

# DEVKIT-S12G128 QUICK START GUIDE (QSG)

ULTRA-RELIABLE MCUs FOR  
INDUSTRIAL AND AUTOMOTIVE



EXTERNAL USE

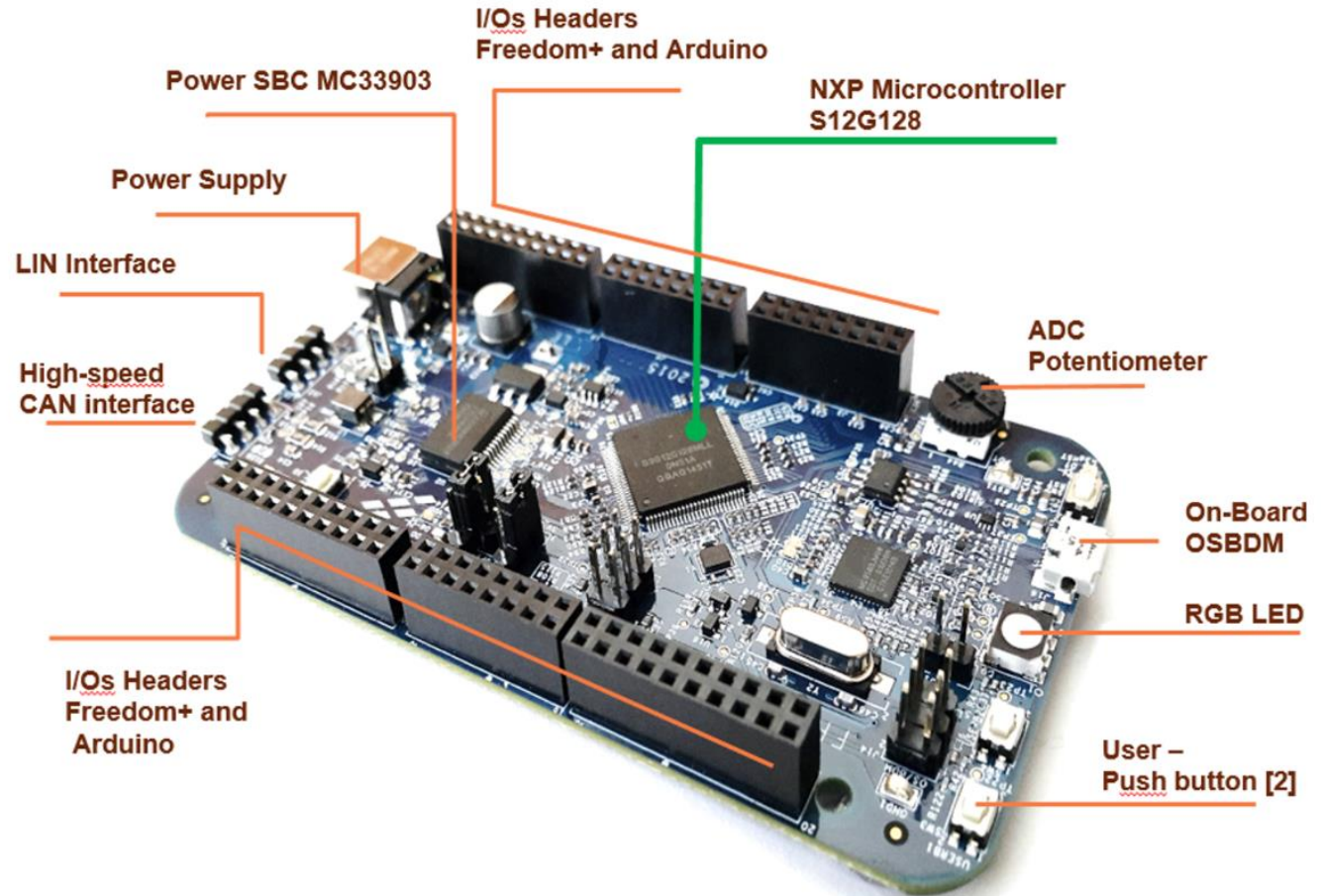


SECURE CONNECTIONS  
FOR A SMARTER WORLD

# Get to know the DEVKIT-S12G128

The DEVKIT-S12G128 is an ultra-low-cost development platform for S12 Microcontrollers.

Features include easy access to all MCU I/O's, a standard-based form factor compatible with the Arduino™ pin layout, providing a broad range of expansion board options, and an USB serial port interface for connection to the IDE, the board has option to be powered via USB or an external power supply.



**DEVKIT-S12G128**  
Features

# Power Supply and Communications

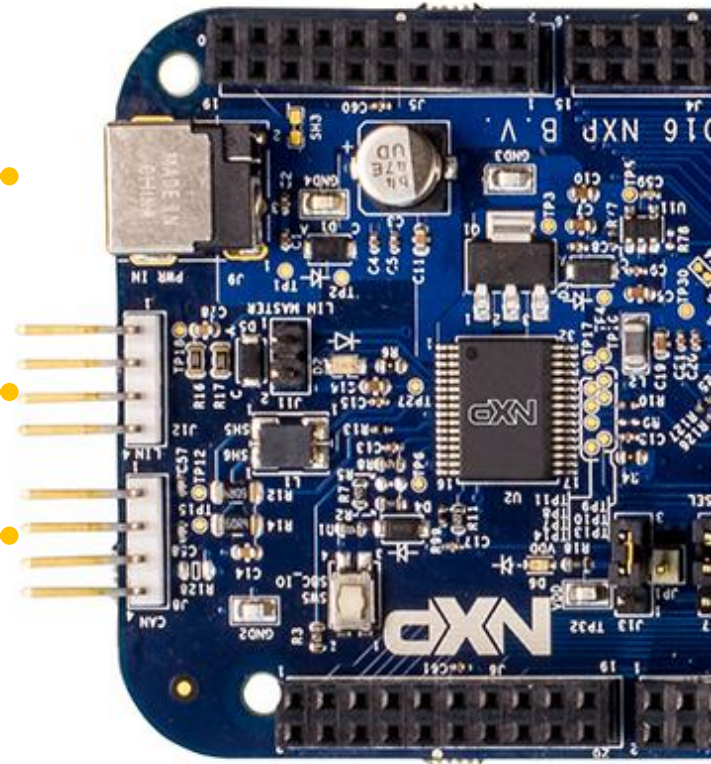
DESCRIPTION	NAME	PIN
	VBAT	J9-01
	GND	J9-02
	GND	J9-03



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



High-speed CAN interface

# Input/Output Connectors



J2

J1

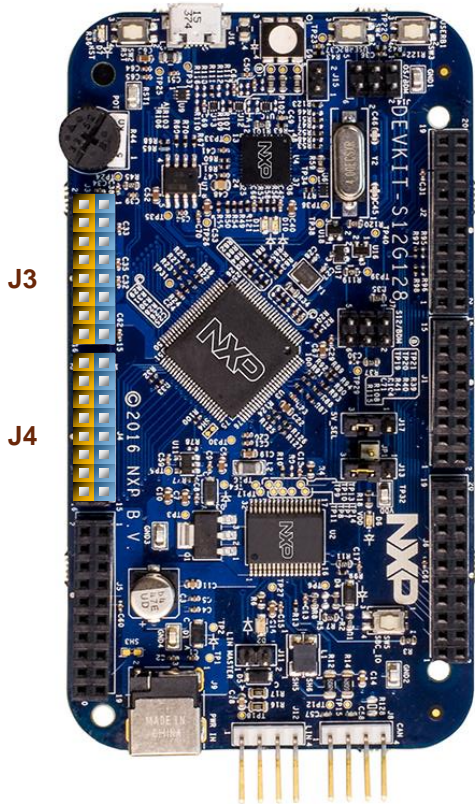
PIN	PORT	FUNCTION	J1	PIN	PORT	FUNCTION
J1-01	PS0	RXD0	■	J1-02	PA0	GPIO
J1-03	PS1	TXD0	■	J1-04	PA1	GPIO
J1-05	PP7	PWM7	■	J1-06	PA2	GPIO
J1-07	PP6	PWM6	■	J1-08	PA3	GPIO
J1-09	PP5	PWM5	■	J1-10	PA4	GPIO
J1-11	PP4	PWM4	■	J1-12	PA5	GPIO
J1-13	PP3	PWM3	■	J1-14	PA6	GPIO
J1-15	PP2	PWM2	■	J1-16	PA7	GPIO

PIN	PORT	FUNCTION	J2	PIN	PORT	FUNCTION
J2-01	PP1	PWM1	■	J2-02	PT0	IOC
J2-03	PP0	PWM0	■	J2-04	PT1	IOC
J2-05	PP5/PJ7	PWM5 / SPI_SS2	■	J2-06	PT2	IOC
J2-07	PP2/PJ5	PWM2 / SPI_MOSI2	■	J2-08	PT3	IOC
J2-09	PJ4	SPI_MISO2	■	J2-10	PT4	IOC
J2-11	PJ6	SPI_SCK2	■	J2-12	PT5	IOC
J2-13	GND	GND	■	J2-14	PB0	GPIO
J2-15	AREF	AREF	■	J2-16	PB1	GPIO
J2-17	PB7	GPIO	■	J2-18	PB2	GPIO
J2-19	PB6	GPIO	■	J2-20	PB3	GPIO

## Arduino Compatibility

The internal rows of the I/O headers on the DEVKIT-S12G128 are arranged to fulfill Arduino™ shields compatibility.

# Input/Output Connectors



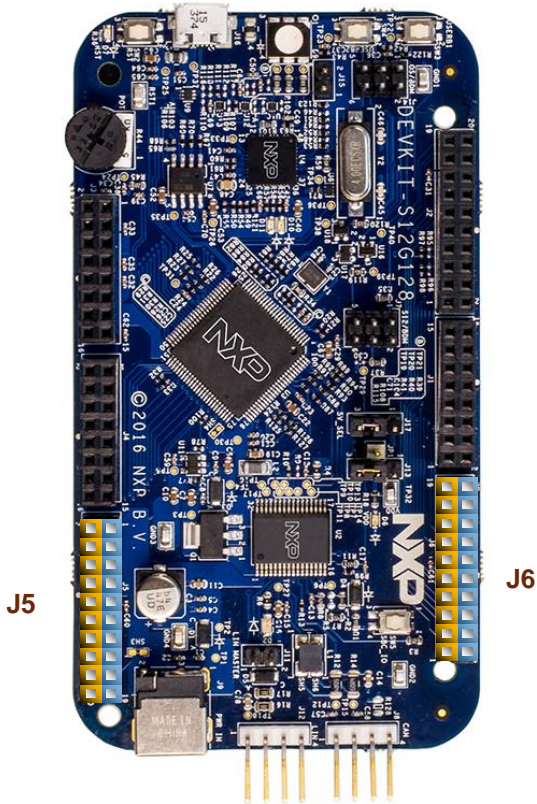
## Arduino Compatibility

The internal rows of the I/O headers on the DEVKIT-S12G128 are arranged to fulfill Arduino™ shields compatibility.

PIN	PORT	FUNCTION	J3	PIN	PORT	FUNCTION
J3-02	PE1	XTAL	■ ■	J3-01		VIN
J3-04	PE0	EXTAL	■ ■	J3-03		VDD
J3-06	PS6	SPI_SCK0	■ ■	J3-05		RESET
J3-08	PS5	SPI_MOSIO	■ ■	J3-07		P3V3
J3-10	PS4	SPI_MISO0	■ ■	J3-09		P5V0
J3-12	PS7	SPI_SS0	■ ■	J3-11		GND
J3-14	PB4	GPIO	■ ■	J3-13		GND
J3-16	PB5	GPIO	■ ■	J3-15		VIN

PIN	PORT	FUNCTION	J4	PIN	PORT	FUNCTION
J4-02	PD7	GPIO	■ ■	J4-01	PAD0	ADC0
J4-04	PD6	GPIO	■ ■	J4-03	PAD1	ADC1
J4-06	PD5	GPIO	■ ■	J4-05	PAD2	ADC2
J4-08	PD4	GPIO	■ ■	J4-07	PAD3	ADC3
J4-10	PD3	GPIO	■ ■	J4-09	PAD4	ADC4
J4-12	PD2	GPIO	■ ■	J4-11	PAD5	ADC5
J4-14	PD1	GPIO	■ ■	J4-13	PAD6	ADC6
J4-16	PD0	GPIO	■ ■	J4-15	PAD7	ADC7

# Input/Output Connectors



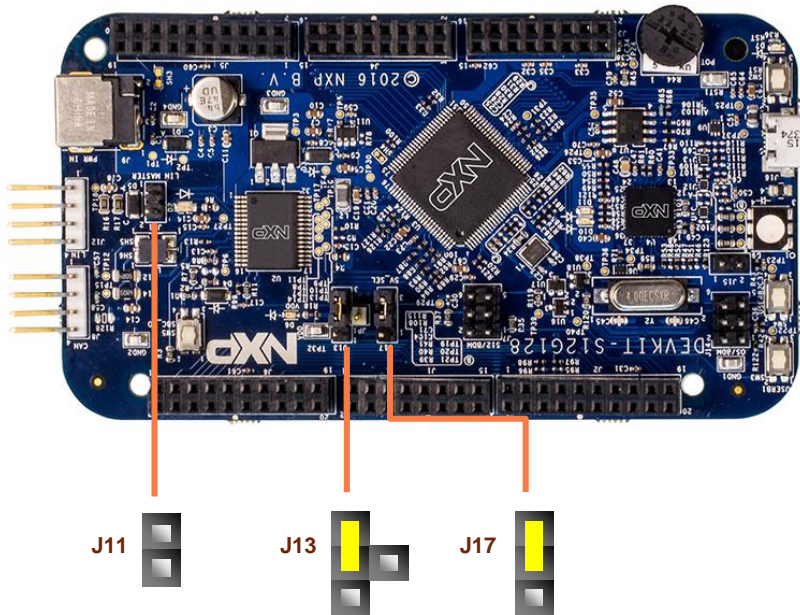
## Arduino Compatibility

The internal rows of the I/O headers on the DEVKIT-S12G128 are arranged to fulfill Arduino™ shields compatibility.

PIN	PORT	FUNCTION	J5	PIN	PORT	FUNCTION
J5-02	PC0	GPIO		J5-01	PAD8	ADC8
J5-04	PC1	GPIO		J5-03	PAD9	ADC9
J5-06	PC2	GPIO		J5-05	PAD10	ADC10
J5-08	PC3	GPIO		J5-07	PAD11	ADC11
J5-10	VDD	VDD		J5-09	PAD12	ADC12
J5-12	GND	GND		J5-11	PAD13	ADC13
J5-14	PC4	GPIO		J5-13	PAD14	ADC14
J5-16	PC5	GPIO		J5-15	PAD15	ADC15
J5-18	PC6	GPIO		J5-17	NC	NC
J5-20	PC7	GPIO		J5-19		SBC_SAFE

PIN	PORT	FUNCTION	J6	PIN	PORT	FUNCTION
J6-19	NC	NC		J6-20	NC	NC
J6-17	NC	NC		J6-18	NC	NC
J6-15	PS3	TXD1		J6-16	NC	NC
J6-13	PS2	RDX1		J6-14	NC	NC
J6-11	PM3	LINTX		J6-12	GND	GND
J6-09	PM2	LINRX		J6-10	VDD	VDD
J6-07	NC	NC		J6-08	PM0	CANRX
J6-05	NC	NC		J6-06	PM1	CANTX
J6-03	PJ1	SPI_MOSI		J6-04	PJ3	SPI_CS
J6-01	PJ2	SPI_SCK		J6-02	PJ0	SPI_MISO

# Default jumpers

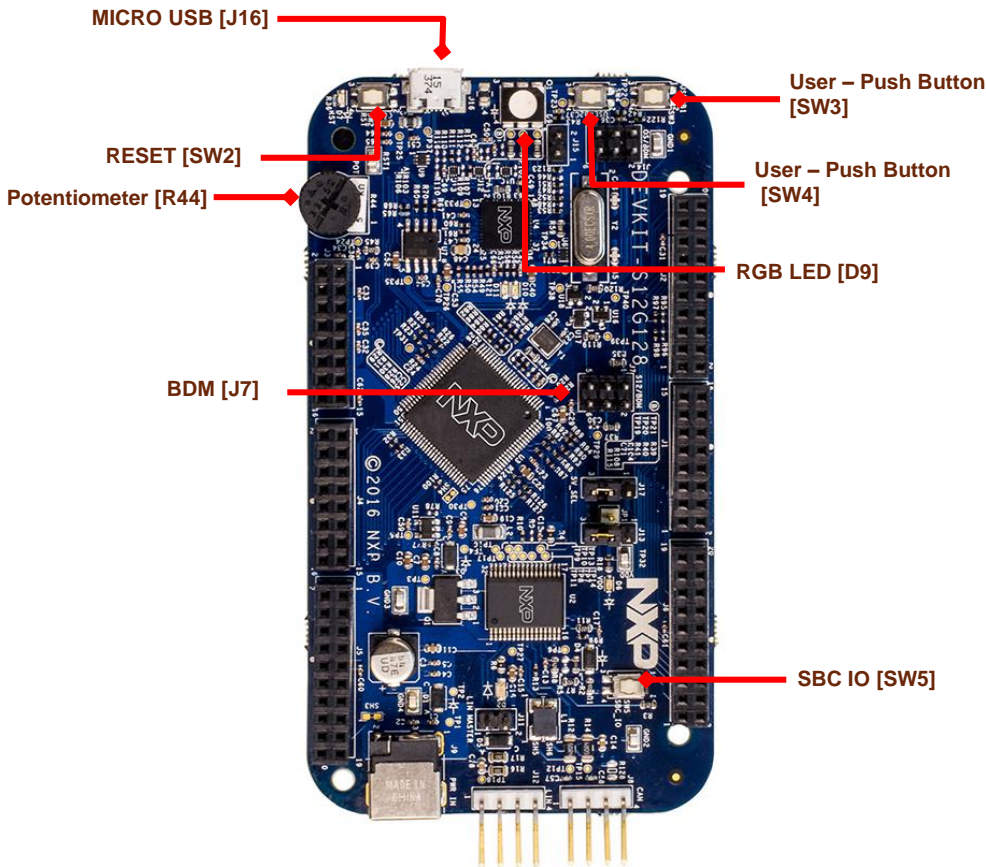


REF	POSITION	DESCRIPTION
J11	OPEN	Enable LIN Master mode
J13	1 - 2	VDD Power MCU linked to 3.3V
	2 - 3 [DEFAULT]	VDD Power MCU linked to 5.0V
J17	2 - JP1	VDD Power MCU linked to USB
	1 - 2	P5V0 reference is linked to P5V_SWUSB
[DEFAULT]	2 - 3	P5V0 reference is linked to P5V_SBC

## 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

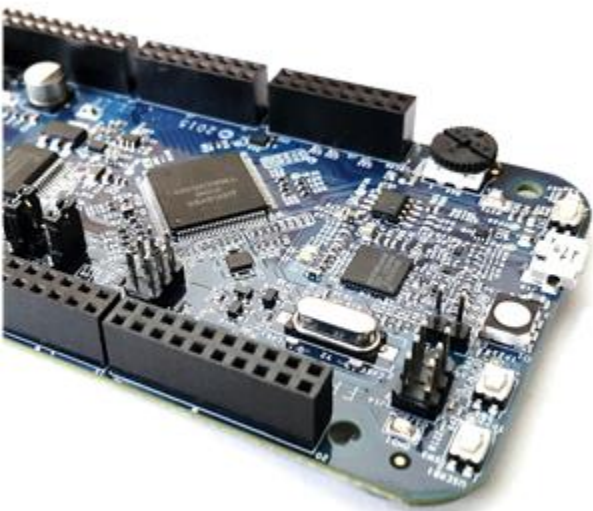


	REFERENCE	MCU PORT	DESCRIPTION
Potentiometer	R44	AN0	Rotary Potentiometer
Push Button	SW5	PWR_SBC	
	SW2	RESET	
	SW3	PT6	
	SW4	PT7	
LED	D6	PWR_SBC	GREEN LED power Indicator
	D7	RESET	RESET LED indicator
	D9	PP3	User LED
	RGB	PP4	User LED
		PP6	User LED
Programming and Debug Interface	J16		On-board JTAG connection via open source OSBDM circuit using the MC9S08JM60 microcontroller
	J7		Support for USB Multilink Interface BDM



# Step-by-Step Installation Instructions

In this quick start guide, you will learn how to set up the **DEVKIT-S12G128** board and run the default exercise.



1

## Install Software and Tools

Install CodeWarrior Development Studio for S12 V5.1 or later. [CodeWarrior Dev Tools for HCS12\(X\) MCUs](#)

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-S12G128 board. Allow the PC to automatically configure the USB drivers if needed.

3

## Using the Example Project

The pre-loaded example project utilizes the RGB LED. Once the board is plugged in you can see how the RGB LEDs change the color.

4

## Learn More About the S12G128

Read the release notes and documentation on the [nxp.com/S12G128](http://nxp.com/S12G128).

- The Processor Expert graphical initialization software included in your CodeWarrior installation will help reduce your time to market
- CodeWarrior for S12 with examples

# CAUTIONARY NOTES

- Electrostatic Discharge (ESD) prevention measures should be used when handling this product. ESD damage is not a warranty repair item.
- NXP does not assume any liability arising out of the application or use of any product or circuit described herein; neither does it convey any license under patent rights or the rights of others.
- EMC Information on the DEVKIT-S12G128 board:
  - This product as shipped from the factory with associated power supplies and cables, has been verified to meet with requirements of CE and the FCC as a CLASS A product.
  - This product is designed and intended for use as a development platform for hardware or software in an educational or professional laboratory.
  - Attaching additional wiring to this product or modifying the products operation from the factory default as shipped may effect its performance.



# Documentation and References

## Datasheet

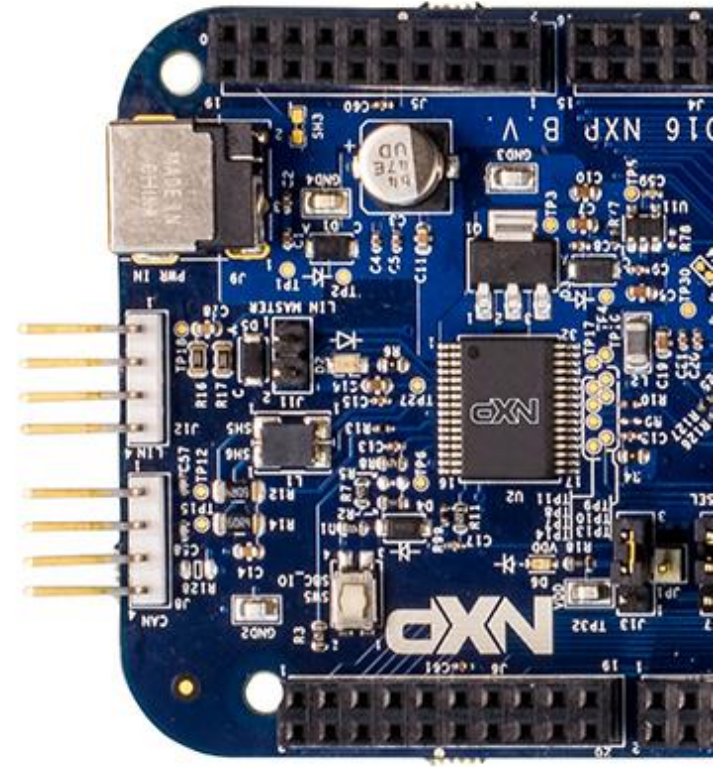
- [MC9S12GRMV1, MC9S12G Family Reference Manual and Data Sheet \(REV 1.25\)](#)

## Application Notes

- [AN4455, MC9S12G128/A240 Demonstration Lab Training - Application Notes \(REV 0\)](#)

## Reference Manuals

- [DRM134, DRM for Driver Information System on S12G128 - Reference Manual \(REV 0\)](#)



For more information please visit : [www.nxp.com/s12g](http://www.nxp.com/s12g)

# Development Tools Ecosystem

## Compilers

- Codewarrior S12
- Cosmic

## IDE

- Codewarrior
- Cosmic Zap

## Programmiers

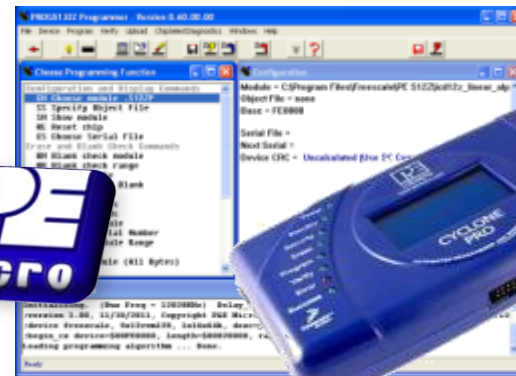
- P&E
- Cyclone Pro Programmer

## Debugger

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

## Support Tools:

- FREEMASTER run time debugger and for instrumentation/calibration





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