

# Micrium

Empowering Embedded Systems

**μC/OS-II**

**μC/LCD**

**μC/TCP-IP**

and

**The NXP LPC2378 CPU**

(Using the Keil MCB2300 EVB)

**Read Me**

[www.Micrium.com](http://www.Micrium.com)

## About Micrium

Micrium provides high-quality embedded software components in the industry by way of engineer-friendly source code, unsurpassed documentation, and customer support. The company's world-renowned real-time operating system, the Micrium **μC/OS-II**, features the highest-quality source code available for today's embedded market. Micrium delivers to the embedded marketplace a full portfolio of embedded software components that complement **μC/OS-II**. A TCP/IP stack, USB stack, CAN stack, File System (FS), Graphical User Interface (GUI), as well as many other high quality embedded components. Micrium's products consistently shorten time-to-market throughout all product development cycles. For additional information on Micrium, please visit [www.micrium.com](http://www.micrium.com).

## About **μC/OS-II**

Thank you for your interest in **μC/OS-II**. **μC/OS-II** is a preemptive, real-time, multitasking kernel. **μC/OS-II** has been ported to over 45 different CPU architectures and now, has been ported to the LPC2378 CPU available from NXP.

**μC/OS-II** is small yet provides all the services you'd expect from an RTOS: task management, time and timer management, semaphore and mutex, message mailboxes and queues, event flags and much more.

You will find that **μC/OS-II** delivers on all your expectations and you will be pleased by its ease of use.

## About **μC/TCP-IP**

**μC/TCP-IP** is a compact, reliable, high performance TCP/IP protocol stack. Built from the ground up with Micrium's renowned quality, scalability and reliability, **μC/TCP-IP** enables the rapid configuration of required network options to minimize your time to market. **μC/TCP-IP** provides you with the highest quality source code in the industry.

**μC/TCP-IP** is a clean-room design and is not derived from publicly available Unix stacks, yet still maintains compatibility with the Berkeley 4.4 socket layer interface. As with all Micrium products, **μC/TCP-IP** is written in ANSI C enabling its usage with a wide array of best-of-class cross-development tools. **μC/TCP-IP** can be used on 16, 32 and even some 64-bit CPUs.

**μC/TCP-IP** was designed specifically for the demanding requirements of embedded systems. Critical sections were kept to a minimum and selected run-time validations can be disabled to enhance performance. **μC/TCP-IP** implements zero copy buffer management for highest efficiency.

**μC/TCP-IP** allows you to adjust the memory footprint based on your requirements. **μC/TCP-IP** can be configured to only include only those network modules absolutely required by your system. When a module is not used, it's not included in the build to save valuable memory space for resource limited embedded systems.

## Licensing

µC/OS-II and µC/TCP-IP are provided in source form for **FREE** for educational use or for peaceful research.

If you plan on using µC/OS-II in a commercial product you can evaluate µC/OS-II and µC/TCP-IP for **FREE** for **45 days** and within that period, need to contact Micrium to properly license its use in your product.

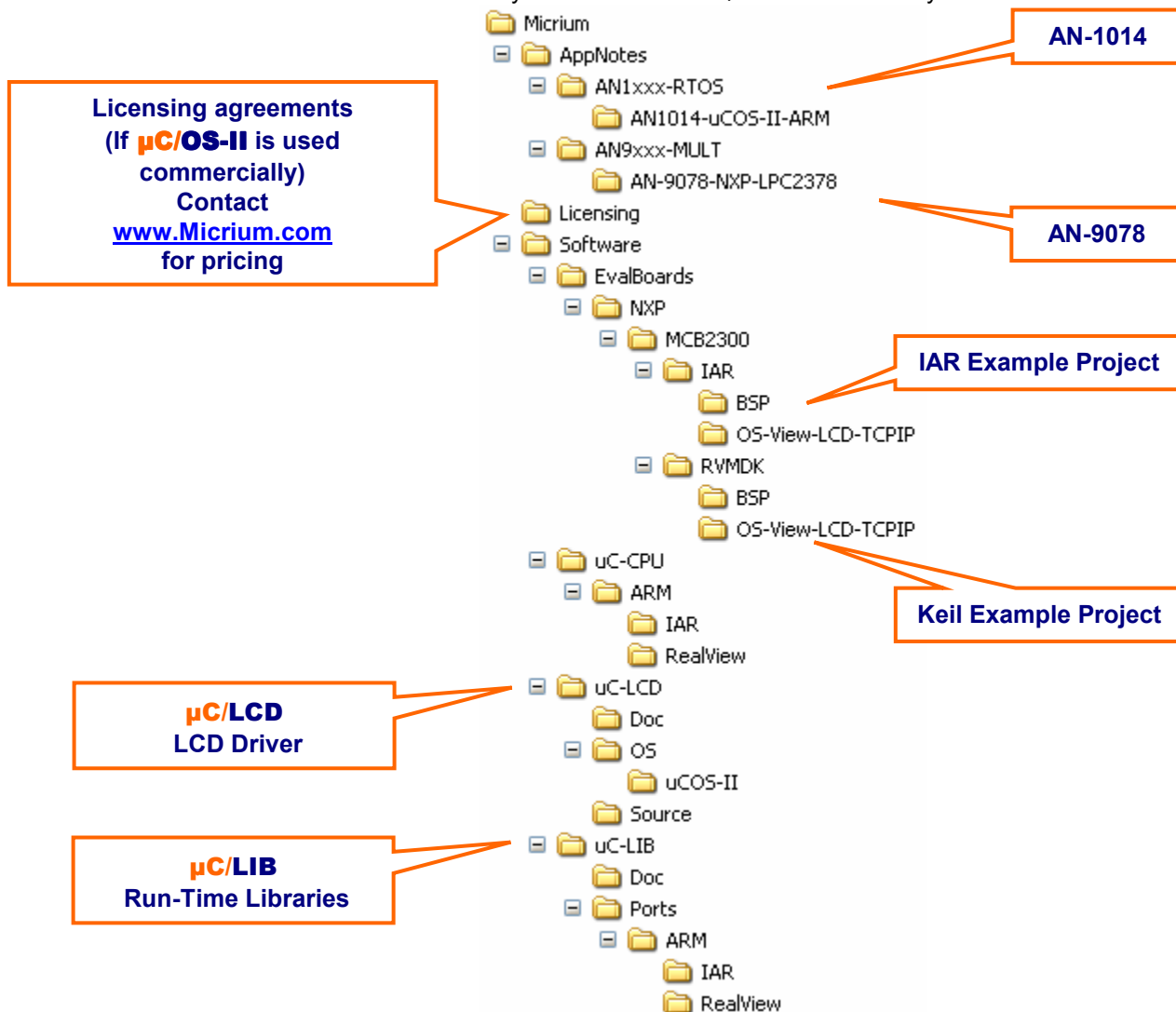
We provide **ALL** the source code with this application note for your convenience and to help you experience µC/OS-II and µC/TCP-IP. The fact that the source is provided **DOES NOT** mean that you can use it without paying a licensing fee. Please help us continue to provide the Embedded community with the finest software available. Your honesty is greatly appreciated.

## Installing the Micrium Software

The source code for **μC/OS-II** and **μC/TCP-IP** is provided in source form along with IAR project files that allows you to run the software on the IAR LPC2378 MCB2300 evaluation board. To install the software, simply run the self-extracting executable.

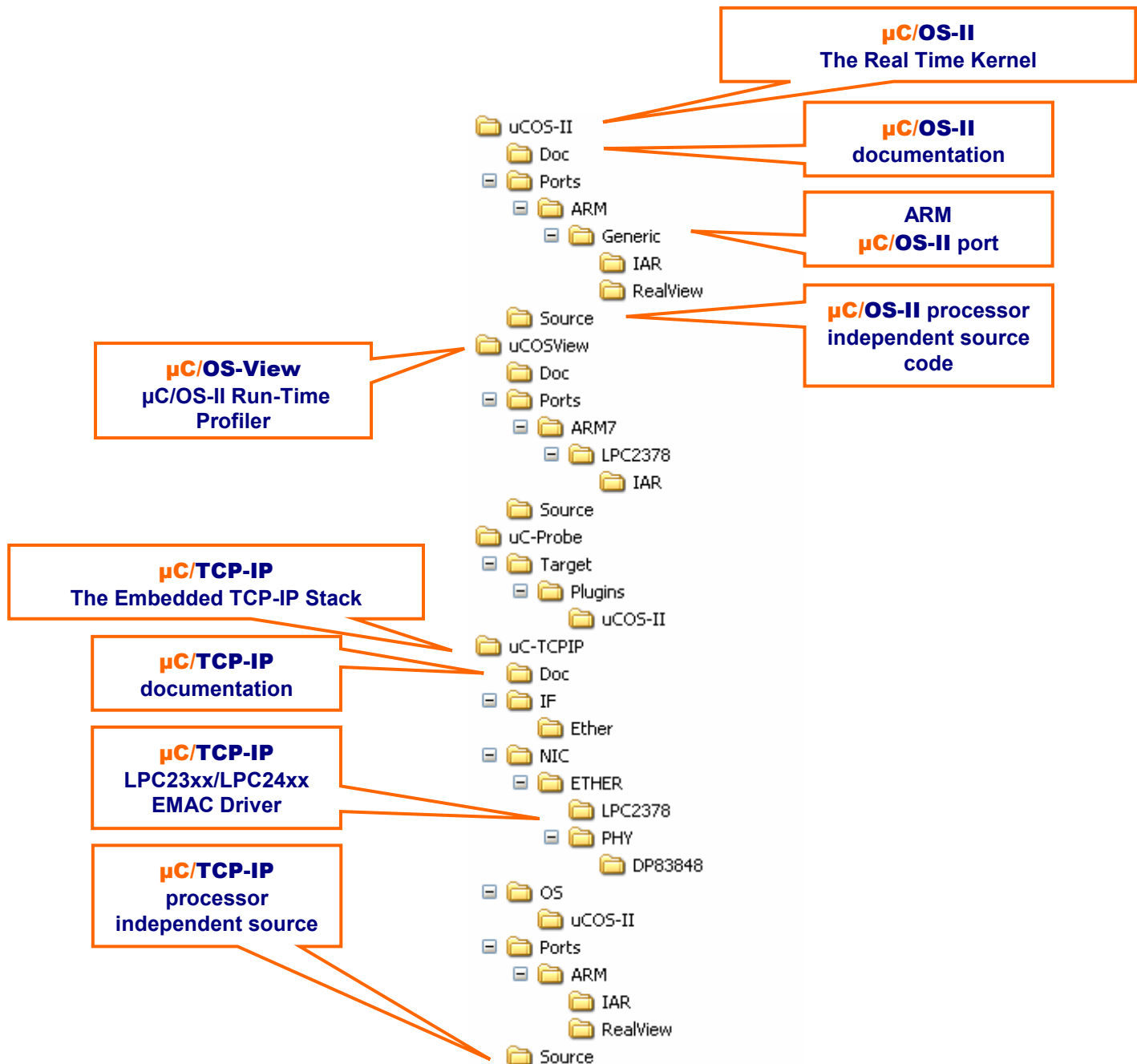
The self-extracting executable is called **Micrium-NXP-uCOS-II-LCD-TCPIP-LPC2378.exe**.

You will be prompted to accept the simple terms of the licensing agreement. If you answer 'Yes', the software will be installed on your PC under the **\Micrium** directory from the root:



# Micrium

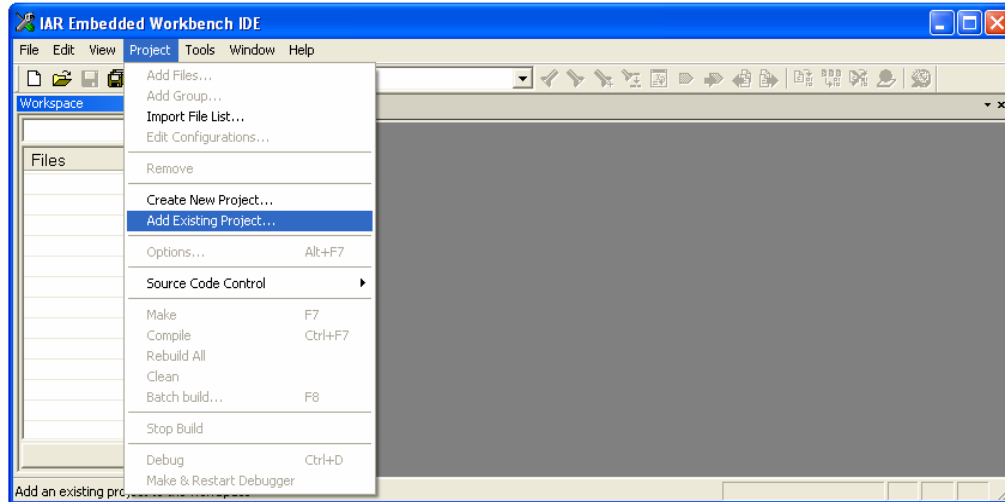
**μC/OS-II** and **μC/TCP-IP** on the NXP LPC2378  
Read Me



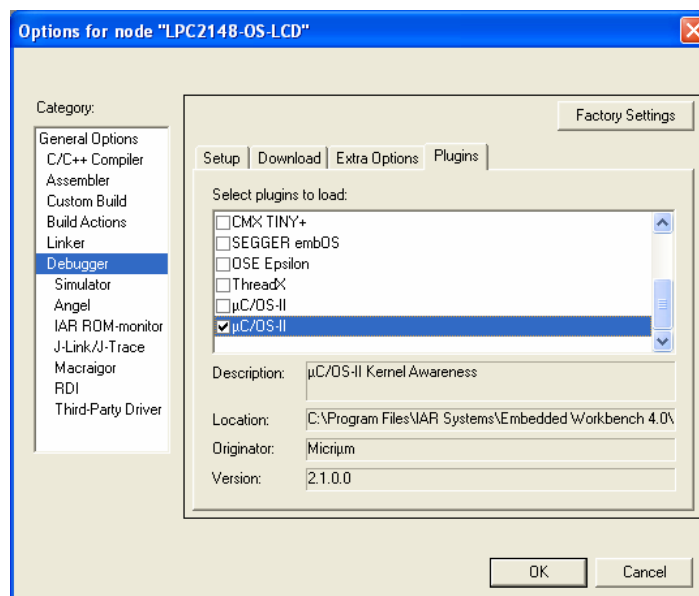
## Using the Micrium IAR Example Project

You should open AN-9078, which describes how the example code works, and read AN-1014 if you are interested in further information about the port for ARM/Thumb processors.

To view the example project, start an instance of IAR Embedded Workbench, and open the project file **OS-View-LCD-TCP-IP.ewp**, located in the directory marked “IAR Example Project” in the tree above. To do this, use the *Add Existing Project...* menu command under the *Project* menu:



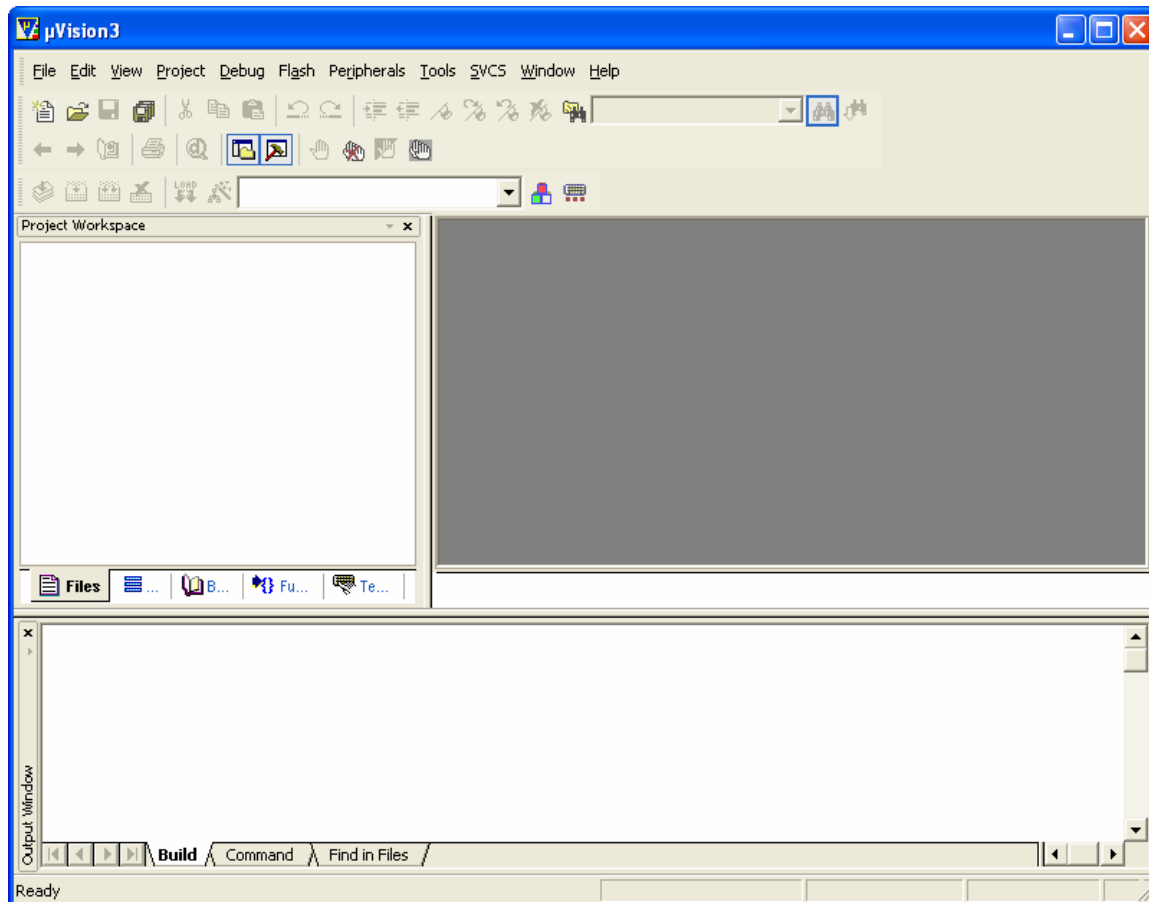
The **μC/OS-II** Kernel Awareness plug-in will allow you to examine information about system objects while using the C-Spy debugger. To gain access to this feature, enable the plug-in by right-clicking on the project name in the work space browser and choosing *Options...* Then, select the “Debugger” entry in the list box, and the “Plugins” tab pane. Find the **μC/OS-II** entry in the list and, finally, select the check box beside the entry.



## Using the Micrium Keil μVision3 (RV-MDK) Example Project

You should open AN-9078, which describes how the example code works, and read AN-1014 if you are interested in further information about the port for ARM/Thumb processors.

To view the example project, start an instance of the Keil μVision3 IDE, and open either the project file `OS-View-LCD-TCP-IP.Uv2`, located in the directory marked “Keil Example Project” in the tree above. To do this, select the “Open Project..” menu command under the “Project” menu and select the project file after navigating to the project directory (In addition, the project should be openable by double-clicking on the file itself in a Windows explorer window.)



## Errata's

If you find any errors in the documentation or code provided, please send those corrections to [Support@Micrium.com](mailto:Support@Micrium.com). Be sure to specify the processor, version of **μC/OS-II** and **μC/TCP-IP** as well as any other pertinent information about the error being reported.

## Contacts

### IAR Systems

Century Plaza  
1065 E. Hillsdale Blvd  
Foster City, CA 94404  
USA

+1 650 287 4250  
+1 650 287 4253 (FAX)

e-mail: [Info@IAR.com](mailto:Info@IAR.com)  
WEB : [www.IAR.com](http://www.IAR.com)

### NXP

1110 Ringwood Court  
San Jose, CA 95131

+1 408 474 8142

WEB: [www.nxp.com](http://www.nxp.com)

### Micrium

949 Crestview Circle  
Weston, FL 33327  
USA

+1 954 217 2036  
+1 954 217 2037 (FAX)

e-mail: [Sales@Micrium.com](mailto:Sales@Micrium.com)  
WEB: [www.Micrium.com](http://www.Micrium.com)