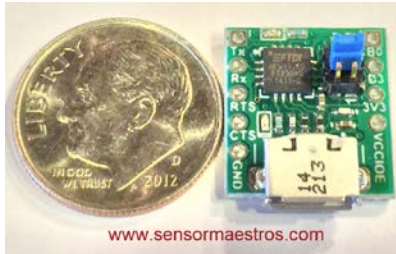

World's Smallest Pin-Selectable I/O Voltage USB-UART Module 15x15mm



Features

- Ultra-Small Form factor(15x15mm)
- Simple USB-UART capability for embedded development
- Easy UART Line Voltage Change with Jumper
 - 5V, 3.3V, Externally supplied down to 1.8V
- **Plug and Play – No Drivers Needed**
- **SMSTRS Wireless Platform Ready**
- No more unsoldering/soldering to change UART GPIO Voltages. Simply move 2pin Jumper.
- 2.54mm(0.1”) headers on 12.7mm(0.5”) spacing
- Red Receive and Yellow Transmit LED’s to indicate activity.
- Can be used to power other 3.3V devices from 3V3 pin.

Applications

- Embedded Debugging
- DataLogging
- UART Streaming
- PC to Embedded Applications
- Any USB-UART functionality

Description:

The **smCOM-FT230X** is the world’s **SMALLEST** USB to UART pluggable device measuring a mere 14.8x15.2mm(0.58”x0.60”). Unlike any other USB-UART modules this has been design for ease of use and allows the user to choose the UART I/O voltage levels by simply moving a 2pin Jumper. The selections are 5V, 3.3V or externally supplied voltage(down to 1.8V). The External option allows the user to input their own voltage into the module by connecting to the VCCIOE pin.

The smCOM-FT230X utilizes the FT230X which is a USB to Basic UART IC that allows data rate transfers from 300baud - 3Mbaud. The FT230X is USB2.0 Full Speed compatible and typically no driver installation is needed to get the FT230X up and running. Drivers are available from FTDI for all common platforms if needed. The FT230X can be operated from 1.8-5V and features low operating current of 8mA and USB suspend currents of 70uA typ. The FT230X features completely integrated clock generation(no external XTAL needed) and the user can output the clock on the CBUS I/O pins. The device allows for the user to configure the CBUS I/O lines for numerous different functions with the FTDI programmer utility. The link for this tool is provided below.

The **smCOM-FT230X** provides an easy to use, low-cost, very small breakout board for the FT230X. All pins are all mapped to standard 2.54mm/0.1” headers. This allows for use in a standard bread-board or to be ‘wired’ into an application. The header-header spacing is 12.7mm (500mil).

All **SMSTRS smMEM, smSENSR, smCOM, smBAT, smPWR** products are compatible with the Sensor Maestros **Wireless Sensor Platforms** that provide Rapid prototyping for Sensor and BTLE applications. The **smCOM-FT230X** can be plugged into ANY of the **smCOM** sockets in the **smWSP** and **smWSP-ARD** rapid prototyping plugin boards. More info provided later in document.

Design Services

Custom Embedded PCB/Software, Wireless/Mobile Applications, and general design services can be provided by Sensor for your own application. To have Sensor Maestros review your project needs please go to www.sensormaestros.com and fill out a Project Questionnaire form on the Design Services page.

References:

The FTDI programming utility to modify the CBUS I/O pin functionality download:

http://www.ftdichip.com/Support/Utilities/FT_Prog_v2.8.2.0.zip

The Programming utility User Guide link:

http://www.ftdichip.com/Support/Documents/AppNotes/AN_124_User_Guide_For_FT_PROG.pdf

FT230X Datasheet link:

http://www.ftdichip.com/Support/Documents/DataSheets/ICs/DS_FT230X.pdf

Issues with installing the drivers please see Appendix A:

BUY IT NOW:

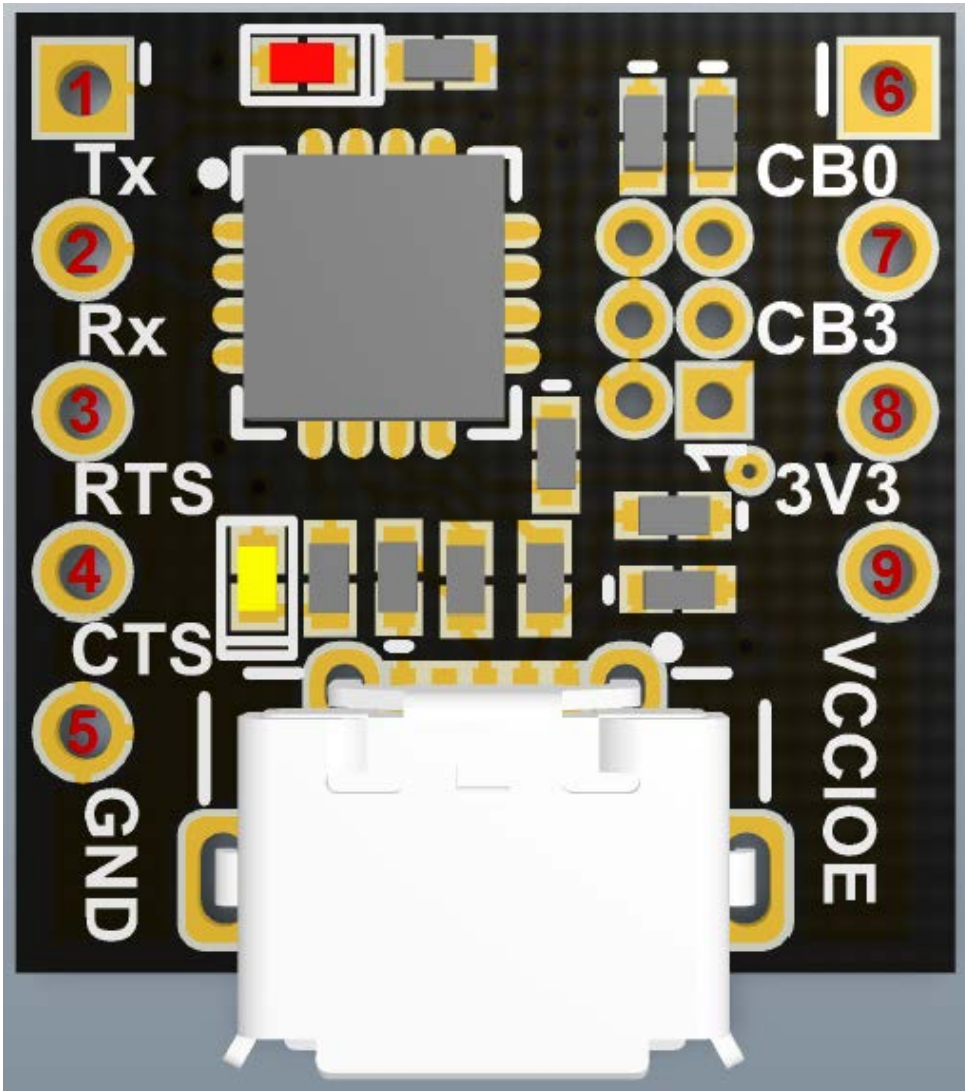
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Features:

- Ultra-small 14.8x15.2mm(0.58"x0.6") Breakout board with .1"/2.54mm header spacing that can be directly soldered into a prototype or used with breadboard.
- Header-Header spacing is 12.7mm(0.500") spacing for easy placement into a breadboard.
- UART I/O Voltage Jumper selectable operation: 5V, 3V, or Externally supplied(VCCIOE).
 - ❖ **NO UNSOLDERING of Resistors or Solder Joints to change the UART Voltage!!**
- USB2.0 Full Speed operation
- Typically no driver installation is needed
- CBUS0 and CBUS3 lines available to user. Can be changed with FT_Prog utility.
- Internal 2048 byte EEPROM for storing device descriptors and CBUS I/O configuration.
- Fully integrated clock generation with no external XTAL required. Optional Clock output selection to drive external devices such as a MCU or FPGA.
- Data transfer rates from 300baud to 3Mbaud at TTL levels.
- 512 byte Rx and 512 byte Tx buffers.
- Tx and Rx LED drive signals, used on EMCOM-FT230(Red=Rx, Yellow=Tx)
- UART interface support for 7 or 8 data bits, 1 or 2 stop bits and odd/ even / mark / space / no parity.
- USB Battery Charger Detection. Allows for USB peripheral devices to detect the presence of a higher power source to enable improved charging.
- Device supplied pre-programmed with unique USB serial number.
- Integrated 3.3V level converter for USB I/O.
- True 3.3V CMOS drive output and TTL input, operates down to 1.8V with external pull-ups. Tolerant of 5V input.
- Configurable I/O pin output drive strength, 4mA(min) and 16mA(max), default=4mA
- Integrated POR.
- UART signal inversion option.
- 5V Single supply operation.
- Internal 3.3/1.8V LDO regulators
- Low operating and USB suspend current, 8mA(active-typ) and 70uA(suspend-typ).
- UHCI/OHCI/EHCI host controller compatible.
- Temperature Range: -40 to 85°C.

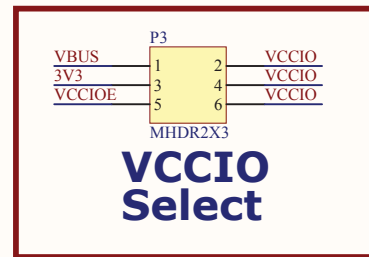
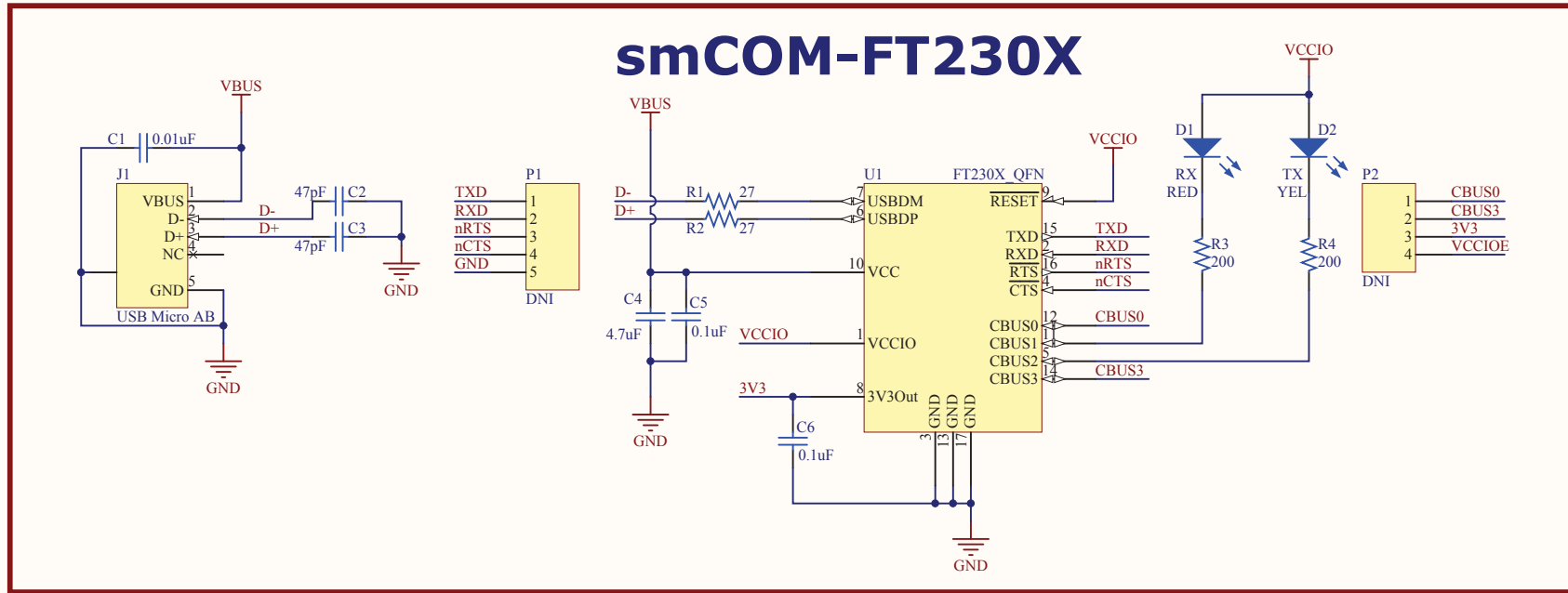
smCOM-FT230X Pin Descriptions



Pin	Name	Type	Function
1	Tx	Output	UART TX
2	Rx	Input	UART RX
3	$\overline{\text{RTS}}$	Output	Request to Send
4	$\overline{\text{CTS}}$	Input	Clear to Send
5	GND	Power	Connect to System Ground
6	CB0	I/O	CBUS0. Default Configuration is TXDEN. See CBUS Signal Options, Table 3.7 of FT230X Datasheet for further options
7	CB3	I/O	CBUS3. Default Configuration is $\overline{\text{SLEEP}}$. See CBUS Signal Options, Table 3.7 of FT230X Datasheet for further options
8	3V3	Power	Regulated 3.3V output from FT230X
9	VCCIOE	Power	Voltage input for externally supplied UART I/O Voltage rail.

Can be used with the smCOM locations on the Sensor Maestros Wireless Sensor Prototype platforms.

smWSP: smCOM Block - 2 locations
 smWSP-ARD: smCOM Block - 1 location



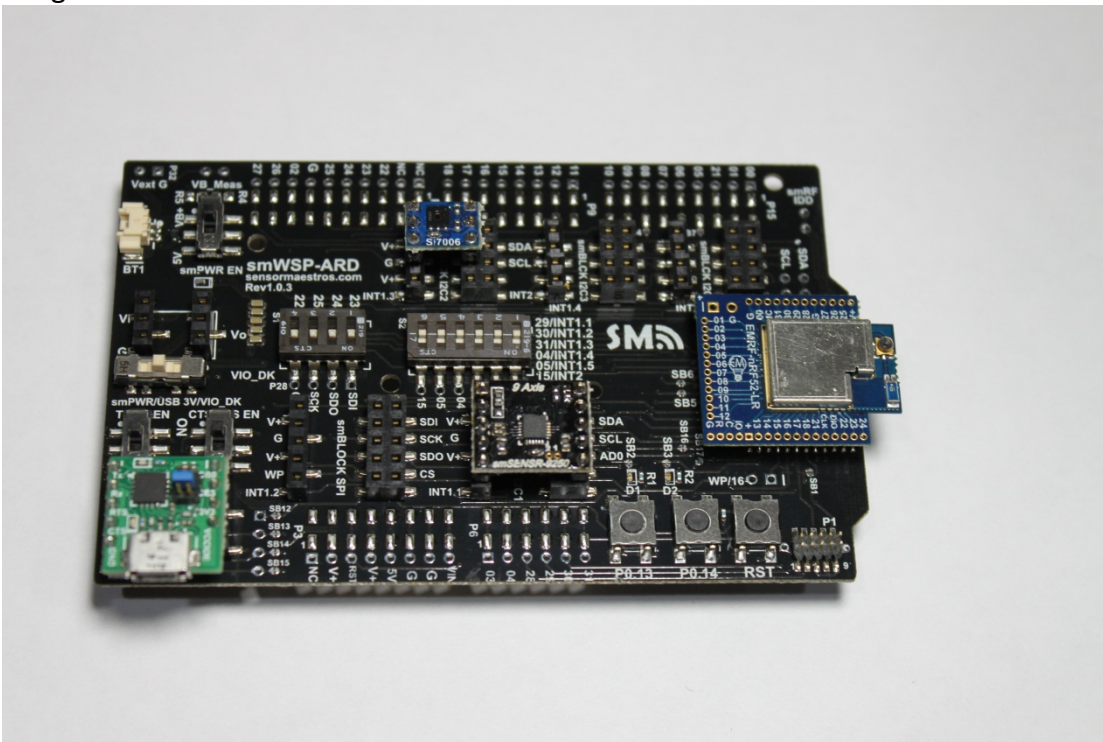
smWSP-ARD

The **smWSP-ARD** is the second offering for the Sensor Maestros **Wireless Sensor Prototype** platform that is in the form of an Arduino Shield. The **smWSP-ARD** provides the same functionality as the **sm-WSP** but in a Arduino Shield Compatible format.

Features

- Allows use of all Sensor Maestros **smSENSR**, **smMEM**, **smCOM**, **smBAT**, **smPWR** Products
 - I2C and SPI **smBLOCKS** available
- Arduino Shield compatible.
- Pin Compatible with the Nordic nRF52 DK.
- 1 smCOM-FT230/USB-UART slot
- Selectable Power Supply
 - 3.3V from Arduino Base
 - LiPo with DC/DC, such as **smPWR-MP2148**
 - smBAT Connector
 - External Power Supply
- Allows configurable SPI and GPIO Interrupt lines from **smRF-WB2** to I2C and SPI smBLOCKS for Sensor and Memory products. Selectable with slide switches and DIP switch selectors.
- 4 I2C, 1 SPI, smBLOCKS
- 1 **smBAT**, 1 **smPWR**, 1 **smCOM** BLOCKS
- 1 LiPo connector
- Can be programmed directly with the Nordic nRF52 DK(if plugged in as a shield into the nRF52 DK)
- 10pin SWD Connector for use with external SWD Programmer/Debugger(for external Debugger/Programmer)

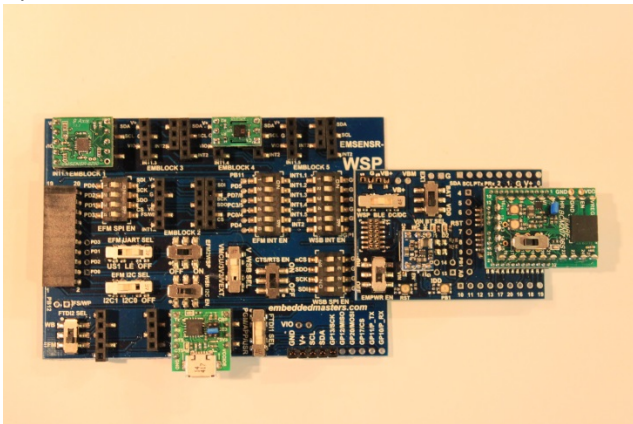
Image of smWSP-ARD:



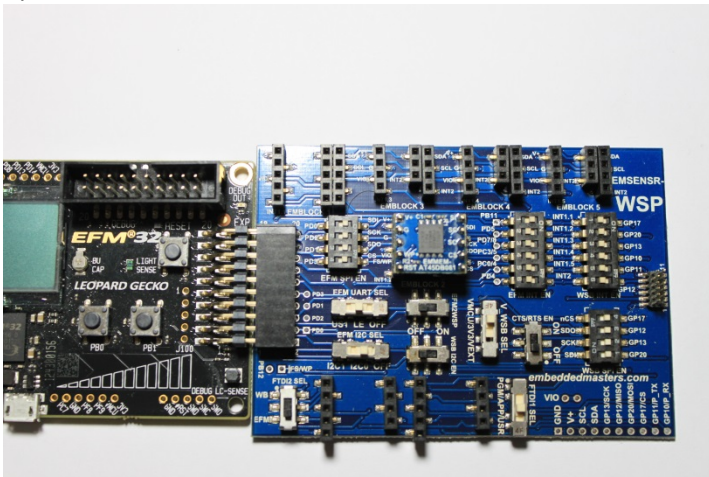
Wireless Sensor Prototype

The *smWSP* is a platform that consists of either the *smWSP* and *smRF-CYW2073x-WB* and also the Silicon Labs EFM32/EFR32 Starter Kit. There are several combinations in how the boards can be used with or without the other boards. 3 options are outlined below.

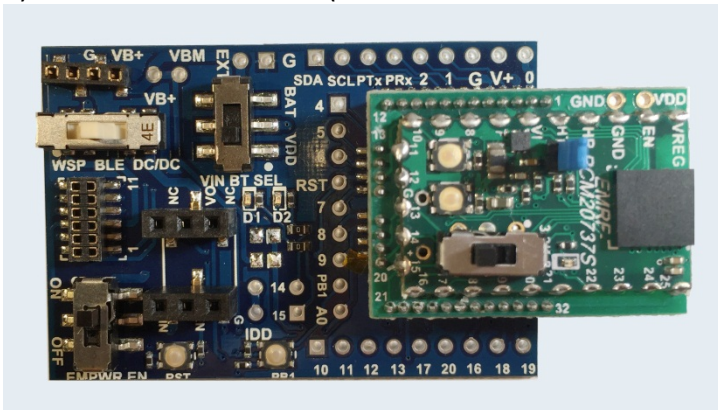
- 1) smSENSR-WSP + smRF-CYW2073x-WB



- 2) smSENSR-WSP + EFM/EFR32 STK



- 3) smRF-CYW2073x-WB(standalone BTLE evaluation board)



smWSP

The **smWSP** (Wireless Sensor Prototype) is a board that allows the Sensor Maestros **smSENSR**, **smMEM**, **smCOM**, **smBAT** products to be plugged into the WSP allowing Rapid Prototyping of a Sensor/Wireless Sensor system. On the right hand side it can be directly connected to the **smRF-CYW2073x-WB** to add BTLE capability and on the Left-hand side it can directly connect to **ANY** of the Silicon Labs **EFM32/EFR32 Starter kits** to add a high performance/ultra-low power MCU capability to a system. The WSP has been designed with a Slide Switch to accommodate the slight variations of the EFM32 Starter Kits.

The **smWSP** can be used with the **smRF-CYW2073x-WB** or with the EFM32 Starter Kits OR with both.

Features

- Allows use of all Sensor Maestros **smSENSR**, **smMEM**, **smCOM**, **smBAT** Products
 - I2C and SPI slots available
- Direct Connection to **smRF-CYW2073x-WB**, for easy programming/debugging of BTLE plugins.
- Direct Connection with all Silicon Labs EFM/EFR32 Starter Kits
- 2 COM-FT230/USB-UART slots
- Selectable Voltage between: VMCU(EFM32 Starter Kits), 3V3(from EMCOM-FT230), or from Regulated voltage supplied by **smRF-CYW2073x-WB** (typically when the **smRF-CYW2073x-WB** is powered from a battery and uses the DC/DC converter to provide regulated voltage to the BTLE module.
- Allows for UART, LPUART, and SPI serial communication from the EFM32 Starter kits to the **smRF-CYW2073x-WB**. Selectable with Slide Switches and DIP switch selectors.
- Several GPIO can be directly connected between EFM32 STK's and **smRF-CYW2073x-WB**
- GPIO pins can individually be connected to Sensor INT lines for individual Interrupt control

smRF-CYW2073x-WB

The **smRF-2073x-WB**(Wireless Base) provides a means to plug in BTLE module carrier boards. It also has a connector that allows the **emBAT** products to be plugged into the kit. The **smRF-CYW2073x-WB** can be used as a Standalone Eval/prototype board OR can be connected to the **smWSP** which allows it to be programmed by the **smCOM-FT230** and allows it to connect to any of the **smSENSR**, **smMEM**, **smCOM** products for rapid prototyping. There are 2 **smCOM-FT230** slots on the **smSENSR-WSP** so one may be dedicated to UART Programming/Bootload while the other is used for debug output. With the **smWSP** connected to the **smRF-CYW2073x-WB** it also allows the user to connect to any of the Silicon Labs EFM/EFR32 Starter Kits and allows for SPI and UART COMs to the EFM32 Starter Kits and allows for several GPIO's to be directly connected to the EFM32 Starter Kit. The following carrier boards that plug directly into the WSP are the following...

smRF-CYW20736S-C: Broadcom BCM20736S based.

smRF-CYW20737S-C: Broadcom BCM20737S based.

Features

- Pluggable Wireless Socket. Allows for multiple options for wireless connection.
- Direct connection to **smWSP** for Rapid Sensor development and easy programming/debugging of the BTLE modules.
- **smBAT** battery READY for multiple Battery Options.
- Small but useable size with easy probing of all BTLE pins.