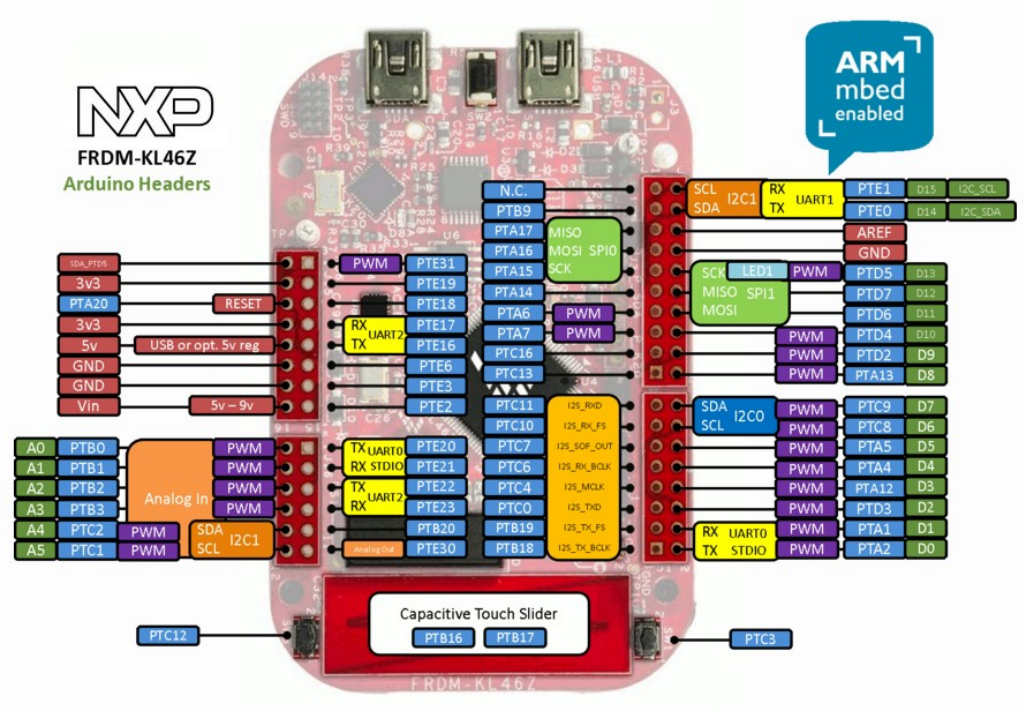
FRDM-KL46Z

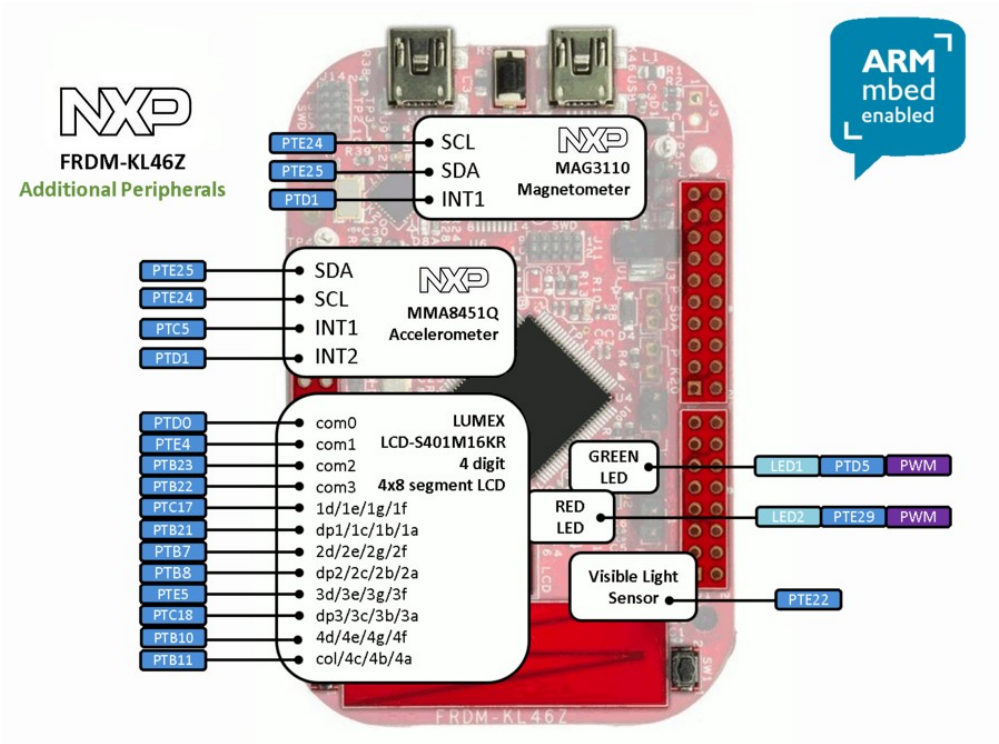
The FRDM-KL46Z is an ultra-low-cost development platform enabled by the Kinetis L series KL4x MCU family built on the ARM® Cortex™-M0+ processor. Features include easy access to MCU I/O, battery-ready, low-power operation, a standard-based form factor with expansion board options and a built-in debug interface for flash programming and run-control. The FRDM-KL46Z is supported by a range of NXP and third-party development software.

Overview

The FRDM-KL46Z has been designed by NXP in collaboration with mbed for prototyping all sorts of devices, especially those requiring the size and price point offered by Cortex-M0+ and the power of USB Host and Device. It is packaged as a development board with connectors to break out to strip board and breadboard, and includes a built-in USB FLASH programmer.



It is based on the NXP KL46Z, with a 32-bit ARM Cortex-M0+ core running at 48MHz. It includes 256KB FLASH, 32KB RAM and lots of interfaces including USB Host, USB Device, SPI, I2C, ADC, DAC, PWM, LCD Controller, Touch Sensor and other I/O interfaces.



The FRDM-KL46Z is fully supported in the mbed platform, so it gets access to the free tools and SDK that provides experienced embedded developers with powerful and productive tools for building proof-of-concepts. The pinout above shows the commonly used interfaces and their locations. Note that all the numbered pins (PT_XX) can also be used as DigitalIn and DigitalOut interfaces.

Mbed Pin Names

LED (RG)
LED_RED = PTE29
LED_GREEN = PTD5

mbed original LED naming
LED1 = LED_GREEN
LED2 = LED_RED
LED3 = LED_GREEN
LED4 = LED_RED

Push buttons
SW1 = PTC3
SW3 = PTC12

USB Pins
USBTX = PTA2
USBRX = PTA1

Arduino Headers
D0 = PTA1
D1 = PTA2
D2 = PTD3
D3 = PTA12
D4 = PTA4
D5 = PTA5
D6 = PTC8
D7 = PTC9
D8 = PTA13
D9 = PTD2
D10 = PTD4
D11 = PTD6
D12 = PTD7
D13 = PTD5
D14 = PTE0
D15 = PTE1

A0 = PTB0
A1 = PTB1
A2 = PTB2
A3 = PTB3
A4 = PTC2
A5 = PTC1

I2C pins
I2C_SCL = D15
I2C_SDA = D14

TSI electrodes
TSI_ELEC0 = PTB16
TSI_ELEC1 = PTB17

Features¶

NXP KL46Z Kinetis KL4 MCU (MKL46Z256VLL4)

- High performance ARM® Cortex™-M0+ Core
- 48MHz, 32KB RAM, 256KB FLASH
- USB (Host/Device)
- SPI (2)
- I2C (2)
- I2S (1)
- UART (3)
- PWM (6)
- ADC (6)
- DAC (1x 6bit, 1x 12bit)
- Touch Sensor
- GPIO (84)
- LCD Controller

FRDM-KL46Z Onboard Sensors

- MMA8451Q - 3-axis accelerometer
- Capacitive touch sensor
- MAG3110 - Magnetometer
- LCD-S401M16KR - 4-digit, 4x8 segment LCD
- Visible light sensor - ALS-PT19-315C/L177/TR8

Evalution Form factor

- 81mm x 53mm
- 5V USB or 4.5-9V supply
- Built-in USB drag 'n' drop FLASH programmer

mbed HDK & SDK enabled

- Drag-n-drop programming
- USB Serial Port
- CMSIS-DAP
- Online development tools
- Easy to use C/C++ SDK
- Lots of published libraries and projects

Status

- Production

More Information: https://os.mbed.com/platforms/FRDM-KL46Z/