



# μC3 Product Guide

Do you have...

Large  
memory?

Large  
development cost?

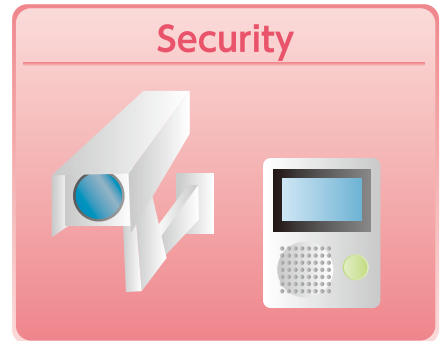
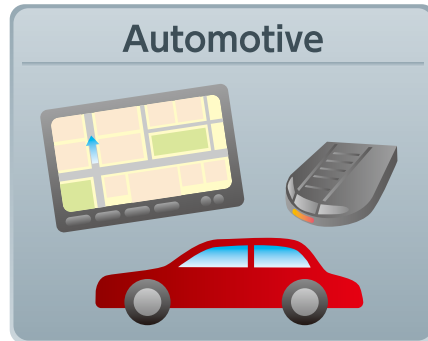
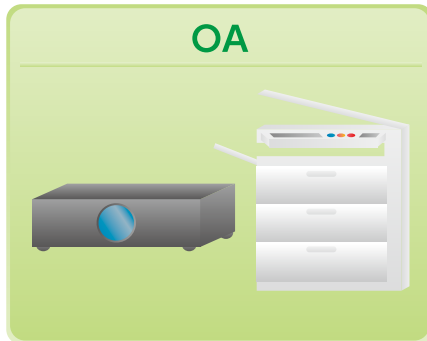
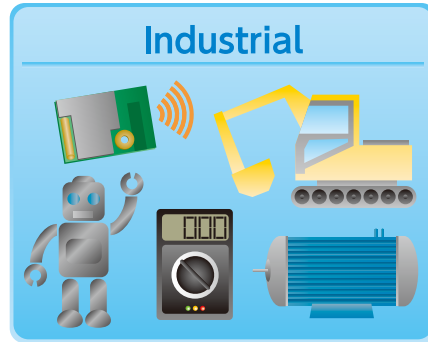
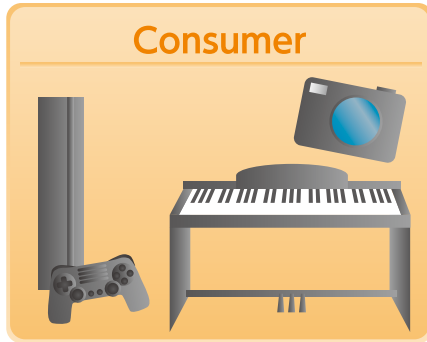
Large  
battery?

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.

# 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.



## Our ecosystem and attractive solution!

We collaborate with broad range of embedded players.

	$\mu$ C3/Compact	$\mu$ C3/Standard
Support CPU core	<ul style="list-style-type: none"> <li>• Cortex-M0/M0+/M3/M4, ARM7 by ARM</li> <li>• RX200/RX600, SH-2A by Renesas</li> <li>• N7/N8 Core by Andes</li> </ul>	<ul style="list-style-type: none"> <li>• Cortex-A5/A8/A9, ARM7/9/11 by ARM</li> <li>• SH2/SH-2A/SH2A-FPU, SH3, SH4/SH-4A by Renesas</li> </ul>
<b>Development environment</b>		
Support compiler	<ul style="list-style-type: none"> <li>• KEIL MDK by ARM</li> <li>• EWARM and EWRX by IAR</li> <li>• Code Composer Studio by TI</li> <li>• CubeSuite+ by Renesas</li> <li>• GCC</li> <li>• Andes Sight by Andes</li> </ul>	<ul style="list-style-type: none"> <li>• DS-5, RVDS by ARM</li> <li>• EWARM by IAR</li> <li>• Code Composer Studio by TI</li> <li>• HEW by Renesas</li> <li>• GCC</li> </ul>
OS aware support debugger	<ul style="list-style-type: none"> <li>• uVision by ARM</li> <li>• EWARM by IAR</li> <li>• TRACE32 by Lauterbach</li> <li>• AICE by Andes</li> <li>• Other major Japanese debuggers</li> </ul>	<ul style="list-style-type: none"> <li>• EWARM by IAR</li> <li>• TRACE32 by Lauterbach</li> <li>• Other major Japanese debuggers</li> </ul>
<b>Collaborated solution</b>		
WiFi	<ul style="list-style-type: none"> <li>• Type-YD by MurataSeisakusho</li> <li>• BP35xx by Rohm</li> </ul>	
OS translation tool	<ul style="list-style-type: none"> <li>• CT-View by Coressent</li> </ul>	<ul style="list-style-type: none"> <li>• CT-View by Coressent</li> </ul>
Driver package for TI AM335x		<ul style="list-style-type: none"> <li>• JSL-ware by JSL technology</li> </ul>
Driver package for Altera Cyclone V		<ul style="list-style-type: none"> <li>• JSL-ware by JSL technology</li> </ul>

## Features and advantages of μC3/Compact

μC3/Compact is a compact type RTOS based on uTRON4.0 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 configure the kernel, TCP/IP and some peripherals via simple GUI.

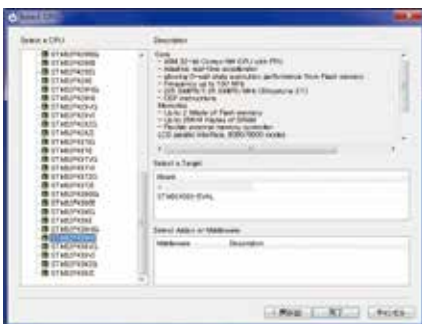
In addition, this tool can generate a base-code automatically. It can save your time and accelerate time-to-market. Finally, this solution is already the largest market proven one in Japan in Cortex-M world!

## Features and advantages of μC3/Configurator

μC3/Configurator is FREE configuration tool. User can visually configure 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.

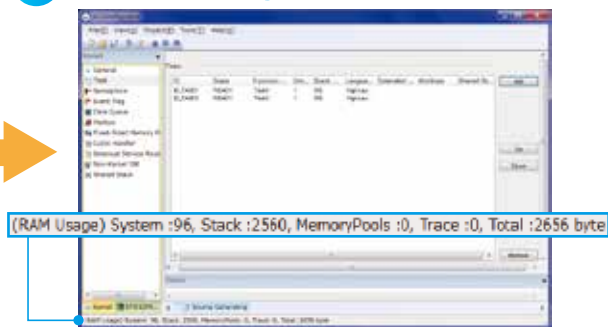
## Flow of μC3/Configurator

### 1 CPU selection



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

### 2 Kernel configuration



RAM usage view

### 4 Code generation



Skelton Code

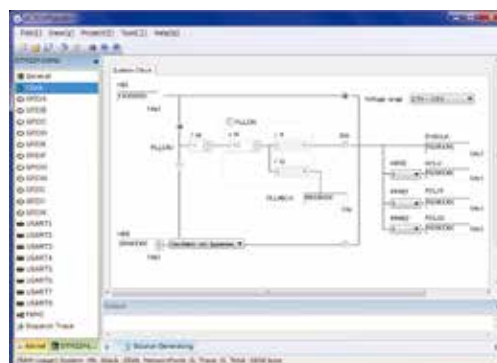
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22 //*****
23 Task1
24 //*****
25 void Task1(VP_INT oxinf):
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```

Start coding your application!

### 3 CPU configuration

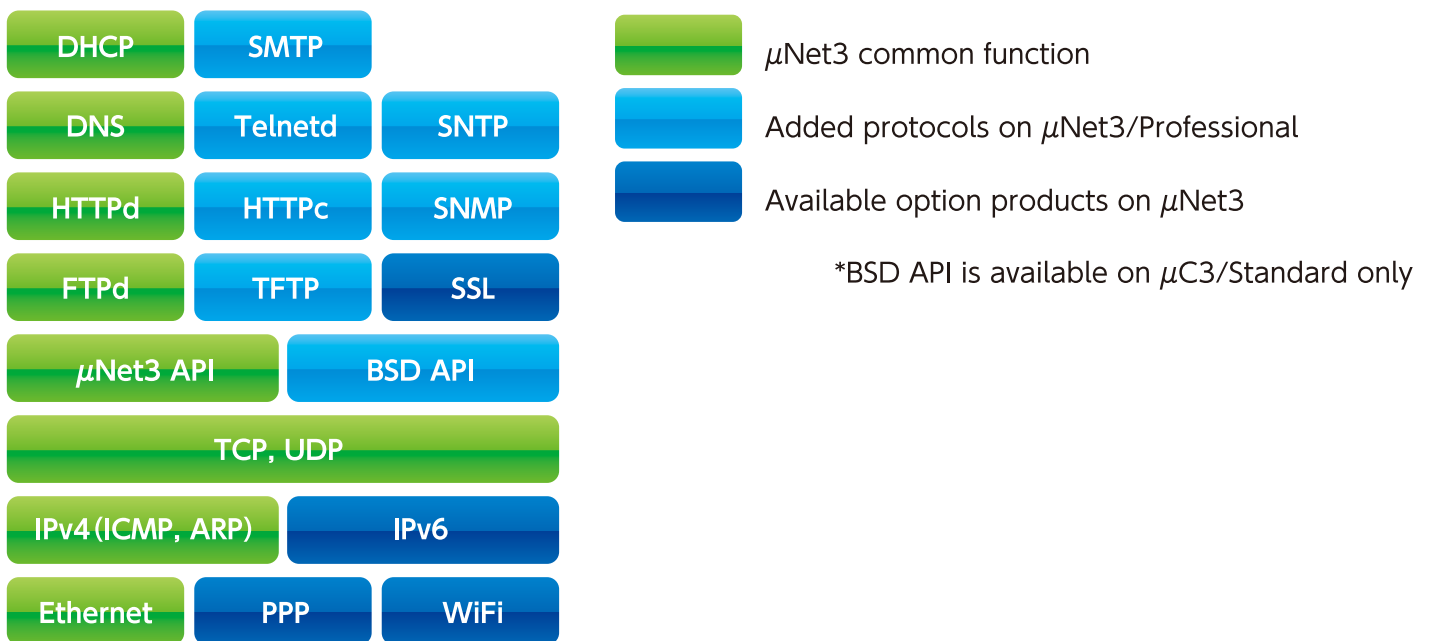


**μC3/Configurator  
makes your  
embedded life  
comfortable!**

## 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 configure the TCP/IP via μC3/Configurator.

## Protocol architecture of μNet3



## 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.

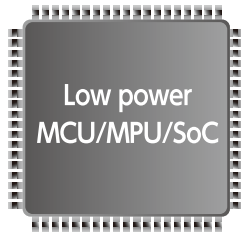
### μNet3-SSL specification

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



More Energy Saving

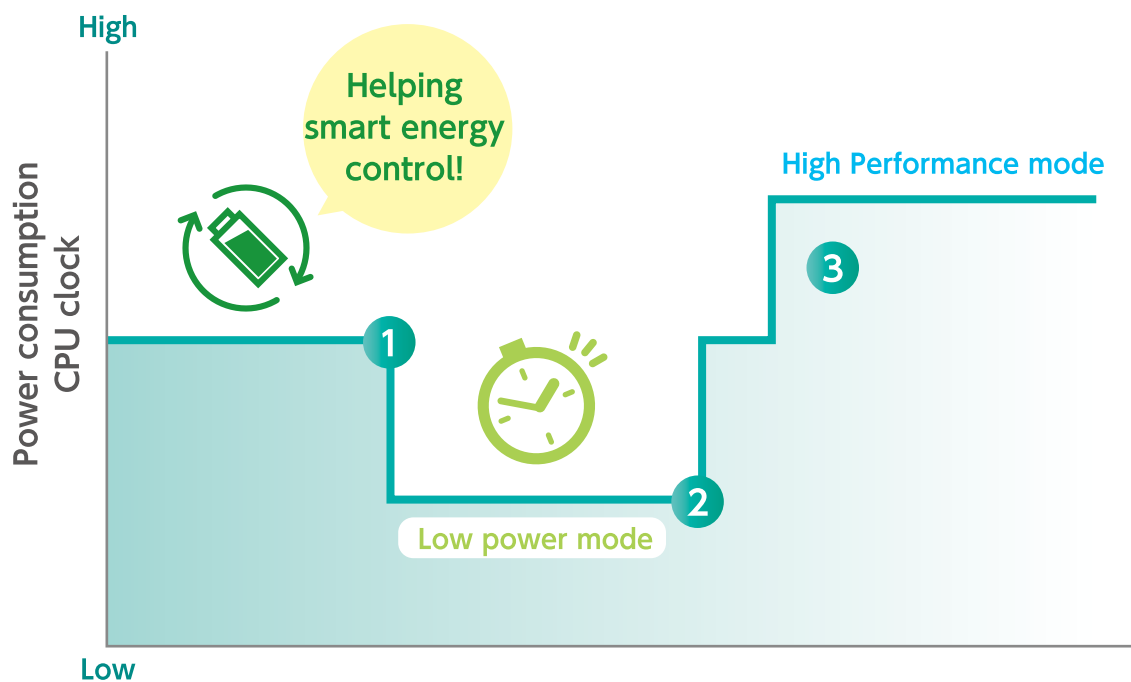
## Helping smart power control

Picco-Cube is the  $\mu$ C3/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



- 1 move to low-power mode automatically when all tasks are idle status
- 2 return from low-power mode triggered by timer or event
- 3 move to high-performance mode if high-speed operation needed

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