µC3 micro c cube ®

µC3 Product Guide

Do you have…

Large memory?

Large development cost?

Large battery?

Our products remove those causes of your worry…

☑ µC3/Compact is compact, easy-to-use, robust RTOS.

☑ µC3/Configurator is FREE friendly configurator tool.

☑ Picco-Cube is energy saving RTOS.

☑ µNet3/Compact is small footprint, easy-to-use, extensibility network stack.

eForce

Largest market proven solutions in Cortex-M world!

In Cortex-M world, we have a No.1 share of RTOS in Japan. Our solutions are appreciated in various markets.

Consumer

Industrial

Medical/Healthcare

OA

Automotive

Security
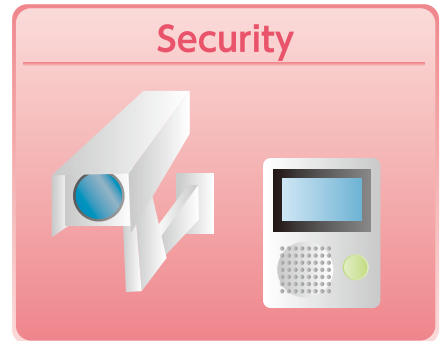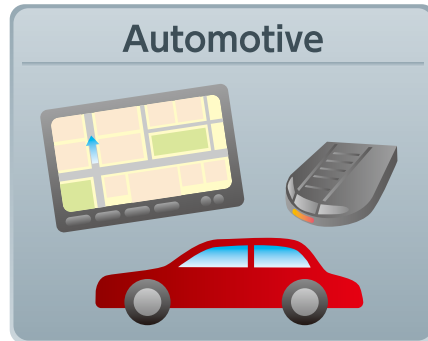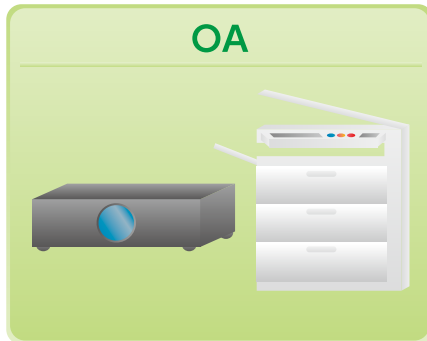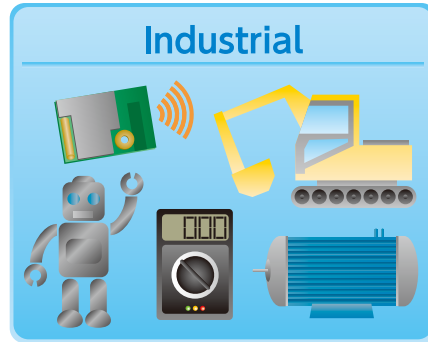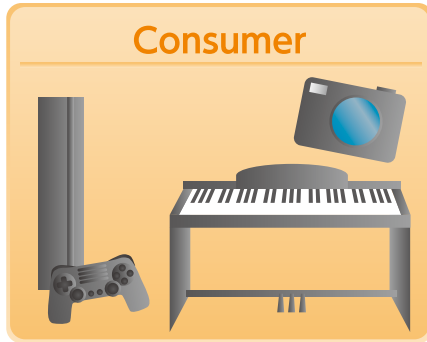
Our ecosystem and attractive solution!

We collaborate with broad range of embedded players.

	μC3/Compact	μC3/Standard
Support CPU core	• Cortex-M0/M0+/M3/M4, ARM7 by ARM • RX200/RX600, SH-2A by Renesas • N7/N8 Core by Andes	• Cortex-A5/A8/A9, ARM7/9/11 by ARM • SH2/SH-2A/SH2A-FPU, SH3, SH4/SH-4A by Renesas
Development environment		
Support compiler	• KEIL MDK by ARM • EWARM and EWRX by IAR • Code Composer Studio by TI • CubeSuite+ by Renesas • GCC • Andes Sight by Andes	• DS-5, RVDS by ARM • EWARM by IAR • Code Composer Studio by TI • HEW by Renesas • GCC
OS aware support debugger	• uVision by ARM • EWARM by IAR • TRACE32 by Lauterbach • AICE by Andes • Other major Japanse debuggers	• EWARM by IAR • TRACE32 by Lauterbach • Other major Japanse debuggers
Collaborated solution		
WiFi	• Type-YD by MurataSeisakusho • BP35xx by Rohm	
OS translation tool	• CT-View by Coressent	• CT-View by Coressent
Driver package for TI AM335x		• JSL-ware by JSL technology
Driver package for Altera Cyclone V		• JSL-ware by JSL technology

μC3 ® micro c cube **/ Compact**

Features and advantages of μC3/Compact

μC3/Compact is a compact type RTOS based on uITRON4.0 specification and it's designed to be worked in MCU's embedded memory. In fact, the kernel size is only 2.4KByte. Thanks to FREE friendly configuration tool, user can easily configurate the kernel, TCP/IP and some peripherals via simple GUI.
In addition, this tool can generate a base-code automatically. It can save your time and accelerate time-to-market. Finally, this solution is already the largest market proven one in Japan in Cortex-M world!

μC3 ® micro c cube **/ Configurator**

Features and advantages of μC3/Configurator

μC3/Configurator is FREE configuration tool. User can visually configurate the kernel, TCP/IP and some peripherals of MCU. The code generation function achieves a MCU boot-up, start-up of OS and TCP/IP, generation of skeleton code. This tool certainly save your time and cost.
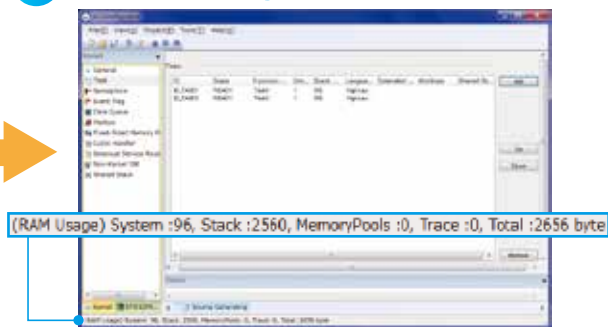
Flow of μC3/Configurator

1 CPU selection
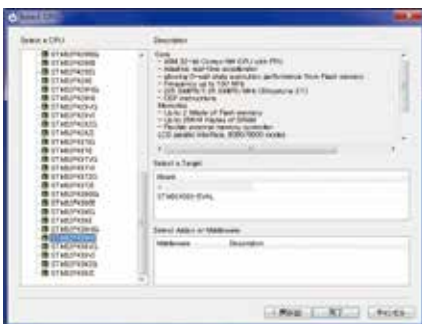
Select the P/N you're going to use.

2 Kernel configuration

(RAM Usage) System :96, Stack :2560, MemoryPools :0, Trace :0, Total :2656 byte

RAM usage view

4 Code generation

Skelton Code

Start coding your application!

3 CPU configuration
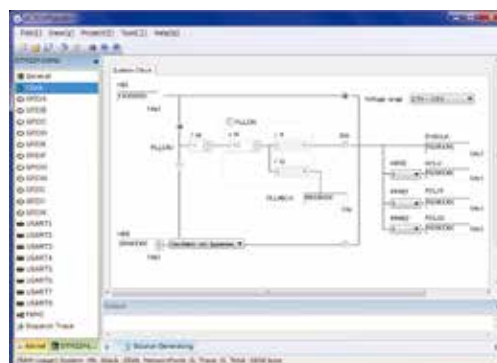
μNet3 / Series

μNet3
micro net cube

Features and advantages of μNet3

μNet3 series is a compact type TCP/IP stack that is used in combination with μC3. It supports the following protocol stacks and has IPv6 and SSL as option products. Thanks to simple original APIs, even beginning network programmer can easily start development. Also, user can configurate the TCP/IP via μC3/Configurator.

Protocol architecture of μNet3

DHCP	SMTP	
DNS	Telnetd	SNTP
HTTPd	HTTPc	SNMP
FTPd	TFTP	SSL
μNet3 API	BSD API	
TCP, UDP		
IPv4 (ICMP, ARP)	IPv6	
Ethernet	PPP	WiFi

- μNet3 common function
- Added protocols on μNet3/Professional
- Available option products on μNet3

*BSD API is available on μC3/Standard only
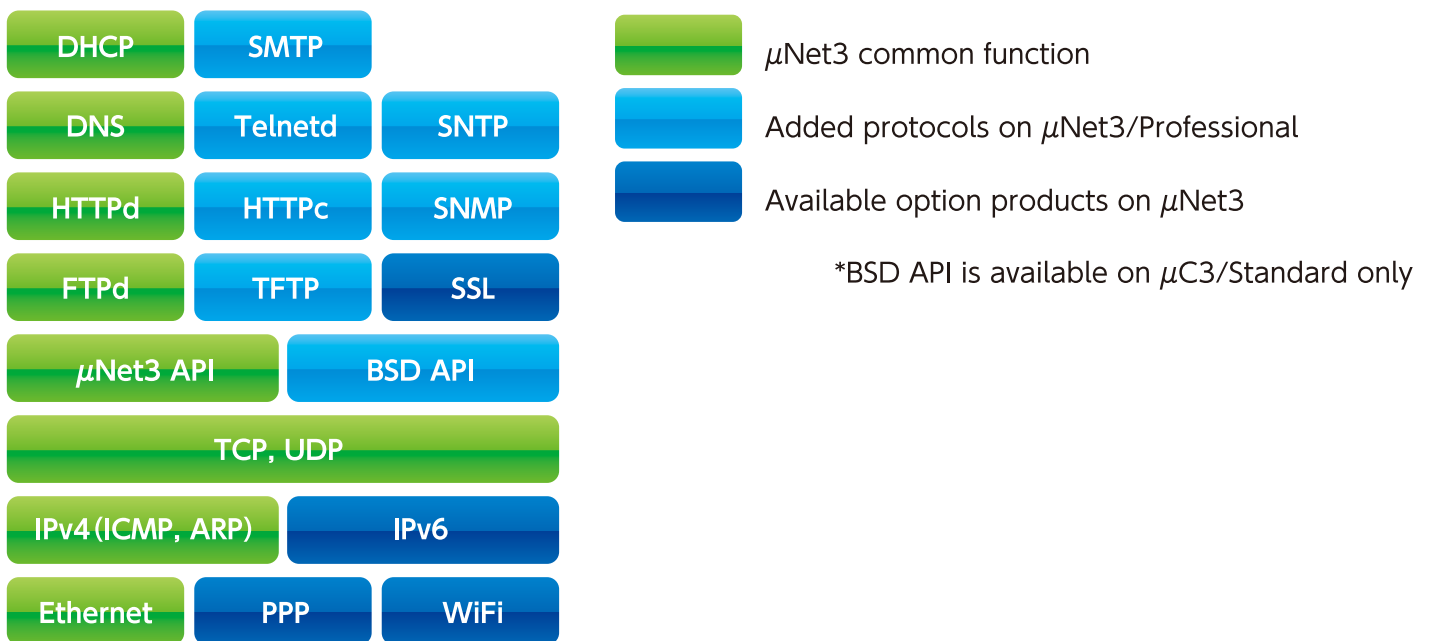
Option products of μNet3

μNet3-IPv6
μNet3-IPv6 is a small footprint IPv6 stack (12KByte). It's used in combination with μNet3 and it doesn't need an external memory.

μNet3-SSL
Net3-SSL is for SSL client use. It encrypt a transmitted and received data by using embedded hardware engine, so it's enable a high-speed and safety communication. It inherits a simple API characteristics from μNet3, so that makes it easier to add SSL function on current system. STM32 and Kinetis have an embedded hardware encryption engine and it helps an achievement of encrypted communication with low CPU performance.

μNet3-SSL specification	
Protocol	SSL ver3.0 / TLS ver1.2
Key-exchange algorithm	RSA(1024 / 2048 bit) -software-
Encryption algorithm	DES / TDES / AES128 / AES256 -hardware-
Digest algorithm	MD5 / SHA2 -hardware-

Picco Cube
for Saving Energy

Energy saving RTOS

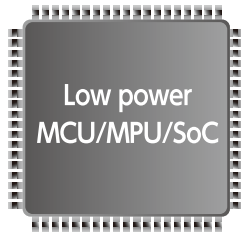Low power MCU/MPU/SoC **+** Picco Cube *for Saving Energy* **=** **More Energy Saving**

Helping smart power control

Picco-Cube is the μC3/Compact has some special features to help power control for battery-driven or power consumption sensitive application.
For, example, it supports "correction of tick time gap caused by dynamic changing of sysclk" and "return from low-power mode by using embedded real time clock".

Strong 4 features of Picco-Cube

i moving to low-power mode automatically when all tasks are in idle status

ii dynamic changing of sysclock depend on circumstances

iii return from low-power mode by using embedded real time clock

iv dynamic changing of RTOS tick time lead to overhead reduction

High

Power consumption CPU clock

Helping smart energy control!

High Performance mode

3

1

Low power mode

2

Low
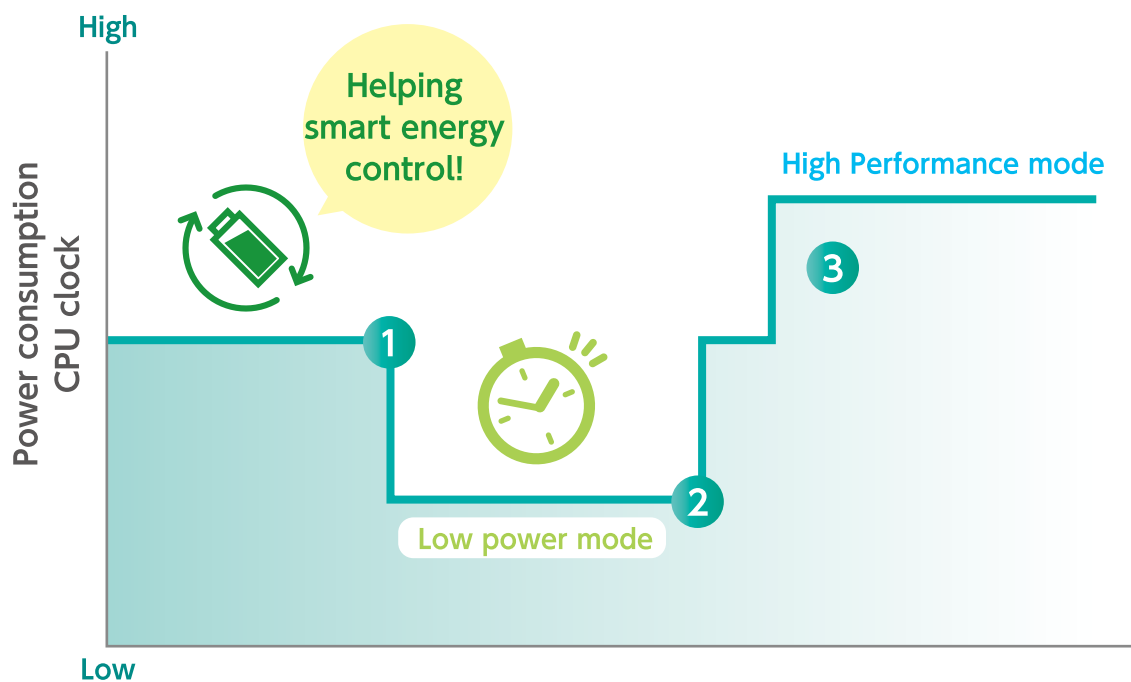
1 move to low-power mode automatically when all tasks are idle status

2 return from low-power mode trigged by timer or event

3 move to high-performance mode if high-speed operation needed

License Policy

R&D License

User cannot use this license for mass production but can use for component development, trial manufacture development and others.

Project License

Project License is a standard license for mass production.
User doesn't need to pay a copy license for each pieces of your product. Although this project license has no limitation of number of engineers, user need to fix a CPU series and kind of compiler and can use it within your project. A range of the project will be configured flexibly according to your product range, and so please do not hesitate to consult us.

Product Family License

Product Family License extends a range of Project License. In case of this license, you can use to broad array of your products. If your product line-up is large variety, this license will be fit and reasonable.

Maintenance service

Initial license includes 6 months of maintenance service. After that, you can keep it by purchasing fare-paying service (20% of product license fee) every year.

eForce Co.,Ltd.

URL http://www.eforce.co.jp/

contact info@eforce.co.jp