

Definitions

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AC97

AC'97 (which is short for Audio Codec 97) is Intel's Audio Codec standard developed in 1997. This standard is used mainly in sound cards.

ADC

The Analog-Digital Converter (ADC) is a circuit designed to convert an analog signal (such as the changing voltage of a battery or the sound coming into a microphone) to a digital signal (such as any kind of data stored on modern computers which is represented as 0s and 1s).

ARM Cortex

ARM cortex refers to a family of Reduced Instructions Set Computing architectures that essentially make up the electronic circuits within the silicon of the microprocessors that PHYTEC employs on our System On Modules. This includes Cortex-A7s and Cortex-M4s for example, as featured on the phyCORE-i.MX7.

Boot Loader

The boot loader is the first program that is run when your board is connected to power. The boot loader's main task is to pull the software that is your operating system from flash memory and load it into RAM. Boot loaders are very hardware specific.

BSP

A Board Support Package (BSP) is a bundle of software that contains drivers and configures interfaces of an operating system so that it can run on a specific hardware setup.

CAN

A Controller Area Network (CAN) is a robust communication standard that describes how various devices such as microcontrollers can communicate to each other.

CPU

A CPU or Central Processing Unit is a specialized electronic circuit that executes instructions written in software. CPUs are the brain of all computers.

EEPROM

EEPROM stands for electrically erasable programmable read-only memory. It is a small and cheap memory storage device that is non-volatile, meaning that it preserves its data contents even once power is removed.

eMMC

The embedded Multi-Media Controller (eMMC) refers to an integrated circuit consisting of both NAND flash memory and a flash memory controller all implemented in the same package. It can be thought of more simply as a non-volatile memory storage device, which means that it preserves its data contents even once power is removed.

Ethernet

Ethernet is a communication standard commonly employed in local area networks. The Ethernet standard describes how devices on the same network can format/transmit packets of data such that other devices on the network can recognize, receive, and process them. The Ethernet cable is the actual type of physical cable that is used to transfer data within a network using the Ethernet communication protocol.

Ethernet PHY

An Ethernet PHY is a chip that implements the Ethernet physical layer. In other words, the Ethernet PHY is a piece of hardware that directly controls the data sent and received via ethernet.

GPIO

A General Purpose Input-Output is a pin on a processor or controller that is undesignated for any specific tasks and is therefore available for general use. The characteristics of the signal/pin (whether it is an output or input for example) are configurable at run time.

I2C

I-squared-C (aka inter-integrated circuit) is a communication standard used to allow multiple devices to communicate. I2C is synchronous, best at low speeds/short distances, and supports multiple masters and slave devices. For this reason it is commonly used for inter-board communication between chips.

I2S

I-squared-S (aka inter-IC Sound) is a communication standard used to transfer sound information between digital audio devices. Despite the similarities in name, I2S is unrelated to I2C.

IC

An integrated circuit (IC), or perhaps more commonly known as a microchip, is a set of electronic circuits set within a semiconductor material that is normally silicon.

JTAG

JTAG (named after the Joint Test Action Group that invented the standard) is a standard for verifying software designs and testing the successful manufacturing of PCBs.

Kernel

The Kernel is a program that is the core of a computer's operating system.

LVDS

Low-voltage differential signaling (LVDS) is a standard that specifies the electrical characteristics of a differential, serial communication protocol. The specification calls for sending data as the difference in voltage between a twisted pair of wires that allows for longer transmissions with increased resistance to environmental noise all at a faster speed and lower voltage.

MIPI

MIPI comes from the MIPI Alliance who originally coined MIPI to mean "Mobile Industry Processor Interface." Since its inception however the organization has gone on to adopt a much broader range of interface specification rendering the original MIPI acronym obsolete. Today, MIPI is not used as an acronym and is instead simply the name of the organization that defines interface specifications deployed in some devices.

NAND

NAND flash is a type of non-volatile memory (it doesn't need power to preserve the data). It is less expensive than its cousin [NOR](#) flash and comes in larger storage capacities. It is faster than NOR flash when it comes to deleting and writing new data but it is slower when it comes to reading that data.

NOR

NOR flash is a type of non-volatile memory (it doesn't need power to preserve the data). It is more expensive than its cousin [NAND](#) flash and takes longer to delete and write new data but NOR flash has the advantage in read speeds.

NXP

Our partner, NXP, is a silicon vendor that manufactures various integrated circuits that include processors such as the i.MX6, i.MX7 and i.MX8 families.

OLDI

OLDI is short for OpenLDI which is a high-bandwidth digital-video interface standard for connecting graphics/video processors to flat panel LCD monitors.

OpenEmbedded

OpenEmbedded is a cross-compilation tool incorporated within [The Yocto Project](#).

OSPI

OSPI, also known as Octal SPI, is a variant of [SPI](#) that makes use of 8 parallel data lines to increase throughput when communicating between devices.

PCIe

PCIe stands for Peripheral Component Interconnect Express and is an interface for connecting high speed components to your board. This could include things like network adapters, wifi cards, and others.

PWM

PWM stands for Pulse Width Modulation. It is a strategy used in digital circuits to emulate analog outputs. A PWM signal is a long train of square pulses of voltage that are either a logic one or zero (this could be five and zero volts for example). By modulating the width of the pulses you can create an average voltage over time that is between the logic one and zero. It is commonly used to control brightness of LEDs or the speed of a dc motor.

QSPI

QSPI, also known as Quad SPI, is a variant of [SPI](#) that makes use of 4 parallel data lines to increase throughput when communicating between devices.

Raspberry Pi Hat

Intended for Raspberry Pi platforms, HATs are add-on boards that bring extra functionality to Raspberry Pis like motor drivers, LEDs, you name it! Raspberry Pi HATs are defined as "Hardware Attached on Top".

RGMII

RGMII stands for reduced gigabit media-independent interface which is a standard that defines the signals a processor uses to communicate to an [161580242](#).

RTC

The "Real Time Clock" is a hardware component whose sole purpose is keeping track of the system time even when power is removed from the board. It is necessary for a small battery or large capacitor to keep the clock powered when the board supply is removed.

SDK

A Software Development Kit is a set of software development tools that aid in the creation of applications intended to run in specific software and hardware environments.

Shell

A shell is the outermost layer of an operating system that allows for users to interact with the services that the operating system provides. This can be in the form of a graphical user interface (GUI), however, in the case of embedded hardware it is generally a command line interface (CLI).

SPI

The Serial Peripheral Interface (SPI) is a synchronous serial communication interface used for short-distance communication primarily used between chips in embedded systems.

TI

Texas instruments, our partner, is a silicon vendor that manufactures various integrated circuits that include processors such as the Sitara family of processors.

UART

The Universal Asynchronous Receiver/Transmitter is a hardware component whose sole job is sending and receiving data to/from another UART device. UARTs (often multiple) are generally packaged alongside computing devices like processors to allow them to communicate with other processors or controllers.

USB

USB stands for Universal Serial Bus which is a standard that defines specifications for cables, connectors, protocols for communication and power supplied between computers and peripheral devices connected to the same bus.

WatchDog

A Watchdog is a feature either implemented in hardware or software that automatically restarts a system should it ever face a hangup or problem that persist for longer than a pre-specified amount of time. Critical remote systems such as those deployed in space rely heavily on WatchDogs to ensure that systems continue functioning without a user needing to manually press a restart button.

Yocto Project

The Yocto Project is a set of tools designed for configuring a custom operating system to run on custom hardware. Yocto isn't a Linux distribution. Yocto is used to compile custom distributions of Linux.