

Industry's First Standard Product Peripherals I/O Chip



OVERVIEW

The ComCentrix™ L1500 is a high-performance, highly integrated I/O solution designed for use by most peripherals, such as printers, digital copiers, and Multi Function Products (MFPs). The L1500 chip integrates several peripheral functions from the LSI Logic CoreWare® library including a USB 1.1 device controller, a USB 1.1 transceiver, an IEEE-1284 parallel port, two 16550-compatible UARTs, a fast Infrared port, two programmable timers, and 16 general-purpose I/Os, as well as a 32-bit, 33 MHz PCI bus compatible with most popular embedded processors. This device is manufactured using LSI Logic's G12™ 0.18 μ process with 3.3-volt I/Os and 1.8-volt core. The L1500 is packaged in a 208-pin plastic quad flat pack (PQFP).

I/O BLOCKS BY FUNCTION

Ethernet 10/100: IEEE 802.3 compliant Media Access Controller (MAC) with integrated DMA buffer management unit, large independent (2k Bytes) receive and transmit FIFOs as well as MII/M physical media interface. Supports full duplex 10 and 100 Mbit/s receive and transmit, collision handling and retry algorithm.

USB Device Controller: USB 1.1 (Universal Serial Bus) compliant interface, providing fast, bi-directional serial data transfer and control information for any peripheral device function for low speed (1.5 Mbit/s) and full speed (12 Mbit/s) modes. Supports control, isochronous, bulk and interrupt transfers between the peripheral device and the USB host. Handles USB bit level protocol (Serial Interface Engine), automatic retry of failed USB packets and disconnect signaling.

USB 1.1 Transceiver: The integrated USB Transceiver provides a USB 1.1 compliant physical interface (3.3V, 12 MHz/1.5MHz) and eliminates the need for any external transceiver components.

IEEE-1284 Parallel Port: IEEE 1284-1994 compliant bi-directional parallel peripheral interface with integrated DMA controller. Supports 1284-mode negotiation, device ID, compatibility (Centronics) mode, nibble mode, byte mode, EPP (enhanced parallel port) mode and ECP (extended capabilities port) mode.



*Standard product for peripheral
I/O design*

FEATURES

- USB 1.1 device controller with integrated DMA Controller and FIFOs for 12 active USB endpoints
- USB 1.1 Transceiver
- IrDA port
- IEEE-1284 ECP peripheral parallel port with integrated DMA controller
- PCI Interface, 2.2 compliant
- DUART
- Two independent Programmable Timers
- 16 programmable General-Purpose I/O s

BENEFITS

- Lower development effort
- No need to redesign system ASIC to accommodate evolving I/Os
- Reduced component count
- Processor independent
- Reduced schedule risk
- Lowers system cost
- Accelerates time-to-market



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Standard Product Peripherals I/O Chip

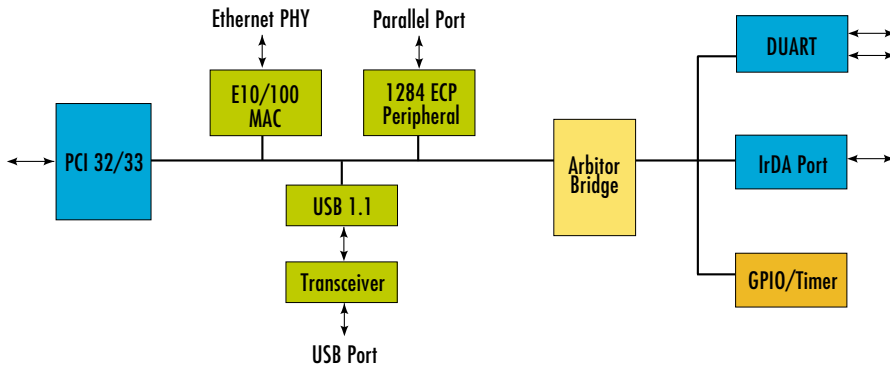


Figure 1. Functional Block Diagram

Infrared Port: IrDA (Infrared Data Association) specification 1.1 compliant serial interface. Supports asynchronous and synchronous (4 PPM or HDLC) framing modes. Transfer rates of 9600 bit/s - 115.2 kbits/s (asynchronous SIR mode), 576 kbit/s - 1.152 Mbit/s (HDLC synchronous MIR mode) and 4 Mbits (4PPM synchronous FIR mode).

DUART: Two (Universal Asynchronous Receiver/Transmitter) NS16550 compatible Serial ports.

Programmable Timer: Two independent programmable timers with periodic or interval modes usable for embedded system control and interrupt functions. Supports programmable freeze/run, up/down count and 6 trigger point registers.

General Purpose I/O: 16 independent channels/pins that can be configured as inputs or outputs for control and interfacing of external devices such as front panel LEDs, LCD displays, buttons and switches for external interrupt sources as well as for interfacing to serial ROMs or NVRAMs.

DEVELOPMENT TOOLKIT

LSI Logic offers a comprehensive development system to accelerate integration of ComCentrix products into customer designs and to reduce overall design and product development cycles. The development system consists of a standard form factor ComCentrix PCI adapter card and LSI Logic's MiniRISC BDMR4020 development board. The ComCentrix PCI adapter card connects to one of the BDMR4020's PCI slots, sample I/O drivers for ComCentrix running under VxWorks RTOS TM will be available to facilitate driver development and debug efforts. For more information contact: printing-division@lsil.com

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