

# EX9486-2L Quick Installation Guide

## Overview

EX9486-2L features two serial ports, dual 10/100 Mbps Ethernet, USB port for flash disk expansion. The pre-install Linux OS and GNU tool chain make EX9486-2L ready for your application development.

## Packing List

EX9486-2L is shipped with following items

1. EX9486-2L
2. TopSCCC CD includes Tool Chain, Installation guide and example programs

## EX9486-2L Panel Layout



## Connector Description

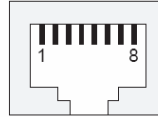
### Power Connector

Connect the 9 to 48VDC power line to EX9486-2L. If the power is properly supply, the ready LED will show a solid green light which indicates OS is ready.

### Ethernet Port

The Ethernet Port use RJ45 connector

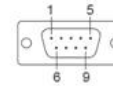
Pin	Signal
1	ETx+
2	ETx-
3	ERx+
6	ERx-



### Serial Port

The four serial ports use DB9 connector and the pin assignment are shown as following table.

Pin Number	Transmission Signals		
	RS-232	RS-422	RS-485
1	DCD	TxD-	-
2	RxD	TxD+	-
3	TxD	RxD+	Data+
4	DTR	RxD-	Data-
5	GND	GND	GND
6	DSR	-	-
7	RTS	-	-
8	CTS	-	-
9	-	-	-



### USB Port

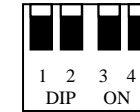
The USB 2.0 Host port now supports following devices

1. USB Storage Device
2. USB to Wireless LAN Adaptor (Ralink RT2570)
3. USB to Ethernet Adaptor (Realtek RTL8150)
4. USB to Serial Adaptor (Prolific 2303)

Use command `modprobe rt2570` and `modprobe rtl8150` load the device driver. USB to Serial Adaptor (ttyUSB0 and ttyUSB1) are built-in Kernel.

### DIP Switch

Switch is a four keys DIP switch and are reserved for your application.



### Reset Button

Press the "Reset" button to activate the hardware reset. You should only use this function if the software does not function properly. Please always use "Reboot" command to reset the system.

### Ready LED

The Ready LED will show solid green if EX9486-2L complete system boot up. If Ready LED is off during system boot up, please check if power input is correct. Turn off the power and restart EX9486-2L again. If Ready LED is still off, please contact the manufacture for technical support.

### LAN LED

When Ethernet port are connected to the network, LAN LEDs will show solid green and if there is traffic is the Ethernet, these LEDs will flash

### Serial Port LED

These four dual color LEDs indicate the data traffic at the serial ports. When RXD line is high then Green light is ON and when TXD line is high, Yellow light is ON.

### Default Setting

Default IP Address:  
Eth0:192.168.2.127  
Eth1:192.168.3.127  
Netmask: 255.255.255.0  
Login: root  
Password: root  
Terminal type: VT100

### Network Configuration

To configure the IP address, Netmask and Gateway setting, please modify

`/disk/etc/rc` as following:

`#Static IP`

```
ifconfig eth0 192.168.2.127 netmask 255.255.255.0
```

For DHCP setting:

`#DHCP`

```
dhcpcd eth0 &
```

### Wireless LAN Configuration

EX9486-2L supports wireless LAN by using USB WLAN adaptor which uses Ralink RT2570 controller. Please refer to the website <http://ralink.rapla.net> for the supporting list of the USB WLAN adaptor.

To configure the wireless LAN setting, please use command:

```
modprobe rt2570
```

```
ifconfig wlan0 up
```

```
iwconfig wlan0 essid XXXX key YYYYYYYY mode MMMM
```

For infrastructure mode XXXX is the access point name and YYYYYYYY is the encryption key and MMMM should be *managed*

For Ad-Hoc mode XXXX is the EX9486-2L device name and YYYYYYYY is the encryption key MMMM should be *ad-hoc*. To configure the IP address use command

```
dhcpcd wlan0 & or ifconfig wlan0 192.168.2.127 netmask 255.255.255.0
```

### USB to Ethernet Configuration

To enable the USB to Ethernet Adaptor device driver, use command

```
modprobe rtl8150
```

```
ifconfig eth1 192.168.2.128 netmask 255.255.255.0
```

### Install GNU Tool Chain

Find a PC with Linux 2.6.X Kernel installed and login as a **root** user then copy the `arm-linux-3.3.2.tar.gz` to root directory \ of PC. Under \ directory type following command to install the EX9486-2L Tool Chain

```
#tar zxvf arm-linux-3.3.2.tar.gz
```

### I/O Devices Control

EX9486-2L uses standard I/O device control to access following devices:

1. Ethernet: eth0, eth1
2. Serial Ports: ttyS1, ttyS2
3. Serial Console Port: ttyS0
4. Real time clock: rtc
5. USB Flash Disk: sda, sda1, sdb, sdb1
6. USB WLAN dongle: wlan0
7. USB Serial Cable: ttyUSB0, ttyUSB1

**Remark: Remember to include the "ex9486.h" header file in your program. Please refer to the example program included in the EX9486-2L SDK CD to demo the RS-232/422/485 mode configuration of serial port 1/2 configuration.**

### File System

EX9486-2L uses jffs2 file system for the built-in flash memory disk. The directory are:

```
/disk  
/home  
/etc
```

Write data to these directories are saved to flash memory and will not be erased after power off.

### Mount External Disk

To mount the USB Flash Disk, use following commands after the disk are installed properly. To mount USB disk

```
mount /mnt/sda or mount /mnt/sda1 or mount /mnt/sdb or mount /mnt/sdb1
```

To find out the device name of the USB disk, you can use

```
dmesg | grep sd
```

### Web Page Directory

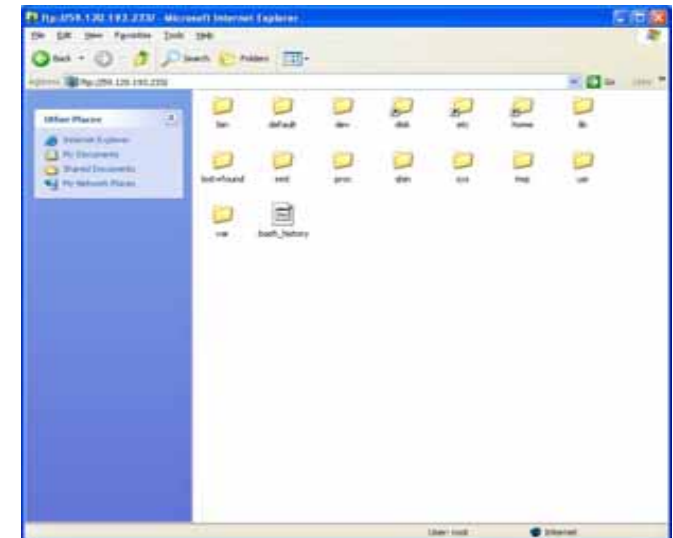
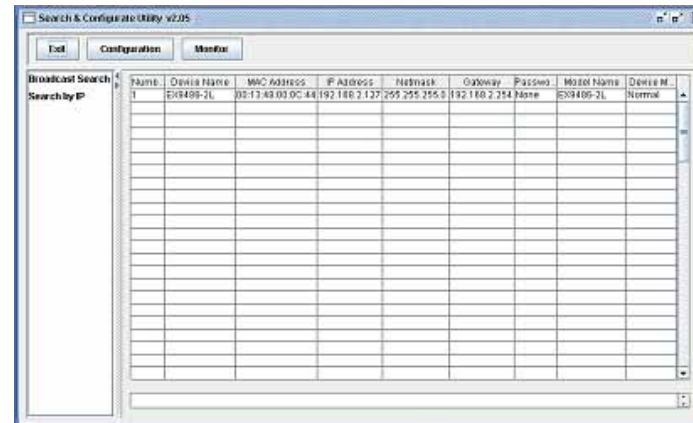
The web pages are placed at `/home/httpd` and the `boa.conf` contains the `boa` web server settings. The home page name should be *index.html*

### Welcome Message

The welcome message "TOPSCCC" can be modified by editing the `/etc/motd` file.

### Manager Utility Software

The Manager Utility software, `manager.jar` is a java program and is used to discovered the EX9486-2L in the network if the IP address is forgotten. It can be run at any OS where java run time is available. To install the java run time platform at your computer, please visit <http://java.sun.com> and download the Java 2 Standard Edition (J2SE). Once the EX9486-2L is found, you can click the Telnet Console to configure the EX9486-2L



### Compile and upload the C program

Use following command of the GNU cross compiler to compile the C program

```
#arm-linux-gcc -o hello hello.c
```

Then upload the *hello* to EX9486-2L. Remember to change the mode of the file

After upload to EX9486-2L by

```
chmod +x hello
```

To run the hello program, please type

```
./hello
```

### Upload file to EX9486-2L

To upload the file to EX9486-2L, you can use FTP command in command line or Web Browser such as Microsoft Internet Explorer. Let us take IE as example,