MICRO/SYS

Professional-Grade Development Kit: i.MX515 ARM Cortex-A8 StackableUSB™ Computer (Linux-ready)

PROCESSORS SUPPORTED

i.MX515

Order Information

United States

Tool Order Number
Processor Part Number

Manufacturers | Development tools | Architecture | Resources | Language | Change location

Order Code	Unit Price			
DK1651-LINUX	IN STOCK		BUY NOW	QUOTE

The DK1651-Linux is a turn-key development kit with an extensive Linux tool base allowing for immediate out-of-the-box development for the SBC1651 i.MX515 ARM Cortex-A8 StackableUSB computer (includes board, complete cable set, industrial enclosure, firmware, and docs).

The SBC1651 is ideal for high-performance, low-power embedded applications. Freescale's i.MX515 ARM Cortex-A8 CPU operates at 800MHz delivering the performance needed to run multimedia-rich applications in embedded environments. Offering several embedded I/O features, the SBC1651 also consumes minimal power, satisfying the demanding environmental conditions in which OEMs must operate.

A high degree of integration allows a variety of I/O functions to be included on the SBC1651. On-board peripherals include dual Ethernet, USB On-The-Go, a real-time clock, watchdog timer, audio support, TV out, 24-bit LVDS flat panel display output, 4-wire touchscreen interface, two PWM outputs, a SATA HDD port, two SD/MMC card slots, 1-Wire interface, seven serial ports, and 24 lines of discrete I/O. For additional expansion, the StackableUSB interface allows for rugged, reliable board-to-board communication via USB, I2C, and SPI.

All these features make the SBC1651 ideal for handheld, mobile devices or remote applications requiring rich connectivity and low power.

TECHNICAL DETAILS:

At the heart of the SBC1651 is the Freescale i.MX515 multimedia applications processor, a System on Chip (SOC) offering high- performance processing optimized for the lowest power consumption. The core of i.MX515 is an 800MHz ARM Cortex-A8 CPU. The CPU is augmented by a floating-point coprocessor, ARM's NEON SIMD media accelerator, and OpenGL ES 2.0 and OpenVG 1.1 hardware accelerators for fast, power-efficient graphics operations.

The i.MX515 SOC integrates many peripherals, including an interrupt controller, watchdog timer, SDRAM and flash memory controllers, three High-Speed USB ports, one Full-Speed On-The-Go USB port, a 10/100 Ethernet MAC, three 16C550 UARTs, 1-Wire interface, 24-bit flat panel display output, 4-wire touchscreen interface, an audio port, and PWM and TV outputs.

In addition to the peripherals built into the i.MX515, the SBC1651 packs on a second 10/100 Ethernet port, four more 16C550 UARTs, a Controller Area Network (CAN) controller, and 24 bits of 82C55A-compatible programmable parallel I/O.

The SBC1651 offers three boot options: A dedicated 4MB SPI NOR flash memory, a partition of the NAND flash, and a bootable SD/MMC card slot.

The SBC1651 memory subsystem provides 512MB of DDR2 SDRAM for application data. The 4MB SPI NOR flash memory holds the bootloader and operating system. Up to 2GB NAND flash is also available for operating system and non-volatile user storage.

If a larger program or data storage space is required, or if portability is needed, there are two options for expansion. Plug in an SD card to the second SD/MMC card slot, or use the SATA HDD connector to attach an external hard drive.

Seven (7) 16C550-compatible RS232 serial ports allow communication with low-speed devices. COM7 is software-configurable for half-duplex RS485 communication.

The SBC1651 can be powered from an external 5 VDC source or a battery. If external power is supplied while a battery is plugged in, the battery will be recharged. Advanced power management is enabled by the new Freescale MC13892.

The SBC1651 becomes a powerful front-end processor for control applications with the standard StackableUSB expansion. This popular I/O channel accommodates multiple I/O boards on the top side and/or the bottom side of the board without use of a hub.

For true 32-bit application development, the SBC1651 supports 32-bit operating systems such as Linux, Windows CE, VxWorks, and Android. All have full tool suites available, including compilers and debuggers.

For pre-configured sets of options, Micro/sys can provide OEMs with a single part number for ordering. In addition, custom versions of the SBC1651 are available. Please call Micro/sys Technical Sales for details.

SPECIFICATIONS:

Mechanical:
- PC/104 mounting holes
- 3.55" (plus I/O region) x 3.775" x .6"
- Installed Secure Digital (SD) cards extend past edge of board opposite the StackableUSB connector
- If installed, Ethernet connector on top side has height of .535"

Power Requirements:
- +5v ±5% at TBD A typical, 850mA max
- Battery input voltage up to 4.8V

Environmental:
- Operating range 0° to +70°C
- -40° to +85°C storage
- 5%-95% relative humidity, non-condensing

Processor Core Section:
- Freescale i.MX515 multimedia applications processor
- 800MHz clock rate
- ARM Cortex-A8 CPU core
- Hardware graphics accelerators (video, OpenGL ES 2.0 and OpenVG 1.1)
- JTAG (IEEE 1149.1) debug interface

FPGA:
- Xilinx Spartan 6 LX
- MicroBlaze Processor Sub-System0MHz clock rate

On-board Memory:
- 512MB DDR2 Synchronous DRAM
- 4MB SPI NOR flash
- 1-4GB NAND flash (option)

Memory Expansion:
- Two (2) SD/MMC card slots
- SATA HDD connector (option)

Watchdog Timer:
- Program must refresh watchdog timer periodically, or system will be reset
- Enabled through software

COM1-COM7 Serial Ports:
- Seven (7) asynchronous serial ports
- 16C550-compatible
- RTS and CTS modem controls (all except COM3)
- RS232 on all channels
- COM7 RS485 half-duplex
- Optional RS485/RS232 configurations

Ethernet Ports:
- Dual 10/100BASE-T Ethernet ports
- Standard RJ45 connectors
- FPGA configurable Ethernet options available*

USB:
- One (1) Full-Speed On-The-Go USB 2.0 port, providing device and limited Host functions, Micro-AB connector
- Three (3) High-Speed USB 2.0 Host ports, StackableUSB connector
- Transfers at High-Speed 480Mbit/sec, Full-Speed 12Mbit/sec, or 1.5Mbit/sec
- FPGA configurable USB options available*

Controller Area Network:
- CAN version 2.0B, 1Mbit/sec
- Standard and extended data and remote frames
- Two (2) receive buffers and three (3) transmit buffers with prioritized message storage
- FPGA configurable CAN options available*

Real Time Clock:
- RTC with rechargeable on-board battery

Digital I/O:
- 82C55-compatible digital I/O:
  - 24 TTL bi-directional signals
  - Direction programmable in three (3) groups of eight bits

  - 470-ohm current-limiting resistors on all lines
- 4-wire touchscreen interface
- I2C (on StackableUSB connector)
- SPI (on StackableUSB connector)
- 1-Wire interface
- Two (2) PWM outputs
- FPGA configurable DIO options available*

Audio/Video I/O:
- Microphone input, stereo line in/line out, headphone out
- FPDLink 24-bit LVDS/TFT flat panel display transmitter
- TV out

Additional FPGA Configurable I/O*:
- Pulse width modulation (PWM)
- SPI
- I2C
- Irda
- Keypad
- Alpha numeric display
- Opto 22 Interface
- 82C54 timers and counters
- COM ports

External Connections:
- 40-pin header for COM1-COM7, RS485
- Two (2) 40-pin headers for digital I/O and CAN
- 50-pin header for LVDS/TFT display
- 20-pin header for Audio and TV OUT
- 20-pin header for Touchscreen and Keypad
- Two (2) 8-pin modular RJ45 jacks for Ethernet
- Two (2) SD/MMCn card slots
- SATA HDD connector
- Mini-B USB connector
- 2-pin locking header for reset
- 3-pin removable terminal strip for power input

Development Kit:
- Single Board Computer
- Complete cable set
- Industrial enclosure
- Documentation and sample software

*Available with "-FPGAxxx" option, contact a Micro/sys sales representative for more information.

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