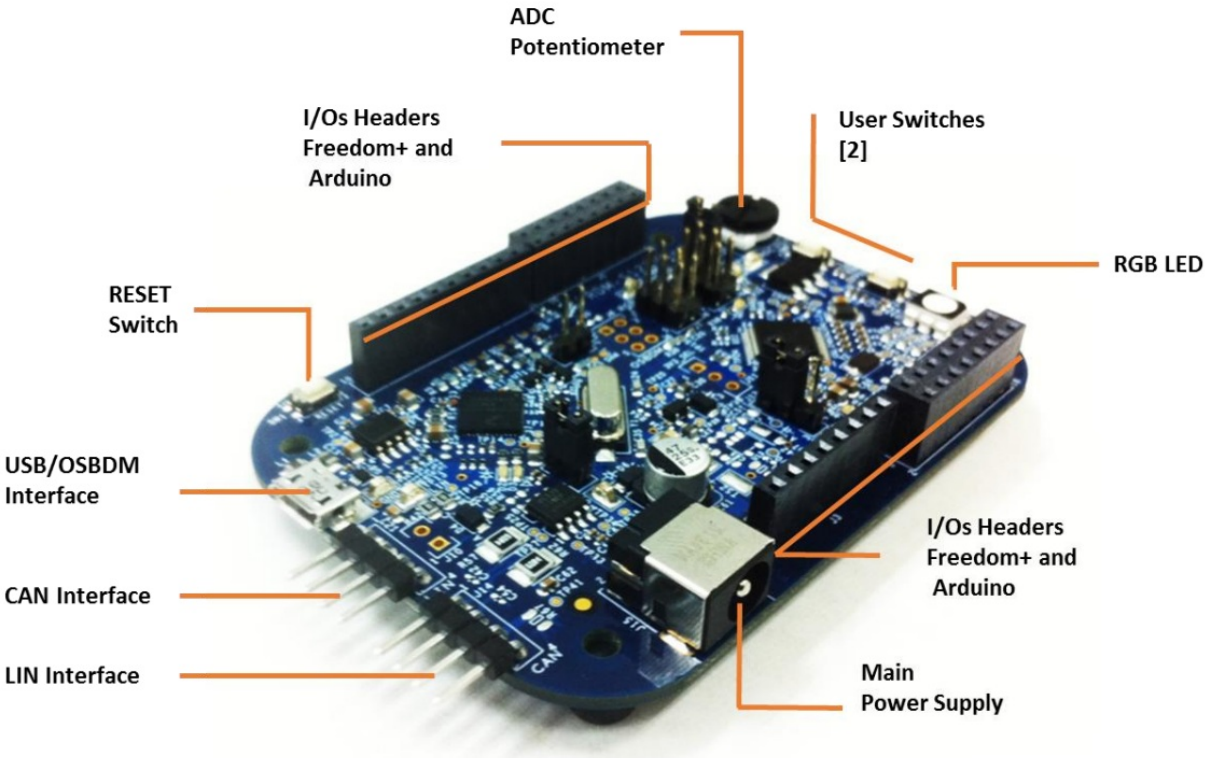
NXP DEVKIT-ZVL128 Ultra-Low-Cost Development Platform for S12 Microcontrollers User Guide

NXP DEVKIT ZVL128
Ultra-Low-Cost Development Platform for S12 Microcontrollers
User Guide
DEVKIT+ZVL128
QUICK START GUIDE (QSG)
ULTRA-RELIABLE MCUS FOR
INDUSTRIAL AND AUTOMOTIVE

Contents

Get to know the DEVKIT-ZVL128

The DEVKIT-ZVL128 is an ultra-low-cost development platform for S12 Microcontrollers. Features include easy access to all MCU I/O, a standard-based form factor compatible with the Arduino™ pin layout, providing a broad range of expansion board options, and a USB serial port interface for connection to the IDE, the board as an option to be powered via USB or an external power supply.

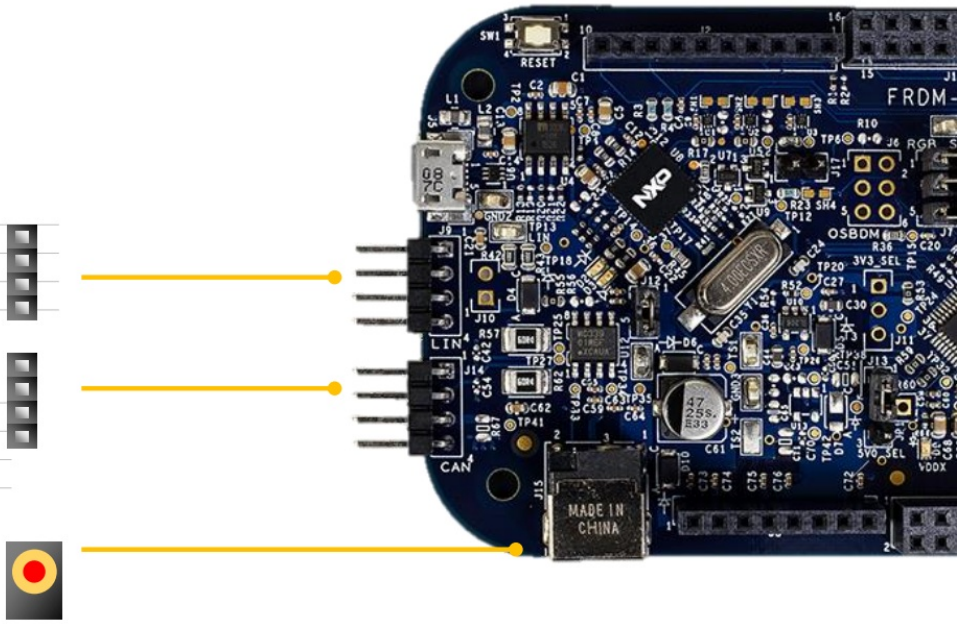


Power Supply and Communications

DESCRIPTION	NAME	PIN
	LIN	J12-01
	VBAT	J12-02
	NC	J12-03
	GND	J12-04

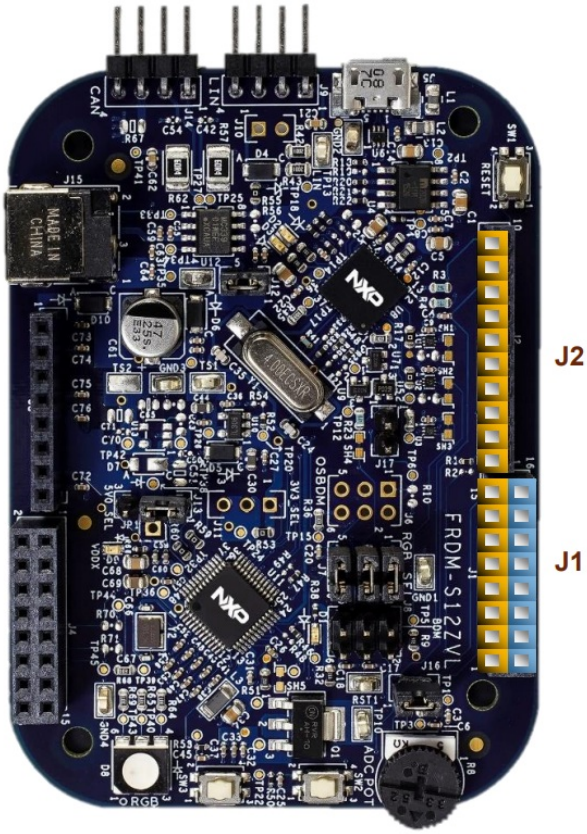
DESCRIPTION	NAME	PIN
	CANH	J8-01
	CANL	J8-02
	VBAT	J8-03
	GND	J8-04

DESCRIPTION	NAME	PIN
	VBAT	J1-01
	GND	J1-03



High-speed CAN interface

Input/Output Connectors



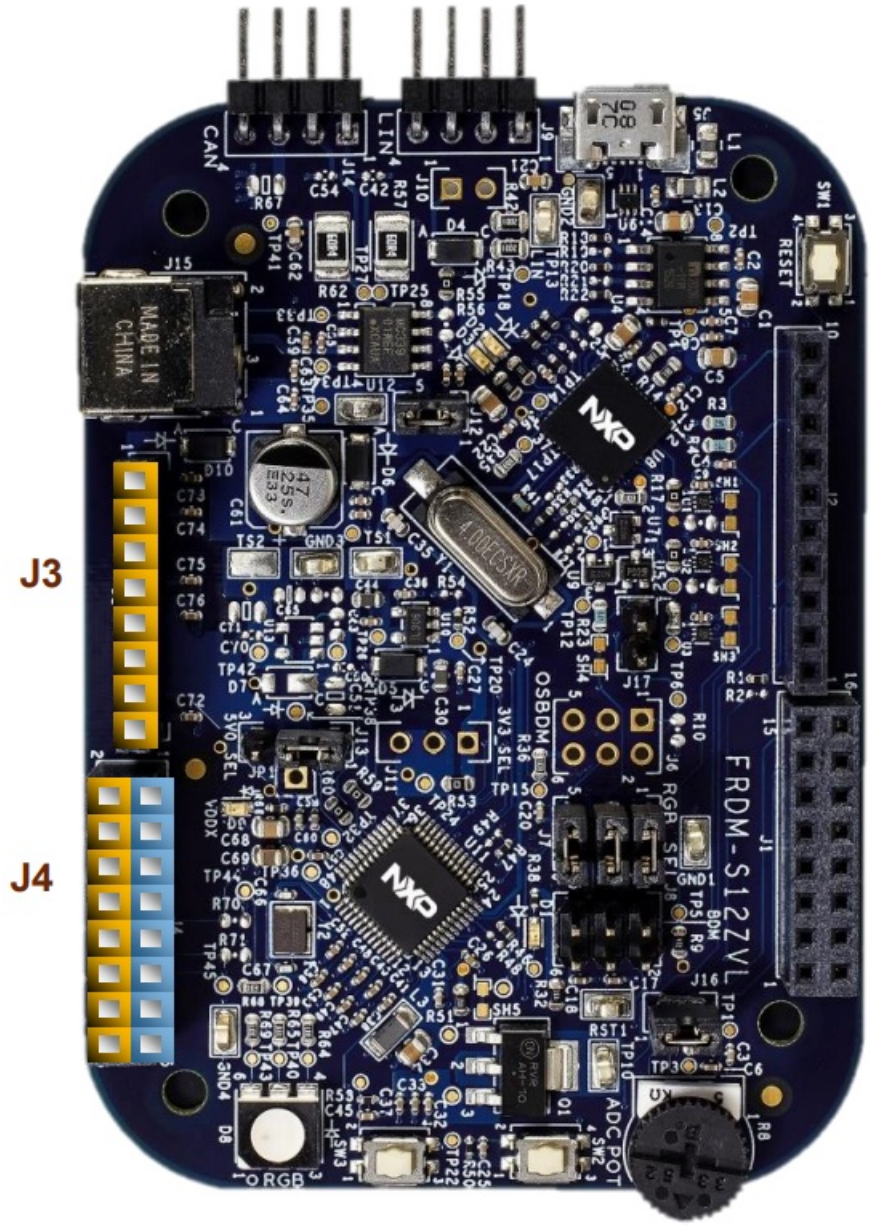
Arduino Compatibility

The internal rows of the I/O headers on the DEVKIT-ZVL128 are arranged to fulfill Arduino™ shields compatibility.

PIN	PORT	FUNCTION	J2
J2-01	PT7	GPIO	
J2-02	PP7	GPIO	
J2-03	PS3	SS	
J2-04	PS1	MOSI	
J2-05	PS0	MISO	
J2-06	PS2	SCK	
J2-07	GND	GND	
J2-08	PAD0	AN0	
J2-09	PJ0	SDA	
J2-10	PJ1	SCL	

PIN	PORT	FUNCTION	J1	FUNCTION	PORT	FUNCTION
J1-01	PT4	RXD1		RXD1	PT2	GPIO
J1-03	PT5	TXD1		TXD1	PT3	GPIO
J1-05	PP0	PWM0		PWM0	PT6	GPIO
J1-07	PP1	PWM1		PWM1		
J1-09	PP2	PWM2		PWM2		
J1-11	PP3	PWM3		PWM3		
J1-13	PP4	PWM4		PWM4		
J1-15	PP5	PWM5		PWM5		

Input/Output Connectors



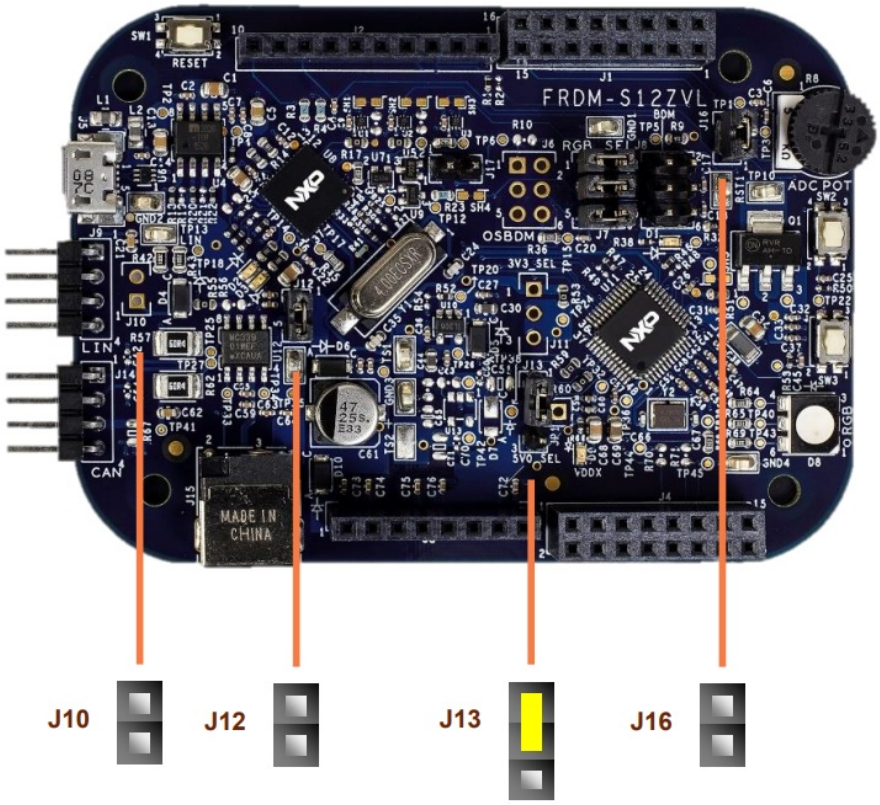
Arduino Compatibility

The internal rows of the I/O headers on the DEVKIT-ZVL128 are arranged to fulfill Arduino™ shields compatibility .

PIN	PORT	FUNCTION	J3
J3-01		VBAT	
J3-02		VDDX	
J3-03		RESET_B	
J3-04		P3V3	
J3-05		P5V0	
J3-06		GND	
J3-07		GND	
J3-08		VBA	

PIN	PORT	FUNCTION	J4	PIN	PORT	FUNCTION
J4-02				J4-01	PAD7	AN7
J4-04				J4-03	PAD6	AN6
J4-06				J4-05	PAD5	AN5
J4-08				J4-07	PAD4	AN4
J4-10				J4-09	PAD3	AN3/SDA
J4-12	PL0	HVI0		J4-11	PAD2	AN2/SCL
J4-14	PAD8	AN8		J4-13	PAD1	AN1
J3416	PAD9	AN9		J4-15	PAD0	AN0

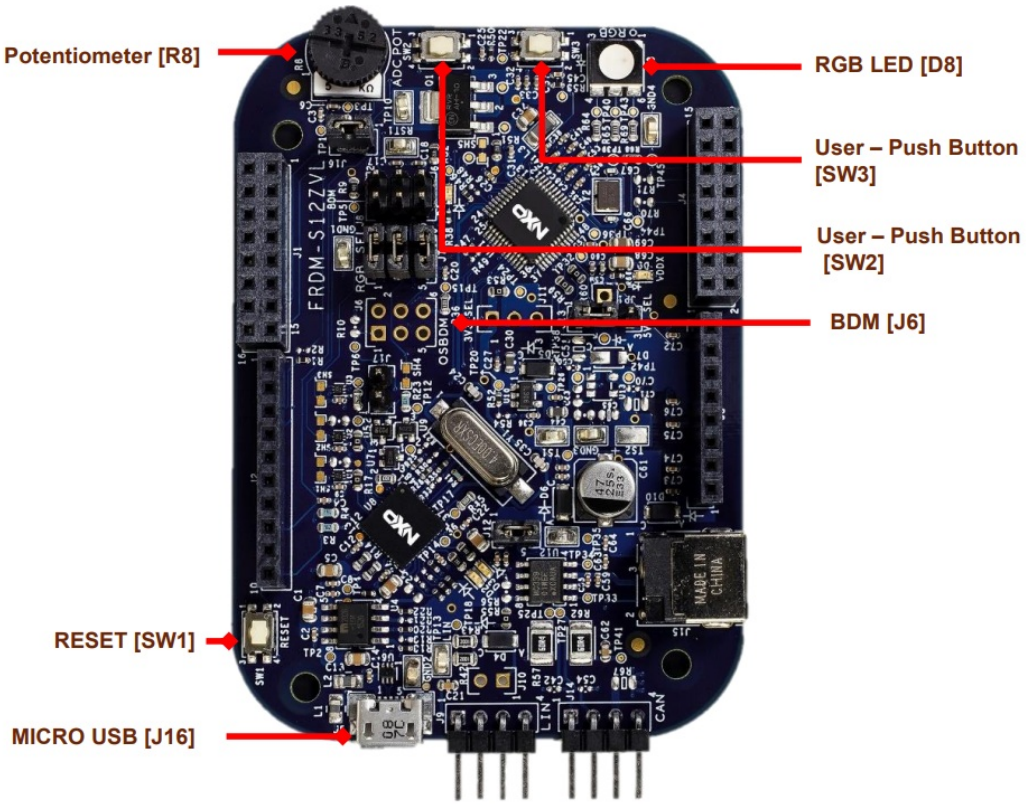
Default jumpers



REF	POSITION	DESCRIPTION
J10	OPEN	Enable LIN Master mode
J12	2-Jan	This link connects VLIN[+12V] Input voltage is routed to VSUP
J13	2-Jan	ADC potentiometer is routed to AN0
J16	2-Jan	ADC potentiometer is routed to AN2

CAUTION:
When powered from the USB bus, do not exceed the 500mA maximum allowable current drain. Damage to the target board or host PC may result.

Programming interface and User Peripherals


Potentiometer [R8]
RGB LED [D8]
User – Push Button [SW3]
User – Push Button [SW2]
BDM [J6]
RESET [SW1]
MICRO USB [J16]

Peripheral	ID	MCU Port	Description
Buttons	SW2	PP4	User switch (Active high)
	SW3	PP7	User switch (Active high)
	SW I	RESET	RESET Switch
Potentiometers	R8	ANO	Potentiometer connected to ADC port ANO/AN I
LED	D9	P P3	RGB LED – Green
		PP I	RGB LED – Red
		P P5	RGB LED – Blue
	D2	–	OSBDM PWR LED, ON when OSBDM is successfully enumerated as USB device.
	D3	–	OSBDM STATUS LED. ON when OSBDM is succes sfully transmitting as USB device.
	D9	VDDX	ICU Power LED Indicator. ON when VDDX is regula ting to +5V/+3.3V
	D I	RESET	RESET LED Indicator
Communication	JI	–	OSBDM USB
	J1 1/J9	LIN	LIN Interface
	J23/J25	CANH	CAN Interface

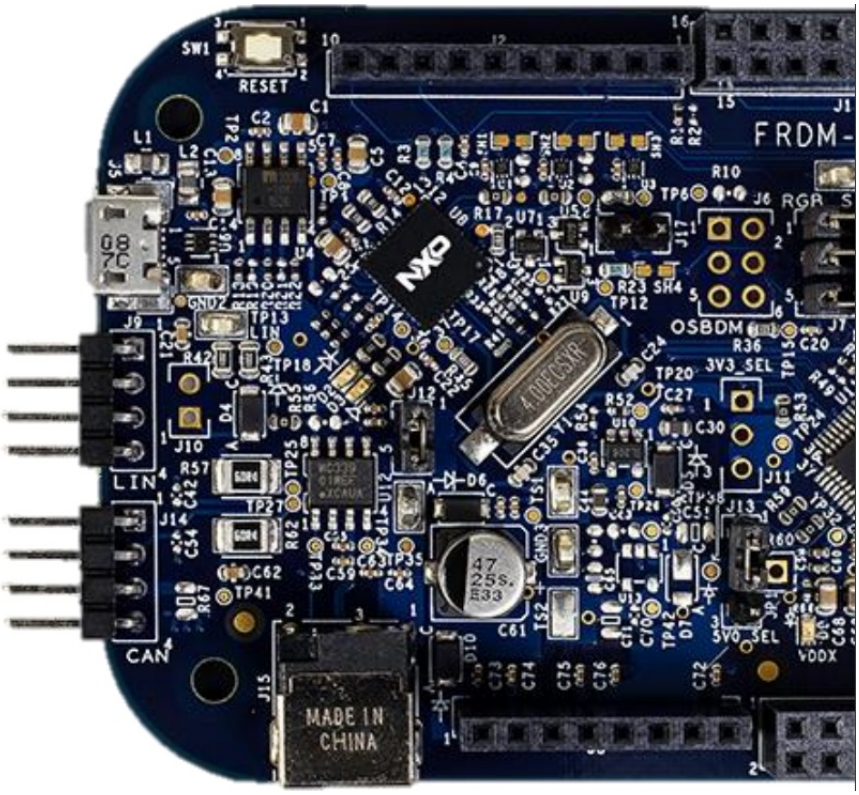
Step-by-Step Installation Instructions

In this quick start guide, you will learn how to set up the DEVKIT-ZVL128 board and run the default exercise.

1. **Install Software and Tools**
   Install CodeWarrior Development Studio for S12Z 10.6(Eclipse).
2. **Connect the USB Cable**
   Connect one end of the USB cable to the PC and the other end to the mini-B connector on the DEVKIT-ZVL128 board. Allow the PC to automatically configure the USB drivers if needed.
3. **Using the Example Project**
   The pre-loaded example project utilizes the DEVKIT-ZVL128 potentiometer and the RGB LED. Once the board is plugged in you can adjust the potentiometer and the RGB LEDs should illuminate/de-illuminate in response. Each color will change when the potentiometer position is adjusted.
4. **Learn More About the S12ZVL**
   Read the release notes and documentation on **freescale.com/S12ZVL**.

- The Processor Expert graphical initialization software included in your CodeWarrior installation will help reduce your time to market
- CodeWarrior for S12Z with examples

Documentation and References



Application Notes

- AN4842, S12ZVL LIN Enabled RGB LED Lighting Application
- AN4841, S12ZVL LIN Enabled Ultrasonic Distance Measurement
- AN5082, MagniV in 24V Applications Reference Manual and Datasheet
- MC9S12ZVL Family Reference Manual and Datasheet

For more information please visit: **www.nxp.com/s12zvl**

Development Tools Ecosystem

Compilers

- Codewarrior S12Z
- Cosmic

IDE

- Codewarrior
- Cosmic Zap

Programmers

- P&E
- Cyclone Pro Programmer

Debugger

- CW & P&E S12 Debugger
- Cosmic Zap Debugger
- iSYSTEM winIDEA

Support Tools:

- FREE MASTER run time debugger and for instrumentation/calibration

Documents / Resources

	NXP DEVKIT-ZVL128 Ultra-Low-Cost Development Platform for S12 Microcontrollers [pdf] User Guide DEVKIT-ZVL128, Ultra-Low-Cost Development Platform for S12 Microcontrollers, DEVKIT-ZVL 128 Ultra-Low-Cost Development Platform for S12 Microcontrollers, DEVKIT ZVL128

References

- S12ZVL Mixed-Signal MCU|MagniV | NXP Semiconductors
- S12ZVL Mixed-Signal MCU|MagniV | NXP Semiconductors