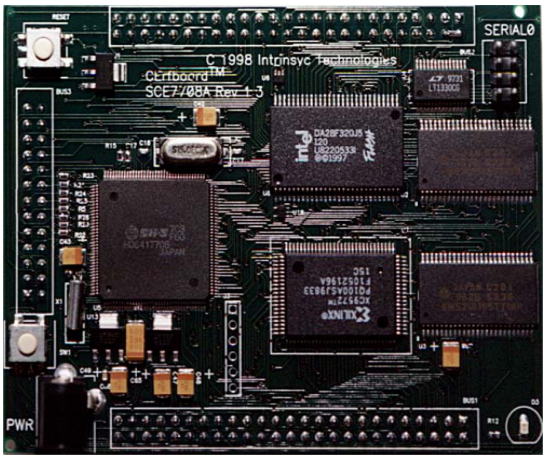
CErfBoard™ v1.0 for Windows CE

Internet Enabled Embedded Reference Platform utilizing Intrinsyc's Distributed Embedded Computing Framework (DECF) Technologies



Product Overview

CErfBoard™ is a member of Intrinsyc's exciting new DECF technology Reference Platforms.

Coupled with Hitachi's powerful **SuperH RISC**™ processor and Intrinsyc's DECF technologies which include the extensible **Rainbow**™ embedded Web Server and **deviceCOM**™ networking, CErfBoard brings Windows CE embedded Internet applications into markets that have previously been the sole domain of other proprietary operating systems.

OEMs can use CErfBoard reference platforms and Intrinsyc's other DECF software technologies to quickly and economically integrate embedded Internet functions into a wide range of Windows CE based devices such as home entertainment and security systems, point of sale systems, and industrial and automotive control systems.

Any embedded system with a need for low-cost, simple remote Internet connectivity, distributed computing, data collection, administration and management can be based on CErfBoard DECF technologies.

These designs are also supported by Intrinsyc's **Integration Expert**™ development tools for Windows CE and its **WinFT**™ embedded software technologies.

** separate data sheets available from Intrinsyc*

Features and Benefits

CErfBoard DECF technologies are a winning combination of low-cost, high performance hardware and Internet-enabled access and extensibility software that is backed up with value-added design services.

Cost Effective Hardware – Powerful Hitachi SuperH RISC processor architecture, without display or keyboard support. Includes basic serial and digital I/O with reduced OS and application memory footprint.

Small Windows CE Image – basic operating system image can be as low as 300K. Typical fully featured Internet-enabled applications run in a total of <1MBytes of memory.

Internet Enabled –Intrinsyc Rainbow web server provides all the User Interface functionality through remote standard PC based web browsers connected to the Internet/Intranet. Rainbow provides an extensible framework on which custom applications can easily be built.

Remote Support –Rainbow Remote Management System (RMS) provides Internet-based remote Operations, Administration and Management (OA&M) capabilities.

DCOM Support* –Intrinsyc deviceCOM provides DCOM-compatible (Distributed Component Object Model) framework for powerful distributed application development and deployment.

Tools* –Intrinsyc IX for CE tools allow developers to rapidly create minimum memory footprint OSes and applications.

Software Watchdog* –Intrinsyc WinFT technology provides software watchdog and API (Application Programming Interface) for incorporation of fault tolerance into high-reliability applications.

Value-Added Services* – CErfBoard provides the starting point for specific customer projects. Hitachi and Intrinsyc can engineer custom solutions through a complete range of specialized services from system design to full turnkey solutions.

DECF RAINBOW INTRINSYC Software Inc.

Technology Overview

Internet Protocol Support

CErfBoard uses Windows CE's built-in Internet protocols including TCP/IP, UDP, SLIP, PPP, and TAPI. CErfBoard augments this connectivity with higher-level HTTP and DCOM-compatible support.

The Rainbow web server is HTTP 1.1 compliant, occupies less than 80K of memory, and is extensible via BGI's (Binary Gateway Interface), a server extension mechanism similar to the standard Microsoft ISAPI (Information Server API).

BGI's can be used to implement custom functions on the device to manipulate the hardware peripherals, operating system or the applications. Rainbow also supports User Authentication and SSI mechanisms.

Remote System Management Support

CErfBoard includes the Rainbow RMS, a collection of web server BGI extensions and site administration tools that provides:

- **File Manager** – full remote file system navigation and manipulation, including file copying, renaming and deletion
- **Application Manager** – remote installation or removal of installed applications
- **Process Manager** – full remote visibility and control over the active processes and threads
- **Registry Manager** – full remote registry editing capabilities
- **OS Image Manager** – full remote image download, flash update and system reset

DCOM Support

DCOM is the industry standard distributed object model technology developed by Microsoft. deviceCOM is Intrinsyc's implementation of a robust, flexible DCOM-compatible framework for Windows CE.

Coupled with deviceCOM, CErfBoard becomes a natural server platform for tightly integrated, distributed embedded systems such as factory and building automation applications, where support for existing DCOM-based standards such as OPC are required for Windows CE.

Development Tool Suite

Intrinsyc's Integration Expert for Windows CE is an essential companion to the Microsoft Platform Builder (i.e. ETK) for CE. This suite of powerful, automated tools gives developers the ability to create minimal memory footprint systems, accurately and quickly.

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Specifications

Software Development Environment

System Requirements:

- Microsoft Windows NT 4.0
- Microsoft Windows CE Toolkit for VC++ v5.0
- Microsoft Windows CE Platform Builder (i.e. ETK)

Tools and Utilities included:

- Rainbow v2.1 ODK
  - Visual C++ 5.0 Wizards for BGI creation
  - Sample BGI with source code included
  - Sample server loaders
  - Online Help and Tutorials
- Rainbow RMS v1.0 for CErfBoard
  - with OS Image Manager
  - source code for serial driver, boot loader and other utilities

Hardware Development Environment

Main Board:

- **Processor** - Hitachi SuperH RISC SH3 7708 @ 60MHz **Memory** – 4 or 8MB Flash, 16-bit data bus, 4 or 8MB SDRAM, 32-bit data bus
- **I/O** – 1 RS232 port, 16 digital lines
- **Indicators** – one LED
- **Switches –** one Reset switch, one Normally Open input switch
- **Power –** 5VDC, 150mA
- **Expansion –** address/data buses, power and control signals
- **Dimensions –** 115mm by 85mm
- **Design Source & Netlists Available**

Daughter boards:

- Flash Emulator Adapter
- Additional I/O: 2 serial ports, 1 parallel port, Ethernet: NE2000 compliant