

OVERVIEW

VMX-pi transforms a Raspberry Pi general-purpose computer into an Intelligent Robot Processor / Controller —at a groundbreaking low price point.

Key specifications include:

- 30 Digital IO Channels
- 4 12-bit Analog IO Channels
- Quadrature Encoder decode
- 9-axis navX-technology IMU w/200Hz update rate
- Digital Communication Interfaces including CAN, SPI, I2C and UART
- Hi-speed internal communication with Raspberry Pi
- 12V DC input power supply for Raspberry Pi and external sensors at 5V and 3.3V DC.
- Real-time Clock and high-resolution sensor timestamps

FEATURES

- **Supported by VMX Robotics Toolkit:**
 - Vision Processing and Video Streaming Tools
 - Real-time Linux for low-latency control applications
 - Robot Operating System (ROS) Node and Master
 - Network Time Server
- Locking connectors
- Design files for 3d-printed enclosure
- **VMX-pi Aero:** adds a barometric pressure sensor for altitude measures

▶ VMX-pi Vision/Motion Processor & Robotics Controller

Supercharge your robot with:

- Vision Processing
- Motion Processing



Control your robot with:

- Digital I/O and PWM Generation

Connect your robot with:

- Wired Communication Interfaces
- Wireless Communication Interfaces
- Quadrature Encoders
- Analog Inputs

Synchronize multiple robots with:

- Battery-backed Real-time Clock & Network Time Server

BENEFITS

VMX-pi

30 Digital IOs	4 Analog IOs	SPI, I2C, TTL UART	CAN 2.0b	9-axis IMU / Motion Processor	12VDC Supply
					5/3.3V Voltage Translation
					Battery-backed Realtime Clock

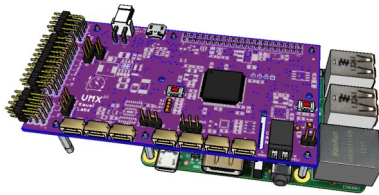
Raspberry Pi 3

4-core 1.2Ghz 64-bit ARM Cortex-A53	1GB DDR RAM	Broadcom VideoCore IV GPU	4 USB 2.0 Ports
	SD Card	CSI Camera Interface	
Ethernet Networking	2.4Ghz 802.11 Wifi	Bluetooth 4.1	HDMI

Communication Interfaces (including Raspberry Pi)

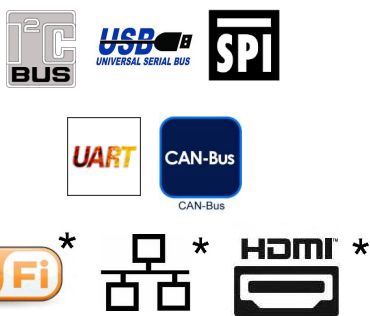
TYPE	MAXIMUM SPEED
USB 2.0*	12 Mb/s
Ethernet*	100 Mb/s
Wifi (802.11n)*	150 Mb/s
Bluetooth 4.1*	25 Mb/s
CAN 2.0b	1Mbps
SPI	8Mhz
I2C	400Khz
UART	230.4 kbps

EASY-TO-USE DESIGN



Raspberry Pi 3 Configuration

Raspberry Pi 3 Configuration



* These interfaces provided by the Raspberry Pi

I/O Interfaces

TYPE	Description	CAPABILITIES
Digital I/O	30 Channels	PWM Generation & Capture, Quadrature Encoders, Interrupt Inputs, SPI, I2C, UART
Analog I/O	4 Channels	12-bit A-D Converter, Analog Triggering

Key Features

FEATURE	DESCRIPTION	BENEFIT
Automatic IMU Calibration	Self-calibration ; storage of calibration in flash memory; continuous gyro recalibration during operation	High-accuracy yaw, pitch and roll measures with no calibration effort required.
2.1A Raspberry Pi & .5A External Device Power Supplies	Distributes power from a single 12VDC Supply to all compute and sensor resoruces	Simplifies Robot electric wiring
Voltage Translation & Circuit Protection	Jumper-selectable 5V or 3.3V signals and power supply to external sensors	Flexible device interfacing
Open-source Libraries and Sample Code	Libraries and Samples for developing Robot Applications	Accelerated application development