Preliminary Product Information

SL11R-IDE USB to ATAPI/IDE Controller

The SL11R-IDE from ScanLogic Corporation, is a low cost, high speed Universal Serial Bus (USB) to ATAPI/IDE Controller. It contains a 16 bit RISC processor with built in BIOS ROM that translates USB ATAPI host commands to variety of IDE disk drives, such as HDD, FD, CD-ROM, ZIP Drives and other external storage devices. SL11R-IDE interfaces to external serial flash EEPROM, which contains USB device configuration and "customer Disk drive specific functions". New functions can be programmed into the Serial EEPROM by uploading it from the USB Host PC. This unique architecture provides the ability to upgrade and support variety of IDE/ATAPI based disk drives, without changing peripheral hardware. The SL11R-IDE's Memory/GPIO bi-directional Port supports both 8 and 16 bit PIO modes. The USB port supports up to 12 Mbits/sec. the maximum USB transfer rate. All USB protocol modes are supported; Isochronous (up to 1024 bytes), Bulk, Interrupt and Control. The SL11R-IDE power source requires only 3.3v. SL11R-IDE uses IDE as physical interface, but commands to external disk can be either IDE or ATAPI commands. ATA-1 and ATA-2 based disk drives are supported. Maximizes Disk drive throughput rate is up to 1Mbytes/sec. SL11R-IDE's unique architecture combined with ScanLogic's comprehensive PnP USB/ATAPI drivers, provides ScanLogic's customers the ability to support verity of DISK drive solutions. ScanLogic offers other optimal USB products for a variety of peripherals such as:

PC Peripherals
- Scanners
- Digital Cameras (video & still)
- Printers
- Facsimiles
- Multi-function Units

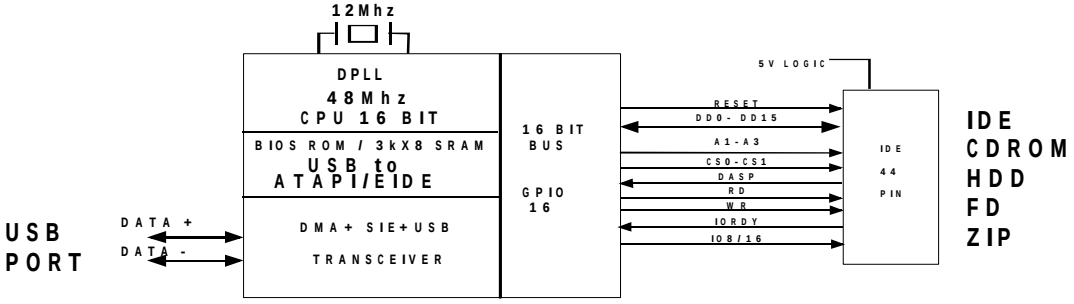
- External Storage Devices
- CD-ROM
- DVD player
- External Modems
- Digital audio

Communications
- Computer Telephony (CTI)
- Video Conferencing
- Cable modems
- DBS/DSS Satellite
- ISDN/T1

Other
- Embedded Systems
- Data Acquisition
- Note Pads
- Gamepads
- Digital joystick

The unique capabilities of SL11R-IDE

- **48 MHz RISC Processor -** 16 bit processor with built in BIOS ROM. It provides comprehensive I/O support including USB functions, ATAPI/IDE emulation, Serial EEPROM programming, among other functions, thereby eliminating the need for time consuming firmware development.
- **Internal SRAM -** 3K x 8 internal multi-purpose SRAM provides "Double buffering Ping -Pong" operation scheme. Incoming/Outgoing sector data , 512/1024 bytes , are double buffered.
- **IDE Port -** 8 or 16 bits, data port, supports Master/Slave multiple disks . Either ATAPI or IDE commands, Supports ATA-1 and ATA-2 standards. Max Disk operation throughput rate is up to 1 Mbytes/sec.
- **USB Port -** Built in USB Transceiver, up to 12Mbits/sec throughput rates in all modes; Bulk, Isochronous, Interrupt, and Control modes - Isochronous mode supports packet sizes up to 1024 bytes .
- **Re-Programmable -** Executable code specific for variety of IDE based Disk Drives can be downloaded through USB host PC and can be programmed into a serial EEPROM to easily modify or update product functionality.
- **WDM ATAPI/IDE Drivers -** Development Kit includes generic PnP USB mini-port driver, ATAPI Driver for Windows 98 /NT2000 for IDE Disk Drive class devices . Development time is significantly reduced.
- **Power Modes -** Includes Suspend, Resume and Low power modes .
- **Digital Phase Lock Loop (DPLL) -** Digital PLL incorporated in the SL11R-IDE requires only 12 MHz external clock or crystal.



SL11REIDE - USB TO ATAPI/EIDE CONTROLLER

SL11R-IDE USB to ATAPI/IDE Controller

Features:

- 48 MHz 16 bit RISC Processor , handles the protocol between the USB port and the driver, translates ATAPI protocol packets to IDE, handles data buffers, and emulates the IDE bus signals.
- Up to 16 bit Programmable Bi-directional Data I/O or DMA port, including Memory port is used as the main IDE port. Data is moved in PIO mode either in 8 or 16 bit mode.
- Up to 24 bit General Purpose I/O (GPIO) channels.
- 3Kx16 internal Mask BIOS ROM, supports USB to ATAPI/IDE macros, USB functions, 2K and 16K serial EEPROM programmability, DRAM, UART, and other functions. Executable code can run from either internal RAM, ROM, or external ROM. Also, available extended external SRAM or DRAM to store disk cash data.
- 3Kx8 internal general purpose SRAM buffer. Memory buffer can be configured as "Double port buffer" multiple sector data buffer, 512 bytes or 1024 bytes simultaneously transferred from Disk to USB port and via versa.
- Max disk operating throughput rate (under both Windows98 and DOS modes) is up to 1Mbytes/sec, includes USB overhead.
- SL11R can use 12 MHz external crystal or clock. Other clocks such as 48 MHz are generated by built-in DPLL (Digital PLL).
- Support for variety of DISK specific functions or protocol is available by downloading specific related code via the USB port for it to be automatically programmed into external serial flash EEPROM, by the BIOS ROM.
- USB Port (12Mbits/sec) including built-in USB transceiver. All USB standard protocol modes are supported; Isochronous mode (up to 1024 packet size), Bulk, Interrupt and Control modes.
- Four end points. Each endpoint utilizes a bi-directional DMA port to move data to/from the USB port to/from internal Memory buffer. Independently, data can be sent/received by external device.
- USB Plus 'n' Play product.
- Suspend, Resume and Low Power modes.
- Package: 100 LPQFP, 0.5 micron.
- VDD : 3.3VDC.

Developers Kit

For all of its products, ScanLogic offers Development Kits (DVKs), USB to IDE reference design board, training, and integration assistance from an experienced staff of engineers . **By using the DVKs, ScanLogic customers can have a working USB product within 3 weeks.** The following items are included in the SL11R-IDE Development Kit:

- WDM Windows 98/NT2000 driver, and ATAPI to USB driver object code, optional source code
- USB to ATAPI/IDE protocol translator firmware source code example
- PnP USB ATAPI Disk Drive Demo object code, optional source code examples is available
- Application notes

ScanLogic Corporation

ScanLogic Corporation was established in 1995 as a semiconductor company to develop, manufacture and license innovative, cost-effective chip based interface solutions for manufacturers of high performance peripherals including, Scanners, Digital Video and Still Cameras, MFU devices, Printers, Fax's, CTI devices, Cable Modems, External Storage Devices, and Embedded Systems. ScanLogic products combine Universal Serial Bus (USB) controllers, video compressors, signal processors, CCD / CMOS imager interfaces, memory controllers and software drivers to provide cost-effective, highly integrated single chip solutions for peripheral manufacturers.

4 Preston Court
Bedford, MA 01730
Tel. 781. 271.1750
Fax. 781. 271.1760
Sales@scanLogic.com
www.scanLogic.com