



# Quick Start Guide

**TWR-PXS3020**

32-bit Dual-Core Power Architecture® MCU  
for Industrial Control and Safety Applications



# Get to know the TWR-PXS3020



## TWR-PXS3020 Freescale Tower System

The TWR-PXS3020 module is part of the Freescale Tower System, a modular development platform that enables rapid prototyping and tool re-use through reconfigurable hardware. Elevate your design to the next level by building your Tower System today.

## 11V1K-1A S3020 Features

- High-performance 180 MHz e200z7 dual cores
- Dual processing spheres, including: CPU, DMA, interrupt controller, crossbar and MPU
- Two statically configurable modes of operation: Lockstep operation (redundant processing and calculations) and dual parallel mode (independent core operation)
- Fault collection unit monitors and manages fault events
- Error correction coding on RAM and flash memory allows detection/correction of memory errors

### SafeAssure Program: Functional Safety. Simplified.

Freescale's SafeAssure functional safety program is designed to help system manufacturers more easily achieve system compliance with functional safety standards: International Standards Organization (ISO) 26262 and International Electrotechnical Commission (IEC) 61508. The program highlights Freescale solutions —hardware and software—that are optimally designed to support functional safety implementations and come with a rich set of enablement collateral.

For more information, visit [freescale.com/SafeAssure](http://freescale.com/SafeAssure)





# Step-by-Step Installation Instructions

In this quick start guide, you will learn how to set up the TWR-PXS3020 module and run the included demonstration software. For more detailed information, please see the user manual found on the included DVD or at [freescale.com/Tower](http://freescale.com/Tower).

## 1 Connecting TWR-SER

Insert the TWR-PXS3020 and TWR-SER boards into the primary and secondary elevator board. The “primary” and “secondary” card edges for each module are indicated along the card edges.

## 2 Powering TWR-PX3020

Connect the TWR-PXS3020 board to a computer or a wall charger using the provided USB cable. Additionally, the USB connector on the primary elevator can be used to power up the board.

## 3 Using the Serial to USB Bridge

The Freescale MC9S08JM60 serial to USB bridge solution provides a RS-232 equivalent connection to the host computer through the USB communications device class. When plugged in and powered, the USB connection will enumerate as a COM port on the PC. This means any terminal utility program may be used to receive serial data from the USB port. To determine the COM port number for the connection, right click on the My Computer icon and select “Manage,” click Device Manager, find and expand ports (COM and LPT).

NOTE: For Windows XP 64 bit users, please refer to the PXS30 Serial Communications Options document at [freescale.com/TWR-PXS30](http://freescale.com/TWR-PXS30).

## 4 Installing the Software Driver

When the cable is plugged in for the first time, the Found New Hardware Wizard will start. Select the option “Install the software automatically” and the driver will be installed automatically. The CDC Virtual Serial Port is also available on the DVD or at [freescale.com/TWR-PXS30](http://freescale.com/TWR-PXS30).

## 5 Configuring a Communication Terminal

Open Microsoft HyperTerminal or a terminal program of your choice. Create a new connection and use the COM port from step 4. Use the following settings:

- Bits per Second: 115200
- Data Bits: 8
- Parity: None
- Stop Bit: 1
- Flow Control: None

## 6 Running Demonstration Code

Press the Reset button on the board and follow the output information on the terminal screen. The installed program will display example outputs from the device and allow you to interact with the user buttons and board LEDs.

## Additional Software and Tools

- MQX™ Real-Time OS
- Green Hills Software MULTI IDE
- Serial Bootloader Utility
- CodeWarrior v10.x Eclipse Development Studio
- OSJTAG Virtual Serial Port Using USB
- Rapid Application Initialization And Documentation Tool (RApplD)
- FreeMASTER Run-Time Debugging Tool

## I VVK-PA33020 Jumper Options

The following is a list of all jumper options. The default installed jumper settings are shown in white text within the blue boxes and the default function in **bold**.

### Two Position General Jumper Configuration

Jumper	Function
J10	<b>Installed: Connects potentiometer to ADC0 channel 8</b> Removed: Disconnects potentiometer from ADC0 channel 8
J12	<b>Installed: Bootloader mode for OSJTAG</b> Removed: <b>Normal operation</b>
J14	Pin 1 can be used to apply +1.2V Core Vdd if necessary (not required). Jumper installation not recommended. <b>Removed: Normal operation</b>

### Power Supply

Jumper	Position	Function
J15	<b>1-2</b>	<b>Use PMC and ballast circuitry to create +1.2V Vdd core voltage.</b>
	2-3	Supply +1.2V core voltage externally. Apply core Vdd to J14 pin 1.
J5	1-2	Use elevator to supply +3.3V (must power USB on elevator).
	<b>2-3</b>	<b>Use on-board regulator to supply +3.3V.</b>
J17	1-2	Bypass PMC – VREG_INT_ENABLE tied to +3.3. +1.2V supplied externally.
	<b>2-3</b>	<b>Enable PMC – VREG_INT_ENABLE tied to GND. +1.2V supplied with on-board ballast circuitry.</b>
J7	<b>1-2</b>	<b>Connect RESET_B to RESET_SUP_B for PMC enabled mode.</b>
	2-3	Connect RESET_SUP_B to GND for PMC disabled mode.

## Boot Assistance Module (BAM) Configuration

Jumper	Position	Function
J3	1-2	FAB is connected to +3.3V. Used for alternate boot modes.
	3-4	ABS[0] is connected to +3.3V. Used for alternate boot modes.
	5-6	ABS[2] is connected to +3.3V. Used for alternate boot modes.
J3 and J4	J3(2)-J4(1)	<b>FAB is connected to GND. Single chip boot mode.</b>
	J3(4)-J4(2)	<b>ABS[0] is connected to GND. Used for alternate boot modes.</b>
	J3(6)-J4(3)	<b>ABS[2] is connected to GND. Used for alternate boot modes.</b>

## CAN Pinout

Jumper	Position	Function
J20	1	CANH transceiver output
	2	CANL transceiver output
	3	GND



Visit [freescale.com/TWR-PXS30](http://freescale.com/TWR-PXS30) for the latest information on the TWR-PXS30 module, including:

- Board database: Schematics, layout and BOM
- User manual
- Quick start guide
- Software BSPs and CodeWarrior development studio
- Demos and tutorial
- Fact sheet

## Support

Visit [freescale.com/support](http://freescale.com/support) for a list of phone numbers within your region.

## Warranty

Visit [freescale.com/warranty](http://freescale.com/warranty) for complete warranty information.

For more information, visit [freescale.com/Tower](http://freescale.com/Tower)  
Join the online Tower community at [towergeeks.org](http://towergeeks.org)

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