E2.08 CLICK SENSOR HUB

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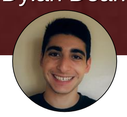


TEXAS STATE
INGRAM SCHOOL OF ENGINEERING

Click Sensor Hub

PROJECT DESCRIPTION

Click Sensor Hub is an IoT development Kit, like the Hexiwear docking station. Except it utilizes NXP's FDRM-KL46Z development platform. The KL46Z is interfaced to our designed PCB which contains four mikroBUS sockets.

PROJECT REQUIREMENTS

I. Connectivity between the FRDM-KL46Z and four mikroBUS sockets.

II. Each socket has 5V and 3.3V channel.

III. Successfully communicate SPI, UART, PWM, I2C, Analog. Between the PCB sockets and FRDM-KL46Z.

IV. Write Code for Ten Clicks.

WHAT ARE CLICKS?

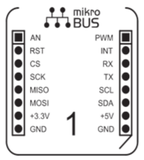
Click boards are plug-and-code modules designed to expand IoT functionality of development kits. These small, function-specific add-on boards all have a common interface to the mikroBUS standard.

WHY USE CLICKS?

Major chip vendors are endorsing it

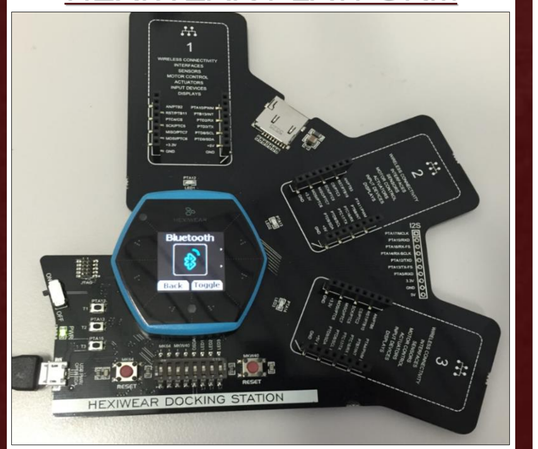
MICROCHIP NXP QUECTEL Wireless Module Expert

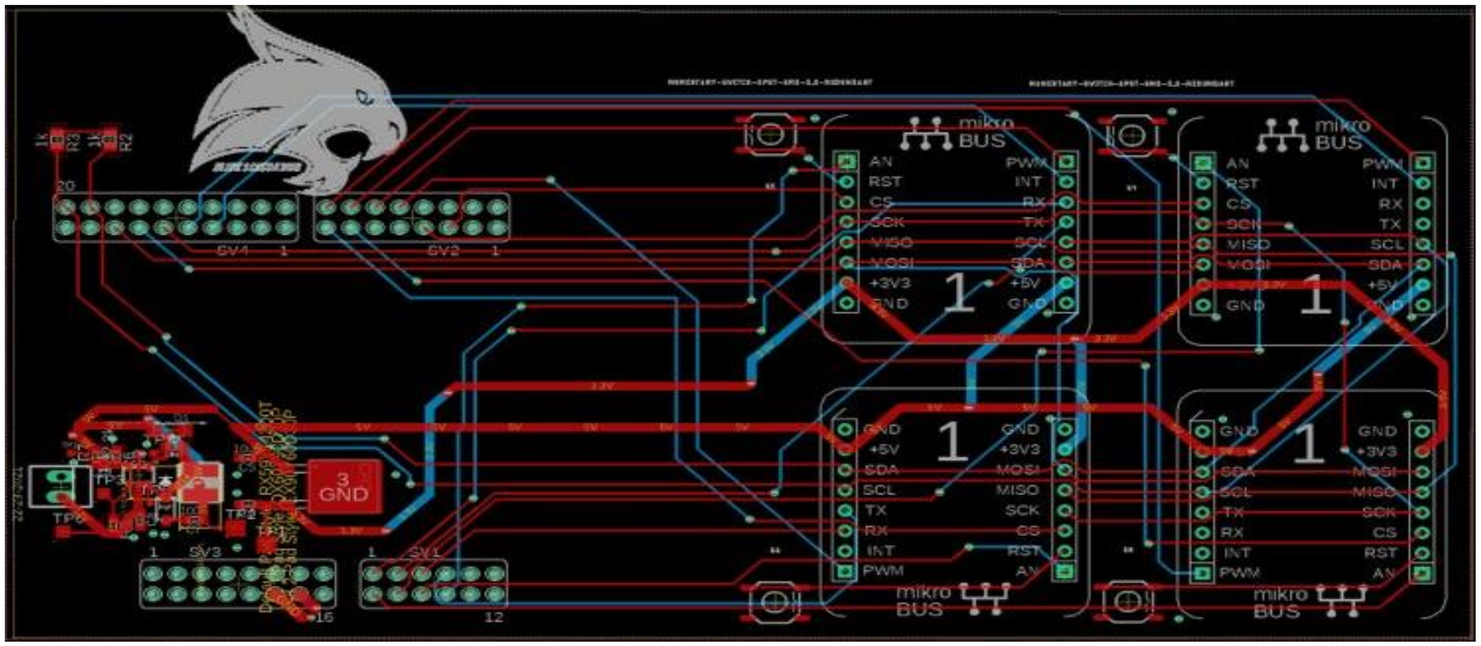
It's an open standard

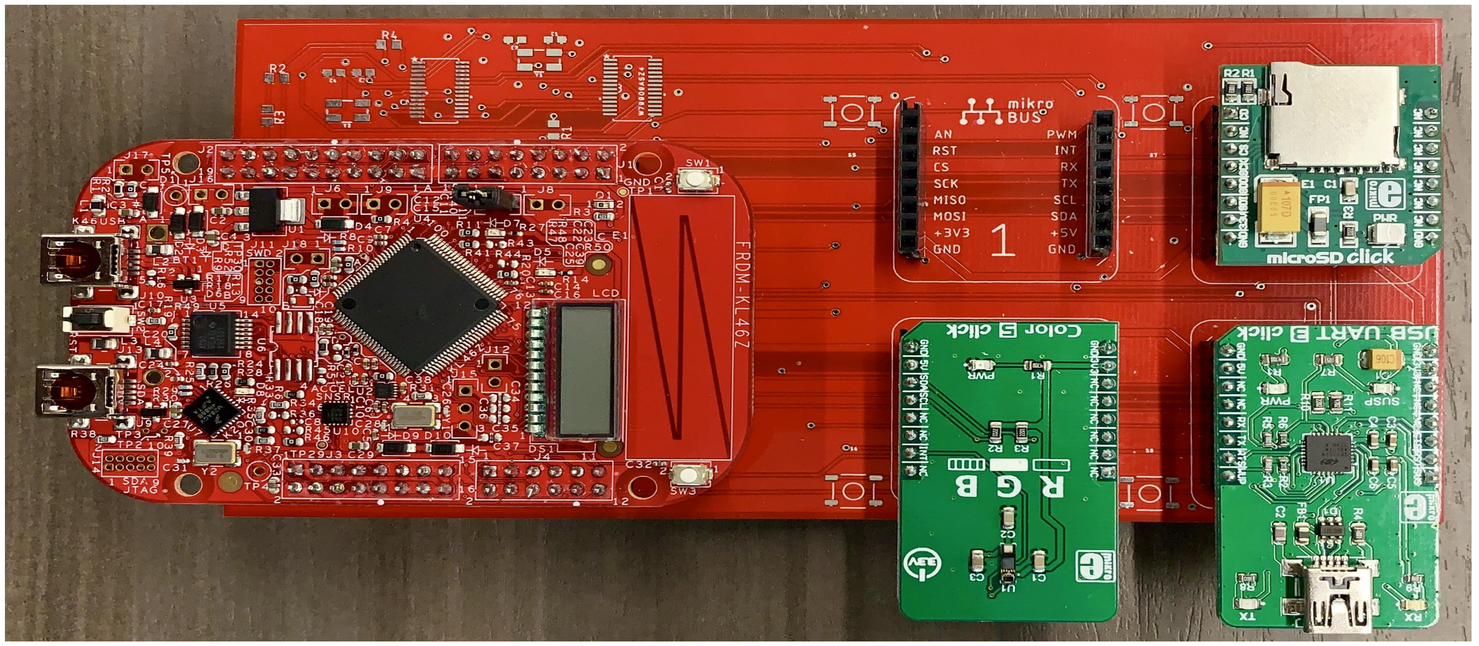


mikroBUS™ - the add-on board standard that offers maximum expandability with the smallest number of pins. Integrate it into your design and open the doors of thousands of possibilities.

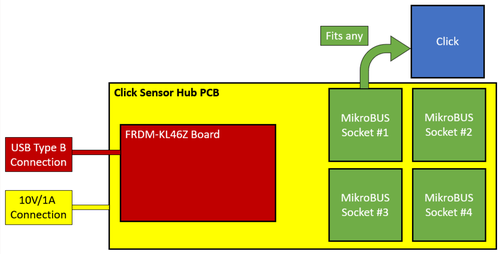
HEXIWEAR PLATFORM

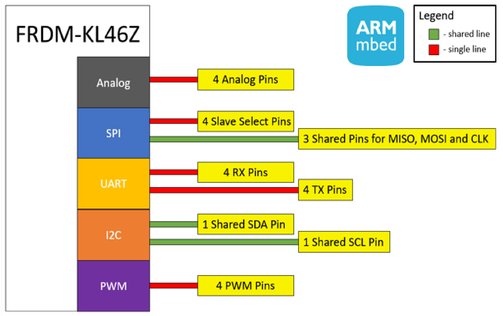






SOCKET INTERFACES





TESTING PARAMETERS

Test Case	Test Specifications	Test Results
Light Ranger 3 Click	Board powered by 3.3V connection	Connected board and checked LED light
	Ensure safe connection to FRDM-KL46Z, no feedback voltage should be above 3.3V	Voltages of respective pins measured to be below 3.3V threshold
	Get distance readings from Click	Non-zero reading recorded and displayed on PUTTY

CLICK NAME	Description and Interface	Interface	Requirement	Status
USB UART 3 click	Adds USB 2.0 functionality	Serial	Detect serial connection in PC	Fail
Color 5 click	Integrated color sensing device	I2C	Non-Zero Putty output reading	Fail
BarGraph 2 click	10-segment bar graph display click, which uses a high-quality, multicolor bar graph LED display	PWM & SPI	Pattern displayed on bar graph	Pass
Accel 5 click	Triaxial accelerometer sensor	I2C & SPI	Non-Zero Putty output reading	Fail
Gaussmeter click	Gaussmeter used for measuring the magnetic field in X, Y and Z axes	I2C & SPI	Non-Zero Putty output reading	Fail
LightRanger 3 click	Accurate distance measurement based on a ToF (Time of Flight) measurement principle	I2C	Non-Zero Putty output reading	Pass
Alcohol click	Portable alcohol detector, breathalyzer for estimating BAC	Analog	Non-Zero Putty output reading	Pass
Air Quality click	detecting a variety of gases that impact air quality in homes and offices	Analog	Non-Zero Putty output reading	Pass
microSD click	A microSD card slot for microSD cards used as a mass storage media for portable devices	SPI	Read SD card file via board	Pass

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