is the Cypress logo with the tagline "EMBEDDED IN TOMORROW". Below the logo is a navigation bar with the text "WELCOME TO THE CYPRESS DEVELOPER COMMUNITY" and a menu with items: HOME, CONTENT, PEOPLE, PLACES, GET STARTED. A breadcrumb trail reads "Home > All Places > IoT Partner Solutions". The main content area features a large header for "Future Connectivity Solutions" with a handshake icon and a sub-menu with items: Overview, Content, People, Subspaces, Reports, and Actions. Below this is a "COMMUNITIES" section with two entries: "WICED Studio Wi-Fi/Combo Cypress Developer Community for WICED and Linux based Wi-Fi. WICED Smart" with a Wi-Fi icon, and "Bluetooth Cypress Developer Community for WICED Bluetooth." with a Bluetooth icon. To the right of the communities section is a detailed view for "FUTURE CONNECTIVITY SOLUTIONS" featuring the "FUTURE Connectivity Solutions" logo and the tagline "SENSE-CONNECT-CONTROL". A short description follows: "Future Connectivity Solutions is a leading provider of cutting edge IoT solutions and sup hardware and software solutions across multiple technologies with a complete ecosystem Sensor and Wireless design needs. The 'Internet of Things' continues to fuel demand at supply a complete suite of services from Sensor Solutions-to-Wireless Hardware-to-Soft".