

# HARDWARE USER MANUAL

## S12ZVMBEVB



General Purpose S12 MagniV 16bit MCU with 5V and 3.3V voltage regulator with LIN-physical layer

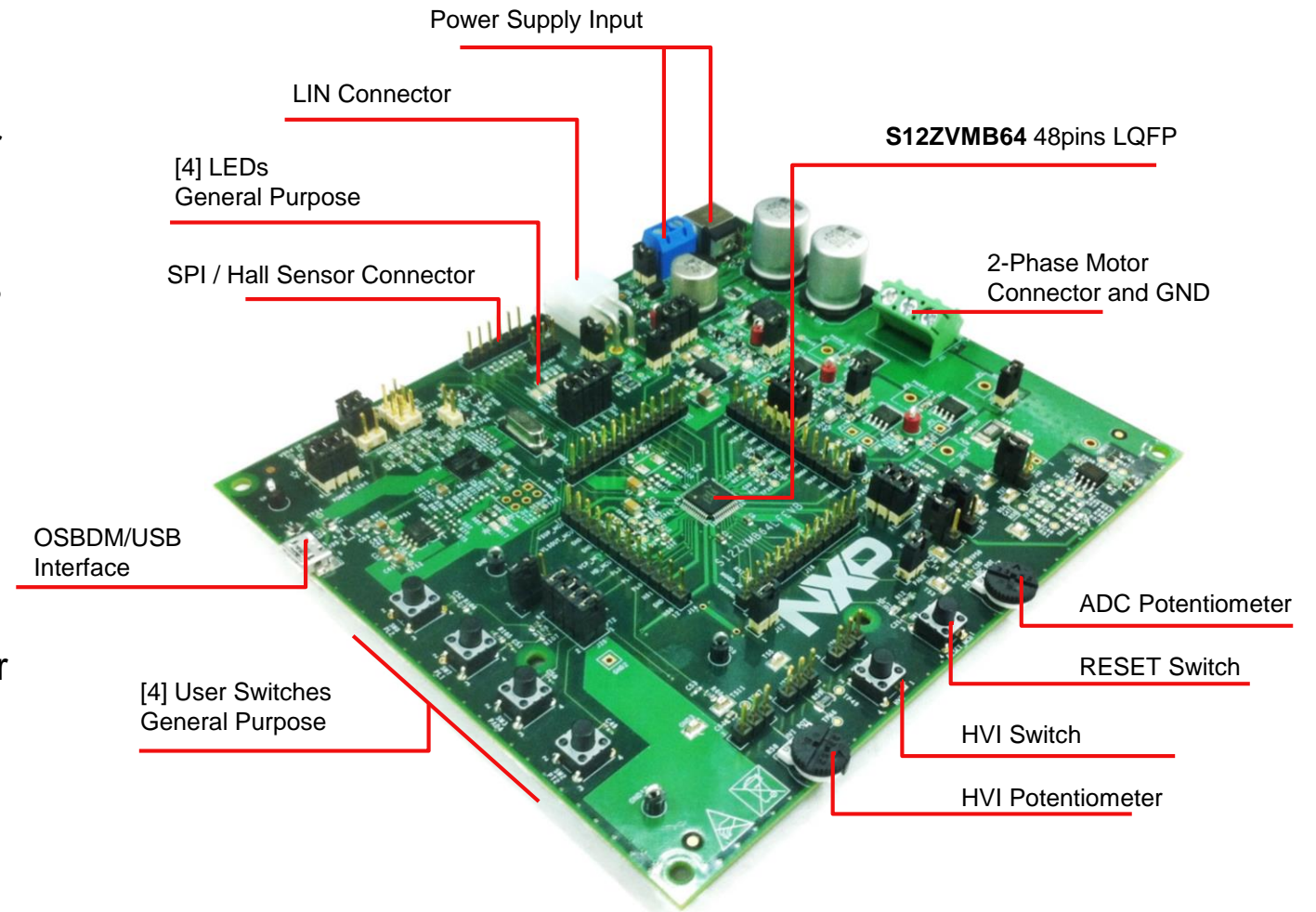
2016



# Get to know the S12ZVMB64LFEVB

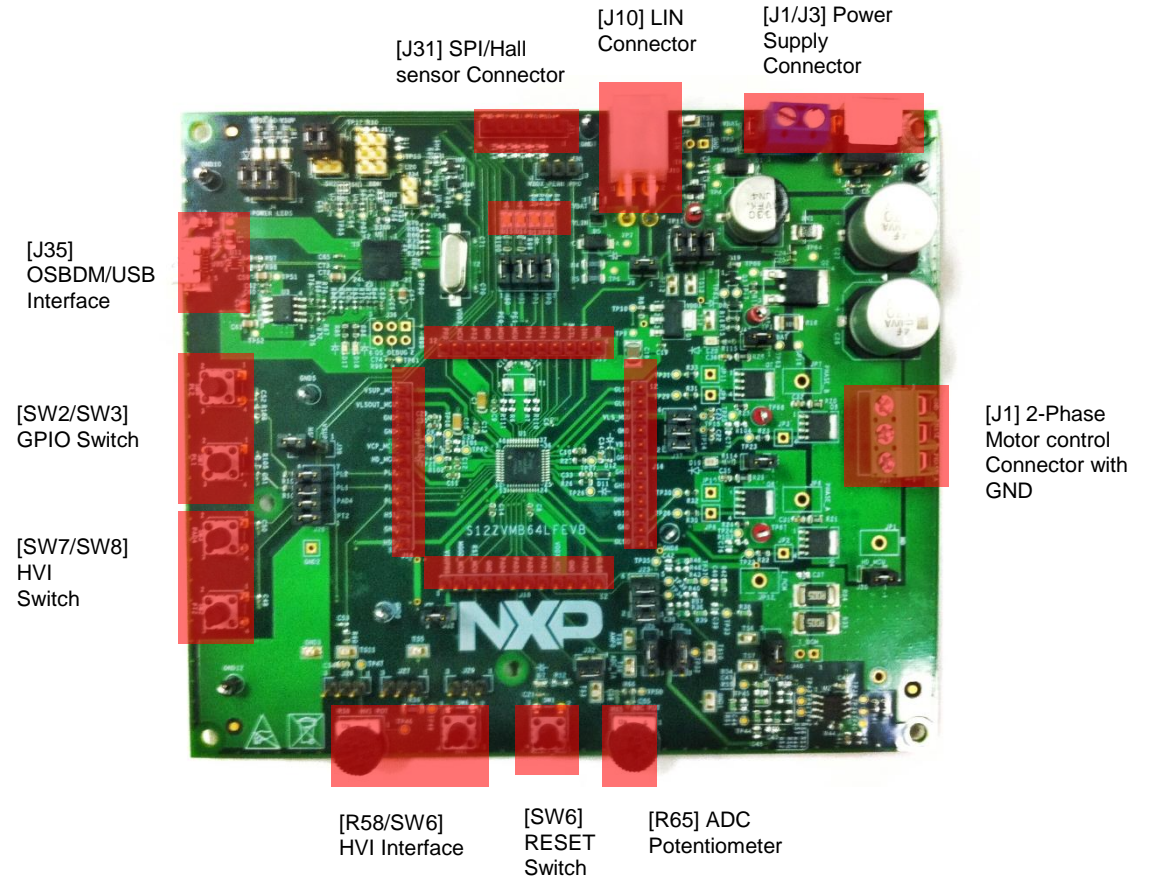
The **S12ZVMB64LFEVB** is a development board for the MagniV S12ZVMB64 Mixed Signal MCU and provides rapid and fully integrated single chip solution to drive external power MOSFETs for 2Phase DC Motor drive applications.

The particular differentiating features of this family are the enhanced S12Z core, the combination of an ADC synchronized to PWM signals using a Programmable Trigger Unit (PTU) and the integration of “high-voltage” analog modules, including the voltage regulator (VREG), Gate Drive Unit (GDU) and a Local Interconnect Network (LIN) physical layer.



# S12ZVMBEVB Peripheral List

Interface	ID	Description
Power Supply and protection	J1	Power supply Connector [+12V]
	J3	Power supply Connector [+12V]
	D2	Power LED indicator, ON when VBAT [+12V] is connected to the board
	D3	Power LED indicator, ON when HD [+12V] is connected to the Motor control interface
	D4	MCU Power LED Indicator. ON when VDDX is regulating to +5V
User Peripherals	SW2	User switch (Active high)
	SW3	User switch (Active high)
	SW7	User HVI switch (Active low)
	SW8	User HVI switch (Active low)
	SW6	HVI Switch connected to VSUP/GND
	SW1	RESET Switch
	R58	Potentiometer connected to HVI
	R65	Potentiometer connected to ADC port AN3
	D13	UserLED - Green
	D14	UserLED - Green
	D15	UserLED - Green
	D16	UserLED - Green
Motor Control	J21	2-Phase Motor control Connector with GND
Communication and Programming Interfaces	J35	OSBDM/USB Connector
	D17	OSBDM PWR LED, ON when OSBDM is successfully enumerated as USB device.
	D18	OSBDM STATUS LED. ON when OSBDM is successfully transmitting as USB device.
	J10/J9	LIN Interface
	J6	LIN Master Enable
	J33	Header selector for OSBDM_RXD/TXD
	J31	SPI/Hall sensor lines with 5.0V and GND





# Software Tools Installation

Download Software and Tools Install Code Warrior Development Studio for Microcontrollers 10.6.4 (Eclipse). Download it from [www.nxp.com/codewarrior](http://www.nxp.com/codewarrior).

**The new S12ZVMB service pack is needed** that just the **CW10.6.4** version supports.

[http://compass.freescale.net/livelink/livelink/234769869/com.freescale.mcu10\\_6.HCS12Z\\_S12ZVMB.win.alpha.sp.v1.0.0.zip?func=doc.Fetch&nodeid=234769869](http://compass.freescale.net/livelink/livelink/234769869/com.freescale.mcu10_6.HCS12Z_S12ZVMB.win.alpha.sp.v1.0.0.zip?func=doc.Fetch&nodeid=234769869)

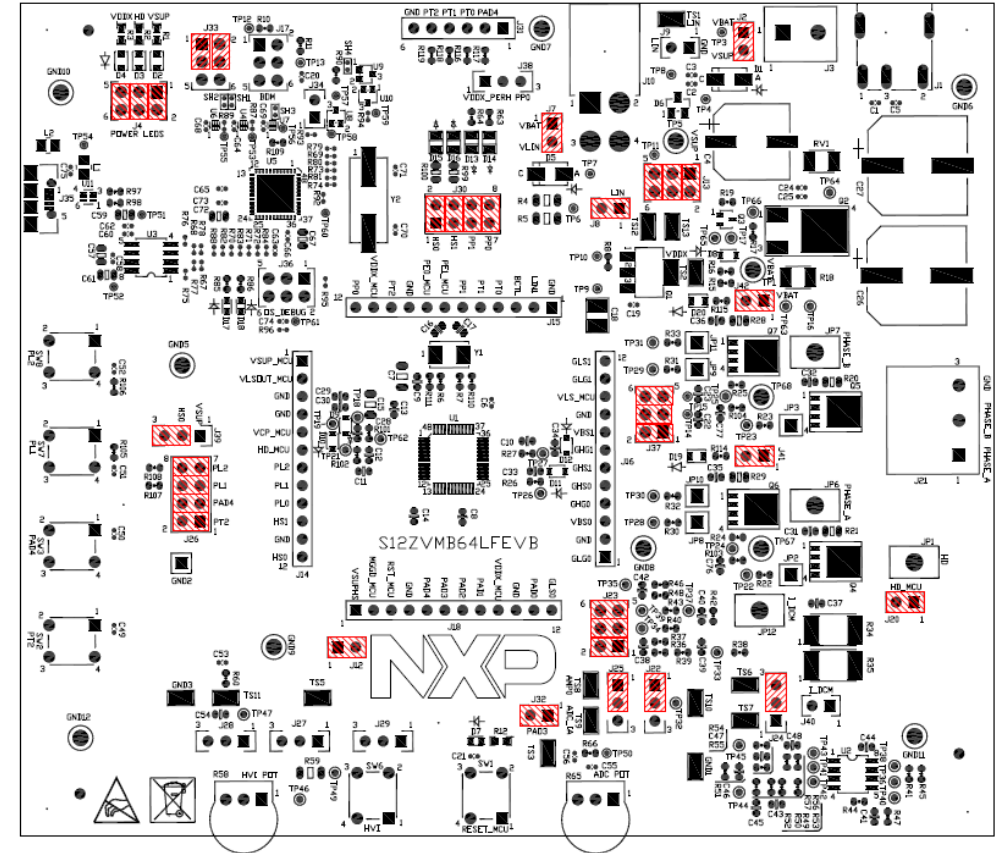
Launch the demo program. The **S12ZVMB64LFEVB** board comes preprogrammed with a small demonstration application that exercises the different modules of the S12ZVMB MCU. To see this demonstration:

- Connect a 2-Phase DCMotor and +12V power source to the EVB.
- Connect a USB cable to the Micro USB type AB connector.
- Press the user-switches **SW7** and **SW8** in order to change the direction motor and stop it (using both switches), also the User-LEDs [D14 and D13 ] will change according the motor direction .



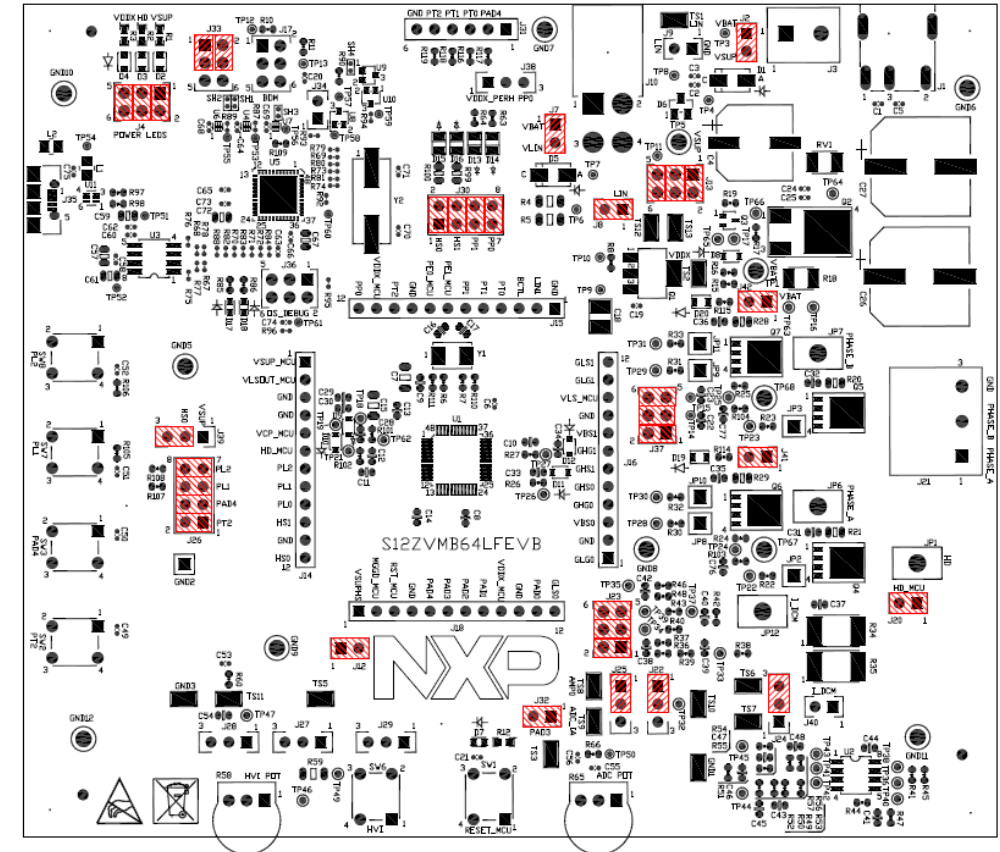
# Jumper Default Configuration

JUMPER	SETTING	DESCRIPTION
J2	1-2	+12V Input voltage is routed to VSUP
J7	1-2	VLIN is routed to VBAT
J8	1-2	LIN Master Mode pullup enabled
J12	1-2	VSUP is routed to VSUPHS
J20	1-2	HD is routed to HD_MCU
J24	2-3	I_DCM is routed to internal current sensing interface
J41	1-2	PHASEA is routed to D14 LED indicator
J42	1-2	PHASEB is routed to D20 LED indicator
J22	1-2	The 2.5V Reference is routed to the pullup resistor for the internal current sensing interface
J25	1-2	Internal current sensing interface is routed to PAD2
J32	1-2	ADC potentiometer is routed to PAD3
J33	1-2	ORSBDM_TX lines are routed to PT0
	3-4	ORSBDM_RX lines are routed to PT1
J4	1-2	Power LED indicator [D2], ON when VBAT [+12V] is connected to the board
	3-4	Power LED indicator [D3], ON when HD [+12V] is connected to the Motor control interface
	5-6	MCU Power LED Indicator [D4], ON when VDDX is regulating to +5V



# Jumper Default Configuration [Continuation]

JUMPER	SETTING	DESCRIPTION
J13	1-2	VSUP is routed to VSUP_BALLAST
	3-4	VDDX is routed to VDDX_MCU
	5-6	VDDX is routed to VDDX_PERH
J37	1-2	VLSOUT_MCU is routed to VLS_MCU
	3-4	VLS0 is routed to VLS_MCU
	5-6	VLS1 is routed to VLS_MCU
J23	1-2	VDDX_PERH is routed to VDDX_5VREF
	3-4	AMPP0 is routed to PAD0
	5-6	AMPM0 is routed to PAD1
J30	1-2	LED-D15 is routed to HS0
	3-4	LED-D16 is routed to HS1
	5-6	LED-D13 is routed to PP1
	7-8	LED-D14 is routed to PP0
J26	1-2	SW2 is routed to PT2
	3-4	SW3 is routed to PAD4
	5-6	SW7 is routed to PL1
	7-8	SW8 is routed to PL2
J39	2-3	HS0 is routed to Pullup resistors in the User-HVI switches (Active low)
*** For S12ZVMB64LFEVB [prototype RevA-29131] J4.pin1 must be routed/connected to J39.pin1		



## Cautionary Notes

- Electrostatic Discharge (ESD) prevention measures should be used when handling this product. **ESD damage is not a warranty repair item.**
- NXP Semiconductors 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 **S12ZVMB64LFEVB** board:
  - 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.



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