Development Tools

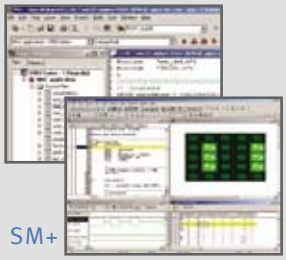
Tools and Services for the Entire Development Cycle

Complete Support

NEC Electronics America offers a full development tools lineup ranging from free evaluation software to full-function in-circuit emulators. Low-cost starter kits and mini-in-circuit emulator (ICE) boards enable designers to quickly evaluate or debug NEC Electronics' All Flash MCUs.

Software Tools

PM+



SM+

- C Compiler
- Assembler
- Project Manager Plus
- System Simulator
- Reference Code Generator
- RTOS

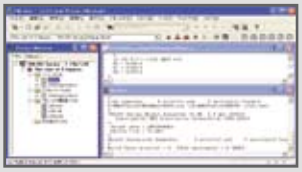
NEC Electronics Emulators

IECUBE
Full-Function Emulator

MINICUBE
On-Chip Debugging Emulator

MINICUBE2
All Flash Emulator

NEC Electronics Starter Kits



Incudes Evaluation Software

- C Compiler, Assembler
- Project Manager Plus
- Sample Code

NEC Electronics Flash Programmers

All Flash Programmer

Universal Programmer

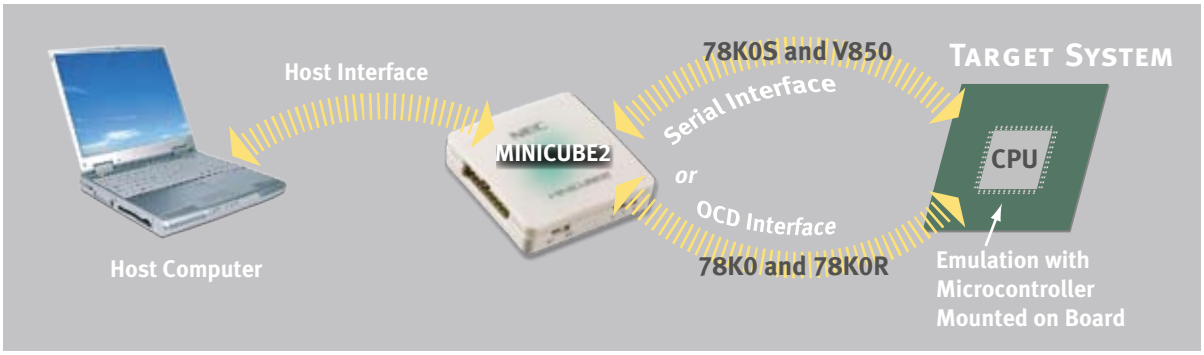
IECUBE Full-Function Emulator

- For efficient debugging of both hardware and software
- Debugger and flash programmer
- Compact and lightweight enough to fit in your hand
- Cost-effective solution
- Self-testing tools for easy maintenance
- Emulates MCU's functionality without microcontroller on the target system
- Enhanced debugging functions
  - Additional hardware breakpoints
  - Trace function
  - Timer measurement function
  - Real-time RAM monitoring
  - Add-on boards for V850 coverage and memory emulation
- Easy setup with USB interface
- Same source-level debugger as MINICUBE and MINCUBE2 on-chip emulators

Tools and Services for the Entire Development Cycle

MINICUBE2 On-Chip Debugger and Programmer

- On-chip debugging and flash programming from development to production release
- Support for current 8-, 16-, and 32-bit All Flash MCU lineup and more devices in the future
- USB-powered connection
- Self-testing function
- Pocket size
- Same source-level debugger as full-function emulator (IECUBE)



Wireless Emulator (Available 1Q '09)

- Add-on wireless debugging capability (based on IEEE 802.15.4-compliant radio device) for MINCUBE2 debugger
- Wireless utility software
- Applications
  - Cable-less connection or long distance
  - Moving or mobile devices
  - As isolation in high-voltage applications

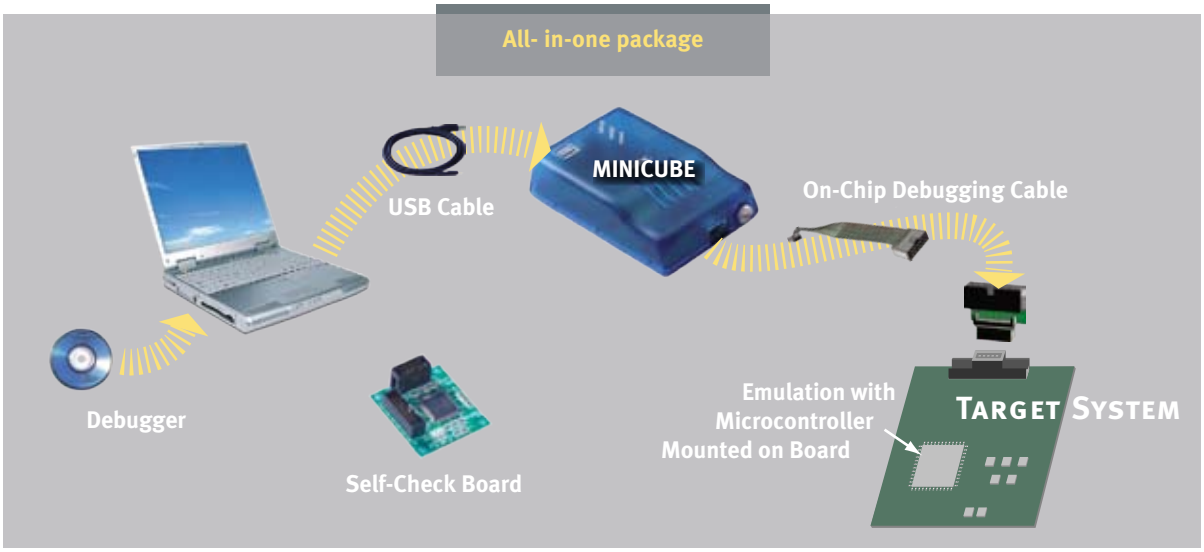
Available Kits

Devices	Standalone unit	MINICUBE2 + target board	Target board only
78K0S/Kx1+	QB-MINI2-EA	QB-MINI2-K0S/KU1	QB-78K0SKU1-TB
		QB-MINI2-K0S/KY1	QB-78K0SKY1-TB
		QB-MINI2-K0S/KY1W	QB-78K0SKY1W-TB
		QB-MINI2-K0S/KB1	QB-78K0SKB1-TB
78K0/Kx2		QB-MINI2-K0/K2	78K0/KF2 demo board
78K0/Kx2-L		QB-MINI2-K0/K2L	QB-78K0KC2L-TB
78K0/Lx2		QB-MINI2-K0/L2	QB-78K0LG2-TB
78K0/Lx3		QB-MINI2-K0/L3	QB-78K0LF3-TB
78K0R/Kx3		QB-MINI2-K0R/KG3	QB-78K0RKG3-TB
78K0R/Kx3-L		QB-MINI2-K0R/KE3L	QB-78K0RKE3L-TB
78K0R/Lx3		QB-MINI2-K0R/L3	QB-78K0RLH3-TB
78K0R/Ix3		QB-MINI2-K0R/I3	QB-78K0RIE3-TB
V850		QB-MINI2-V850/I3	QB-V850ESIG3-TB
		QB-MINI2-V850/I2	QB-V850ESIE2-TB
		QB-MINI2-V850/K2	AF-EV850/K2 (KJ2 mounted)
		QB-MINI2-V850/J2	AF-EV850/J2 (JJ2 mounted)
		QB-MINI2-V850/H2	AF-EV850/H2 (HJ2 mounted)
		QB-MINI2-V850/J3	AF-EV850/J3 (JJ3 mounted)
		QB-MINI2-V850/S3	AF-EV850/S3 (SJ3 mounted)
		QB-MINI2-V850/F3	AF-EV850/F3 (FJ3 mounted)

Tools and Services for the Entire Development Cycle

V850 MINICUBE N-Wire/JTAG-Compliant On-Chip Emulator

- Non-invasive real-time on-chip debugging emulator with microcontroller mounted on target system
- Support V850 32-bit MCUs with OCD
- Rich features via N-wire
- Ideal for final debugging of system
- Pseudo-debugging of devices possible without on-chip debugger
- Background monitoring method that does not use user memory spaces
- Debugging through JTAG-compliant N-wire communication (via 5 pins) with debugging control unit (DCU)



Demonstration Kits

NEC Electronics' demonstration kits provide a simple evaluation solution for standalone operation and debugging. Reference components such as LEDs and pushbuttons are incorporated to highlight the microcontroller's peripherals.

DemoKit-KA1 for 78K0S/Kx1+ Microcontrollers

- Low-cost demonstration kit for 78K0S/Kx1+ microcontrollers
- On-board flash programming and real-time execution of application programs up to 4 KB based on the 78K0S/KA1+ microcontroller
- Designed for connection to user hardware such as digital I/O or analog signals
- Easy-to-use device demonstration capabilities
  - Pushbuttons
  - LED output
  - A/D reference voltage
  - I/O lines
  - UART interface
- Power supply via USB interface
- Flash programming software
- Sample programs

Tools and Services for the Entire Development Cycle

DemoKit-LG2 for 78K0/Lx2 Microcontrollers

- Low-cost demonstration kit for 78K0/Lx2 microcontrollers with on-board LCD driver
- On-board flash programming and real-time source-level debugging without additional hardware
- USB interface
- Real-time debugging (ID78K0-TK)
- Flash programming (PG-FPL3)
- Power provided to board
- Light sensor and thermistor
- Buzzer, joystick, LCD, reset switch, coin battery
- Optional interfaces
  - 16-pin flash programming interface
  - 10-pin MINICUBE interface
  - 10-pin ZigBee stick
  - Two 100-pin connectors
- Sample programs

DemoKit-LF3 for 78K0/Lx3 Microcontrollers

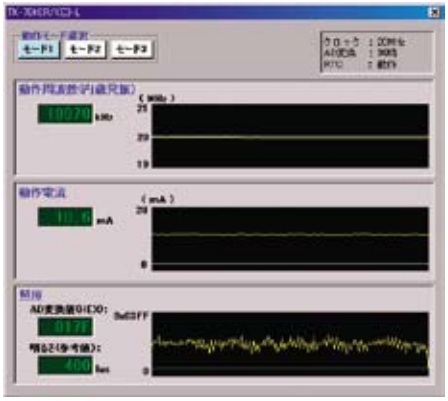
- Low-cost demonstration kit for 78K0/Lx3 microcontrollers with on-board LCD driver
- On-board flash programming and real-time source-level debugging without additional hardware
- 8 × 24 segment LCD
- USB interface
- Real-time debugging (ID78K0-QB-MON)
- WriteEZ3 flash programming software
- Thermistor
- Buzzer, joystick, reset switch, IR receiver
- Optional 10-pin MINICUBE interface
- Sample program

DemoKit-KG3 for 78K0R/Kx3 Microcontrollers

- Low-cost demonstration kit for 16-bit 78K0R/Kx3 microcontrollers
- On-board flash programming and real-time source-level debugging without additional hardware
- USB interface
- Power supply via USB or battery
- 12 × 2 alphanumeric LCD
- Joystick
- Interface for MINICUBE2 on-chip debugger and programmer
- Three on-board low-pass filter sinusoidal outputs
- Sample program

TK-78K0RKX3L Starter Kit for 78K0R/Kx3-L Microcontroller (Available 1Q '09)

- On-board 16-bit 78K0R/KE3-L microcontroller
- On-board flash programming and real-time source-level debugging using 78K0 USB microcontroller without additional hardware
- Two 7-segment LEDs
- USB power source
- Product demonstration using sample code and GUI software

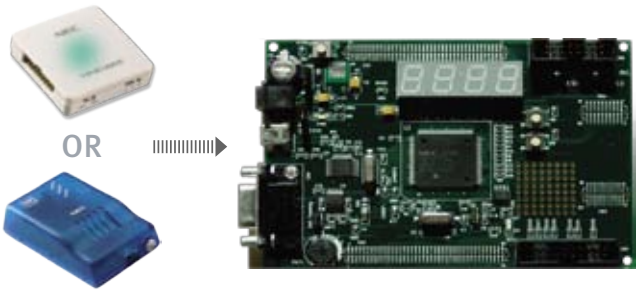


GUI Software

Tools and Services for the Entire Development Cycle

AF-EV850 for V850ES Microcontrollers

- Evaluation board for 32-bit V850ES/KJ2, V850ES/HJ2, V850ES/JJ2, V850ES/JJ3, V850ES/FJ3, and V850ES/SJ3 microcontrollers
- MINICUBE debugging interface
- MINICUBE2 debugging and flash programming interface
- Expansion memory interface
- Expansion peripheral interface
- ZigBee interface supporting Chipcon and UBEC RF modules
- SD I/O memory card interface
- SD card/MultiMedia Card (MMC)
- 16 KB 2-wire EEPROM
- DB-9 RS-232 interface
- USB-UART interface
- Four-digit 7-segment LED
- Two LEDs for power-on and reset signal indication
- One reset switch button and two user buttons
- One potentiometer and one temperature sensor as ADC inputs
- Supercapacitor for power backup



AF-EV850-TFT

- 3.5” QVGA TFT LCD touch panel: NEC NL2432HC22-41B
- Graphics controller: Epson S1D13513
- 100/10 Ethernet MAC/PHY: SMSC LAN9215I
- 32 MB SDRAM: Qimonda HYB39SC128160FE-7
- 512 KB SRAM: NEC Electronics µPD444016L
- Complementary P/N MOSFET: NEC Electronics µPA679TB
- Touchscreen interface: NEC Electronics µPA679TB MOSFETs
- Add-on AF-EV850 basic board
  - NEC Electronics 32-bit flash microcontroller: V850ES/K2, V850E/J2, V850E/J3, V850E/S3
  - V850ES memory / peripheral bus interface
  - SDIO memory card interface
  - SD card/MultiMedia Card (MMC) interface
  - ZigBee RF module interface
  - MiniUSB interface
  - RS-232 interface

Software Support

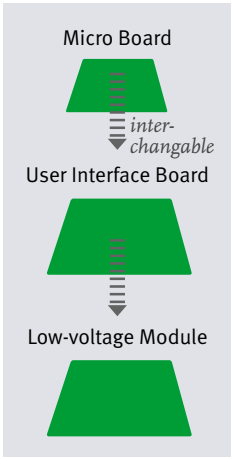
- Real-time operating system: NEC Electronics RX850, µCOS/II, Segger embOS, and CMX RTX
- Graphics stack: Segger emWin
- TCP/IP stack: NEC Electronics

Available Kits

Series	TFT and AF-EV850 board
V850ES/Jx2	AF-EV850-TFT-JJ2
V850ES/Jx3	AF-EV850-TFT-JJ3
V850ES/Sx3	AF-EV850-TFT-SJ3

Tools and Services for the Entire Development Cycle

Development Tools for Motor Control Microcontrollers
MC-LVKIT Low-Voltage Starter Kit



- Modular
  - Low-voltage power module up to 24V
  - User interface board
- High-voltage inverter
- Seven different MCUs supported
- Three BLDC motors
- Hall sensor and sensorless code available
- New application notes

Motor Control
Evaluation System

M-V850ES-IK1
(V850ES/IE2- compatible)

Applications

Home appliances, low-end white goods,
AC units, power tools

Microboards

M-78F0714 M-78F0712 M-V850E-IA4 (Two motor drives)

M-V850ES-KJ1,2 (V850ES/KJ2- compatible) M-V850E-IG3 (Two motor drives)

M-V850E-Ix3 (Works with 78K0R/IE3 or 78K0R/IC3)

RoHS-compliant

Motor Drive Kits

Low-cost single-board drive

- 12V to 18V BLDC motor drive with start/stop, mode/direction and RPM control
- Four-digit 7-segment LED
- NEC Electronics µPA2792 complementary MOSFETs (H-Bridge)
- µPD78F0730 USB microcontroller
- Debugging and PC GUI software
- On-board debugging hardware and firmware
- 78K UZ ZigBee® stick connector for wireless operation
- MINICUB2 interface

MC-78K0RIE3-KIT

MC-78F0712-Kit

ADPCM Voice Solutions

- Royalty-free adaptive differential pulse-code modulation (ADPCM) libraries
  - Encoding and decoding using 2-, 3- or 4-bit ADPCM data and 16-bit PCM output
  - One second of voice data: 4 KB when compressed in 4-bit mode
  - Output PCM of 8, 16, 44.1 kHz
- Voice output circuit by D/A conversion or PWM (78K0 MCUs only)
- Free voice compression tool

TK78K0/KF2+Voice
8-Bit

CEB-V850ES/JG2 Sound Kit
32-Bit

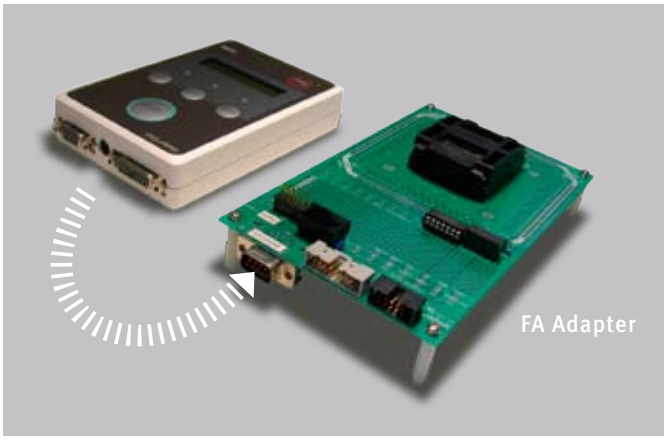
TK78K0R/KG3+Voice
16-Bit

Tools and Services for the Entire Development Cycle

PG-FP5-EA Flash Programmer

The PG-FPG-EA is a new flash programmer that supports the next-generation of microcontrollers from NEC Electronics, which come with reliable and easily settable security functions. Through security settings, your valuable program assets are protected from third parties, and data destruction through malfunction is prevented.

- Expanded program memory (up to 16 MB)
- External remote interface
- Same power supply as IECUBE in-circuit emulator
- Support for 8-, 16-, and 32-bit NEC Electronics microcontrollers
- Standalone function
- USB 2.0 /RS-232-C connection to host computer
- On/off-board programming
- Self-test capability



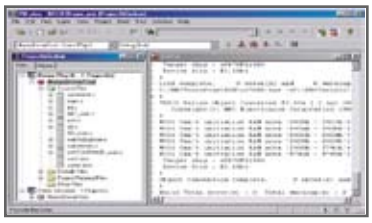
Off-board programming available with flash adapter board (sold separately). Mount microcontroller chip on FA adapter individually to program.

Free Evaluation Tools—No Hardware Needed

Complete System Evaluation Software

or

Generate reference code with **Applilet.**



Edit, compile, and assemble code using the NEC Electronics **PM+ Project Manager.**

- Free maximum 128 KB code size for 32-bit MCUs
- Free maximum 64 KB code size for 16-bit MCUs
- Free maximum 32 KB code size for 8-bit MCUs

Simulate the microcontroller and system using the NEC Electronics SM+ system simulator.

- Free maximum 64 KB code size for 32-bit MCUs
- Free maximum 64 KB code size for 16-bit MCUs
- Free maximum 32 KB code size for 8-bit MCUs

Tools and Services for the Entire Development Cycle

Applilet Reference Code Generator

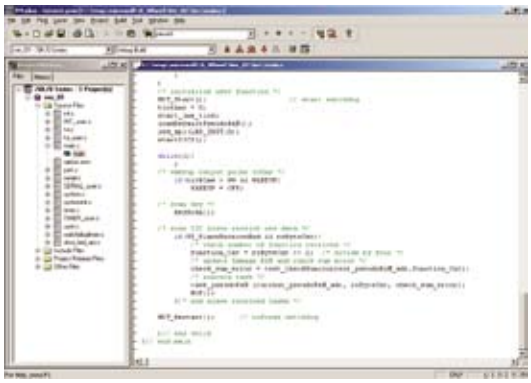
- Free reference initialization code generator that also includes APIs for peripheral functions
- Provides a simple and quick start for designers to evaluate NEC Electronics microcontrollers—without the need for digging through a device user's manual
- Outputs either C or assembly language programs
- Checks for functions and settings in conflict
- Helps configure devices using the MINICUBE2 on-chip debugger
- Generates a project/workspace ready for PM+

Applilet is available for the following devices:

78K0S/Kx1+, 78K0KX2, 78K0LX2, 78K0LX3, 78K0FX2, 78K0RKX3, V850ESJX2, V850ESJX3, V850ESHX2, V850ESKX2, V850ESFX2, V850ESFX3, V850ESSX2

Project Manager (PM+)

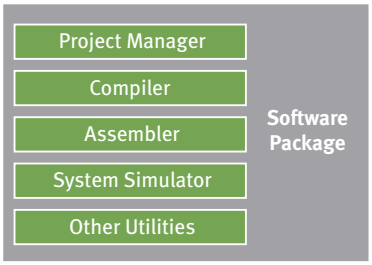
- Software tool that combines NEC Electronics compilers, assemblers and debuggers into one integrated development environment (IDE)
- Use of "Workspace" and "Project Groups" concept allows management of multiple projects in one environment
- Integrated text editor and option to use external editing tool



- Concurrent versions system (CVS) for version control that allows multiple developers to share files through a server
- Automated build process (compile, assemble and link); debugging can also be performed when a debugger tool is linked to PM Plus.
- Comprehensive help files for each individual tool
- Windows® XP operating system
- Access to Device File Installer utility
- Support for all 8- to 32-bit NEC Electronics microcontrollers
- Multiple versions
- Link to NEC Electronics web site

Bundled Software Packages

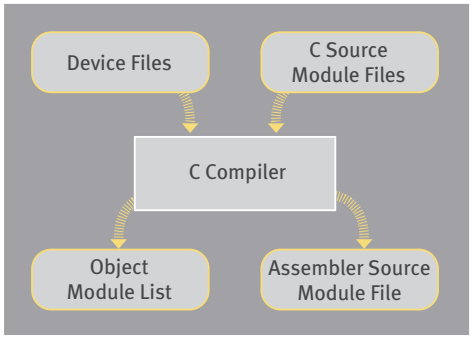
- Complete, affordable software platform for embedded microcontroller design
  - C compiler
  - Relocatable assembler and project manager (IDE)
  - System simulator
  - Integrated debugger for traditional emulators
- Custom packages for each processor core
  - SP850 for 32-bit V850 microcontrollers
    - Stack usage tracer (STK850)
    - Link directive generator (LDG)
    - Performance analysis tuning tool (TW850)
    - Static performance analyzer
  - SP78K0R for 16-bit 78K0R microcontrollers
  - SP78K0 for 8-bit 78K0 microcontrollers
    - Stack usage tracer (SK78K0)
    - Bank support tool (BS78K0)
  - SP78K0S for low-end 8-bit 78K0S microcontrollers



Tools and Services for the Entire Development Cycle

C Compiler

- Based on the processor core
- Translates source program described in C language into machine language
- ANSI C-compliant
- Extended specifications for embedded devices
- Utilities for embedded systems
- Other features

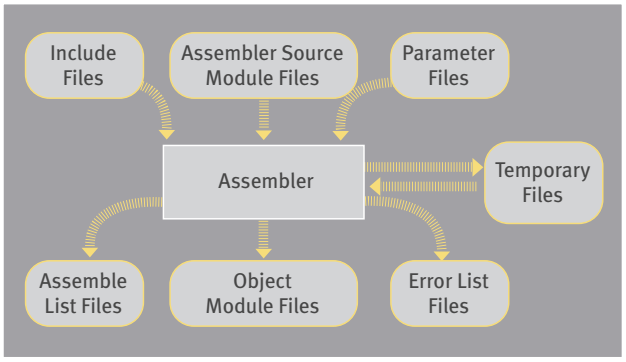


  - CA850 for 32-bit V850 microcontrollers
    - Bundled assembler and PM+ (IDE)
    - Multi-level optimization function
    - Local optimization (constant folding, common expression elimination)
    - Large-scale optimization (loop invariant code motion, loop expansion)
    - Machine-dependent optimization (peephole optimization, command rearrangement)
    - Evaluation version that supports up to 128 KB code size
  - CC78K0R for 16-bit 78K0R microcontrollers
    - Simple global optimization settings for size and speed
    - Three memory models (small, medium, and large) for code efficiency
    - Evaluation version that supports up to 64 KB code size
  - CC78K0 for 8-bit 78K0 microcontrollers
    - Simple global optimization settings for size and speed
    - Two memory models (static and normal) for code efficiency
    - Evaluation version that supports up to 32 KB code size
  - CC78K0S for 8-bit 78K0S microcontrollers
    - Simple global optimization settings for size and speed
    - Two memory models (static and normal) for code efficiency
    - Evaluation version that supports up to 32 KB code size

Relocatable Assembler

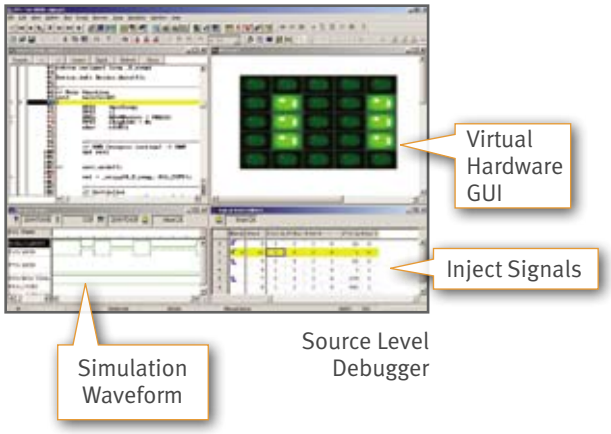
The relocatable assembler converts the source program described in assembly language into machine language.

- Structured assembler
- Preprocessor
- Assembler
- Linker
- Object converter
- Librarian
- List converter
- Project Manager (PM+): NEC Electronics' integrated development environment



System Simulator

- Instruction and peripheral-level simulation of NEC Electronics microcontrollers
- Source-level debugging
- Simulation of virtual hardware such as LEDs and pushbuttons

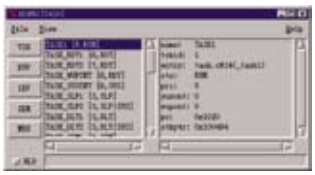


Tools and Services for the Entire Development Cycle

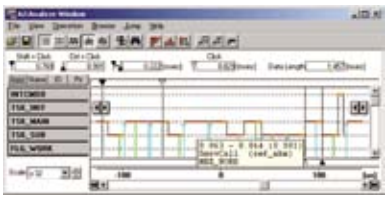
Real-Time Operating System

The NEC Electronics RX78K0R operating system for 16-bit MCUs and the RX850/Pro operating system for 32-bit MCUs are designed to conform with the uITRON 3.0 specification, which defines a typical built-in controlled operating system architecture. The RX78K0R and RX850/Pro support the following functions to realize complete real-time processing and multitasking.

- Task management function
- Task-associated synchronization function
- Synchronous communication function
- Interrupt management function
- Memory pool management function
- Time management function
- System management function
- Scheduling function



RD850 Task Debugger



AZ850 System Performance Analyzer

Package includes

- RDxxx task debugger
- AZxxx system performance analyzer
  - Software trace support for SM+ and MINICUBE on-chip debugger and programmer
  - Hardware trace with IECUBE

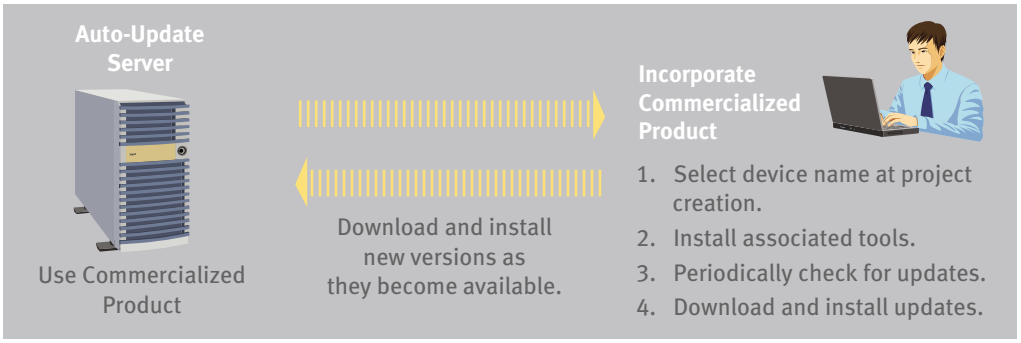
CubeSuite

- Simplified development environment for all NEC Electronics MCUs
  - Compilers and assemblers
  - Simulator and debugger
  - Code generator and pin configurator
- Automatic updater with version control
- 78K and V850 editions with standard and advanced versions
- Evaluation version (when license key not used)

	Standard Edition	Advanced Edition
Supported MCU	V850, 78K (78K0R, 78K0, 78K0S)	V850, 78K (78K0R, 78K0)
Supported In-Circuit Emulators	IECUBE, MINICUBE-V850, MINICUBE2 IECUBE2 (under development) for IECUBE-level debugging Target emulator	IECUBE, MINICUBE-V850, MINICUBE2 IECUBE2 (under development) Target emulator
Features	› Pin configurator › Automatic code generator (Applilet) › Build files › Debugger (including SM+ level simulator) › Real-time operating system (µITRON) › Virtual target debugging	Additional functions › Profiling › Unit test › Functional test

Automatic Updates

- Automatic updates of software tools and related documents
- Downloads of device information and device-dependent files



Free edition does not support this feature.

Third-Party Software Tools

CMX Systems Software for NEC Electronics V850, K0, K0S and K0R Processors

CMX-MicroNet is a TCP/IP stack specially crafted to work with virtually all processors and features an extremely small ROM requirement ranging from 5K to 24K (depending on configuration and processor) and very minimal RAM requirements of about 500 bytes plus buffers for packets. The base CMX-MicroNet software package currently includes UDP, TCP, IP, Modem, SLIP, ICMP Echo, IGMP, and Virtual File. Current Add-On Options available are: HTTP Web Server, DNS Client, FTP, SMTP, SNMP, DHCP Client, TFTP Client, Fragmentation, SNTP, POP3, PPP, Ethernet (ARP, BOOTP) and Wireless Ethernet. The CMX-MicroNet stack can work with or without a RTOS.

CMX TCP/IP is the full-featured, 100% RFC-compliant TCP/IP stack. CMX TCP/IP provides the protocols, link layers, interfaces, and device drivers required for most networking applications. The basic CMX TCP/IP stack supports: UDP, TCP, IP, ICMP, IGMP, DNS, ARP, SNTP, SLIP, Ethernet, Standard BSD socket interface and a High Performance Socket Interface. Add on options include: DHCP, IMAP4, FTP, NAT, POP3, PPP, PPPoE, SMTP, SNMP, Telnet Server, TFTP/BOOTP, Web Client and Web Server. The CMX-TCP/IP stack can work with or without a RTOS.

CMX-RTX is a truly preemptive, multi-tasking RTOS supporting a wide variety of 8-, 16-, 32-bit switching times, and the lowest interrupt latency times available today. RTOS functionality provided includes: task management, message management, queue management, system management, event management, memory management, resource management, semaphore management and timer management. CMXKAware provides kernel aware debugging.

CMX-Tiny+ is a real time preemptive kernel specially designed for those processors that have a small amount of RAM embedded on the processor's silicon (usually 512 to 4K bytes). This allows the user to develop application code and have it run under an RTOS using only the onboard RAM that the processor provides. The RTOS functionality provided includes: task management, message management, system management, event management, resource management, semaphore management and timer management.

CMX Flash File Systems include CMX-FFS-FAT, which is a FAT 12/16/32 compatible file system supporting standard media. CMX-FFS-THIN, a FAT 12/16/32 compatible file system supporting standard media on small micros. CMX-FFS, a Failsafe File System supporting NOR and NAND devices and CMX-FFS-TINY, a Failsafe File System supporting small erasable flash.

All products come with source code and NO royalties.
Contact CMX Systems at www.cmx.com for more information.

IAR Embedded Workbench®—C and C++ Compiler and Debugger Tool

IAR Embedded Workbench (EW) is a set of highly sophisticated and easy-to-use development tools for programming embedded applications. It integrates the IAR C/C++ compiler, assembler, linker, librarian, text editor, project manager, and C-SPY® debugger in one integrated development environment (IDE). With its built-in chip-specific code optimizer, IAR Embedded Workbench generates very efficient and reliable flash/PROMable code.

Key Features

- Seamlessly integrated environment for building and debugging embedded applications
- Highly optimizing C/C++ compiler generating the most compact code
- Embedded focus with language extensions for target-specific support
- State-of-the-art C-SPY debugger with RTOS plugins and extensive hardware debugging support for all NEC Electronics emulators, such as IECUBE, MINICUBE, MINICUBE2, TK, and N-Wire.
- Easy start with ready-made device configuration files and example projects
- Comprehensive documentation with efficient coding hints and context sensitive online help

Device Support

- EWV850: supports all devices with V850ES, V850E1 and V850E2 cores
- EW 78K: supports all devices with 78K0, 78K0S and 78K0R cores (available also in Japanese edition)

visualSTATE®—State Machine Design Automation for Embedded Systems

visualSTATE is a suite of graphical design automation tools for designing, testing and implementing embedded applications based on state chart diagrams. It provides advanced verification and validation utilities and generates very compact C/C++ code. The new and revolutionizing integration with IAR Embedded Workbench enables true state machine debugging on hardware with direct graphical feedback at various levels of detail.

Key Features

- Completely integrated development environment including a graphical designer, test tools, a code generator, and a documentation facility
- Graphical state machine design based on the Unified Modeling Language (UML) state machine subset
- Formal verification of the design model finds unwanted properties in the design, like dead-ends or unreachable states
- Test and validation tools to ensure at an early stage of design that the application behaves as expected, even before the hardware exists
- Automatic code generation providing very compact micro-tight C/C++ code, 100% compliant with the design
- Code compatible with any ANSI C compiler
- Automatic documentation generation with comprehensive information

For more product information, visit www.iar.com

Third-Party Software Tools

Green Hills Software, Inc.

Software Development Tools

- **MULTI® development environments:** Quickly develop, thoroughly debug, completely test, and fully optimize embedded and real-time applications
- **TimeMachine™ Debugging Suite:** Go back in time to find find and fix bugs faster, optimize with ease, and test with confidence
- **Green Hills® optimizing compilers:** The fastest, smallest code from C, C++, Embedded C++ (EC++) and MISRA C versions

Hardware Debuggers

- **Green Hills Probe™**
  High-performance real-time debugging
- **SuperTrace™ Probe**
  The fastest trace, download, and debug

MULTI Integrated Development Environment

MULTI is a complete development environment for embedded applications written in C, C++, or EC++. MULTI provides a direct graphical interface with all Green Hills compilers and supports multi-language development and debugging. MULTI provides a host-based graphical environment for V800 target development and supports many V800 targets—including evaluation boards from NEC.

MULTI's fully integrated development tools include:

- Project Builder
- EventAnalyzer
- Source-Level Debugger
- Performance Profiler
- Run-Time Error Checking
- Code Coverage Analysis

V800 Optimizing Compilers

The Green Hills Optimizing Compilers for V800 use a common code generator with architecture-specific optimizations. Some optimizations include loop optimizations, peephole optimizations, register coalescing, tail recursion, and memory optimization. As an additional benefit, Green Hills offers CodeFactor®, a link-time optimization which reduces overall program size by identifying and removing redundant segments of code from object files.

Processor Probes

The Green Hills hardware-assisted debuggers enable the MULTI debugger to load, control, debug, and test a target system without the need for prior board initialization, an RTOS, or even a ROM monitor.

Supported Processors				
V850E	V850E2	V853	V850E/PH2	V850E2R
V850	V850ES	V850E1F	V850E/PH3	

Green Hills most advanced hardware debugger, the SuperTrace Probe, can capture up to one gigabyte of trace data at clock speeds in excess of 300 MHz. With its 1GB storage capability, the SuperTrace Probe can collect hundreds of millions of trace frames, dramatically extending the capture window.

The Green Hills Probe supports 10+ MB/second sustained download speeds through serial, Ethernet, or USB host interfaces. It also supports heterogeneous and homogeneous multi-core debugging with a single host connection and single target JTAG interface. Supported hosts include Windows, Linux, Solaris, and HP-UX.

SEGGER Microcontroller Systems

SEGGER Microcontroller develops and distributes development tools and ANSI "C" software components (middleware) for embedded systems. Our middleware offering includes an RTOS, GUI/LCD Driver, File System, USB Stack, and TCP/IP Stack. SEGGER's intention is to cut software development time for embedded applications by offering compact, flexible and easy to use middleware permitting developers to concentrate on what they do best; conceive and design.

Real Time OS

Our small and efficient real-time kernel, embOS, supports a variety of NEC CPUs. embOS provides the benefits of a full featured multitasking system with fast context switches, and zero interrupt latency. embOS comes complete with a viewer that allows you to peek into the system from your PC (this includes profiling). Its small memory footprint makes it a perfect fit for single-chip applications.

GUI and Graphics Package

The ANSI "C" graphics software, emWin, can be used on any NEC CPU and with any black and white, grayscale, or color display. Drivers for all common LCD controllers are available. One of the most challenging aspects of many development projects is designing an attractive and useful display. Besides creating images that look exactly how you want them to appear, the implementation of windowing techniques, complex drawing routines, different fonts, and flicker-free updates are also expected; and emWin provides it all in an intuitive, easy to use package.

File System

emFile makes it possible to use any storage media from your embedded application. It is written in ANSI "C" and is compatible with all NEC CPUs. This high-performance library has been optimized for speed, versatility, and memory footprint. A variety of device drivers are currently available: SmartMedia, Multimedia/Secure Digital, RAM disk, Compact Flash/IDE, NOR and NAND Flash.

We strive to provide clean, well documented, modular, end-to-end solutions for all of your project needs. If you have any questions please do not hesitate to contact us.

http://www.segger.com http://www.segger-us.com