

## Embedded Linux System - F2M05 Datasheet

### Free2move Embedded Linux System

With the Embedded Linux System, Free2move offers a powerful embedded platform that can be used in a large number of situations. With network and Bluetooth connectivity it is perfect as a wireless information server.

An extensive set of I/O interfaces can be added to the system. 16 digital I/O, Ethernet is standard but more interfaces can be added in customer specific projects.

With a physical size of 65x65x19mm the Embedded Linux System can be included in almost any product.



### Linux – effective development, low cost

Using Linux on embedded systems has several advantages. It is a well-tested operating system that is used in many server systems today due to its reliability. Using Linux also gives access to a wide range of open source applications. The Linux Embedded System is delivered with a software development kit including a large number of applications. If other applications are needed, porting standard Linux application to the Embedded Linux system is often done by just recompiling the source code.

The software development kit includes everything that is needed to compile, debug and flash applications. The application can be developed and tested on a Linux workstation and then recompiled and downloaded to the Embedded Linux System via the Ethernet interface. The software can also be upgraded with a regular FTP client.

### Features

- 100 MHz 32bit RISC CPU with peak performance of 100MIPS
- 16 MByte RAM
- 4 MByte Flash
- 10/100 Mbit Ethernet Interface
- Standard Linux operating system with kernel 2.4 or 2.6

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## Software specification

### *Operating system*

Linux operating system with kernel v2.4 or v2.6 with MMU support. The Embedded Linux System is supported by kernel releases from kernel.org.

### *File system*

File system designed for flash memory usage. It implements a log structured file system that is always consistent no matter crashes or power-downs.

### *Applications*

The following applications are some of the applications included in the software development kit. Those applications are delivered with makefiles and are compiled and tested on the Embedded Linux System.

**Boa**  
High performance web server with CGI support.

**Telnetd**  
Telnet server, allows users to log in to the system.

**Sftp**  
FTP server and client for file transfer.

**Ash**  
A small Bourne compatible shell, enables shell scripting.

**Smtplib**  
Email application that takes an email message body and sends it to a SMTP server.

**Elvis-Tiny**  
A mini vi editor with many of the common vi commands implemented.

**Easyedit**  
An easy to use editor for users that does not like vi.

**Syslogd**  
Kernel and system logging tool

**DHCP**  
Server, client and relay applications for the Dynamic Host Configuration Protocol.

**Busybox**  
Implements many common UNIX/Linux utilities into one executable.

**Ipsed**  
Set the IP address remote by the ARP-Ping method.

**Iptables**  
Application for creating firewalls using NAT(Network address translation).

**PPP-2.4**  
PPP daemon that enables IP networking over serial lines.

### *Boot loader*

Boot loader application for Linux that boots the Embedded Linux system over the Ethernet interface. The Embedded Linux system can be upgraded with a standard FTP client.

### *Bluetooth software*

Bluez protocol stack with libraries and tools.

### *Software development kit:*

The software development kit includes compiler, libraries, debugger and flash utilities. The Embedded Linux System is supported by the GCC (GNU Compiler Collection).

Customers gets free access to the Free2move developer area website where all the necessary software and documentation can be found.

Free2move offers different levels of support. Contact free2move for more information.



## Hardware specification

The following is the default specification of the Embedded Linux System. Free2move offers to change or add features in customer specific projects.

### CPU:

100MHz 32-bit RISC CPU with peak performance of 100MIPS. MMU featuring 4Gbyte of virtual uniform address space for each user process. 8Kbyte on-chip direct mapped unified instruction/data cache memory.

### Flash:

4 Mbyte of non-volatile flash memory (1,9 Mbyte available for customer applications). Firmware updates via Ethernet interface.

### RAM:

16 Mbyte SDRAM (7Mbyte available for customer applications)

### Network interface:

10/100Mbit Ethernet auto sensing, RJ45 connector(Category 5 twisted pair cable)

### Digital I/O:

16 digital I/O  
Device drivers included in Linux OS.

### Leds:

Power indicator  
Network activity

### Additional interfaces:

Additional interfaces are available as customer specific I/O cards. Examples are:

- USB Interface (Control and bulk traffic only)
- AD/DA Converters
- I2C
- 2 Parallel ports
- 4 RS-232 serial ports
- LCD displays
- CAN

### Size:

65x65x19mm

### Power:

7-30V DC via power supply.  
Power over LAN support.  
Power consumption: TBD

### Package:

With or without IP65 classed plastic casing with physical size of 130x80x25mm.

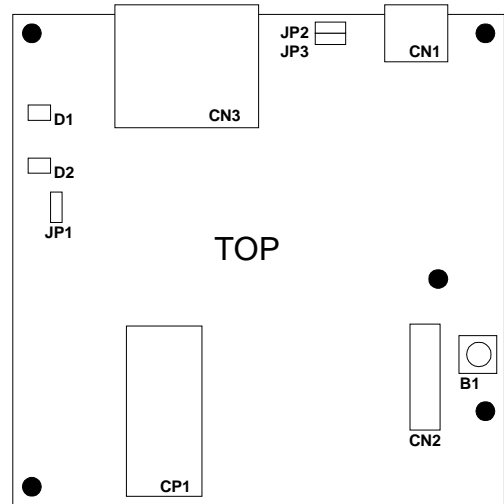
### Operating temperature range:

0-70°C

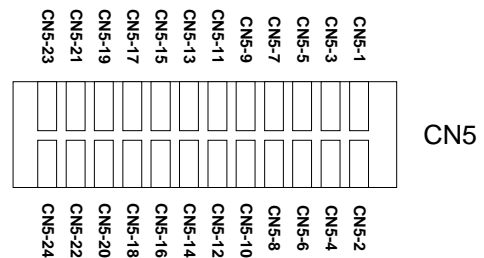
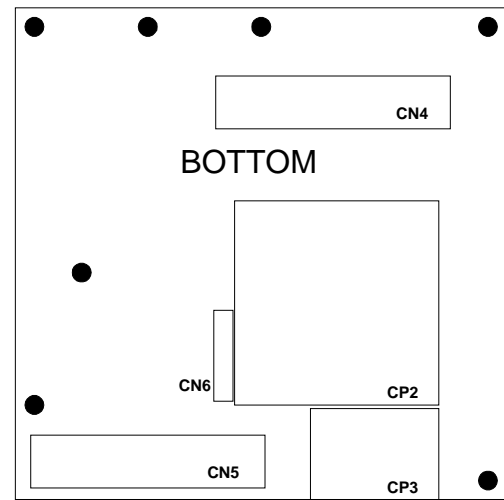


### Hardware pinout

Component	Description
CN1	Power connector
CN2	Serial port 1(Bluetooth module)
CN3	RJ45 Network connector
CN4	I/O Card connector 1
CN5	I/O Card connector 2
CN6	Serial port 3
D1	Network activity led
D2	Power led
JP1	Network boot
JP2	Power over LAN
JP3	Power over LAN
CP1	RAM chip
CP2	CPU
CP3	Flash chip
B1	Reset button

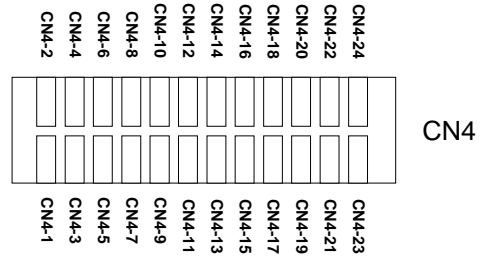


CN5	Pinout
CN5-1	Serial port 2 – TX
CN5-2	+3.3V
CN5-3	Serial port 2 – RX
CN5-4	RESET
CN5-5	Serial port 2 – RTS
CN5-6	USB D-
CN5-7	Serial port 2 – CTS
CN5-8	GND
CN5-9	GND
CN5-10	USB D+
CN5-11	GND
CN5-12	BT - PCM Sync
CN5-13	GND
CN5-14	BT - PCM CLK
CN5-15	GND
CN5-16	BT - PCM IN
CN5-17	GND
CN5-18	BT - PCM OUT
CN5-19	GND
CN5-20	NMI
CN5-21	GND
CN5-22	GND
CN5-23	GND
CN5-24	GND

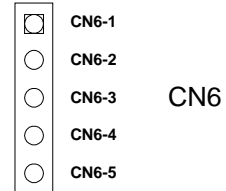




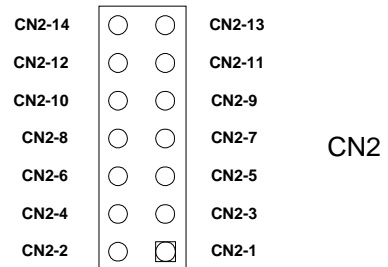
CN4	Pinout
CN4-1	DC GND
CN4-2	+DC Power
CN4-3	I/O Port B – 7
CN4-4	I/O Port B – 6
CN4-5	I/O Port B – 5
CN4-6	I/O Port B – 4
CN4-7	I/O Port B – 3
CN4-8	I/O Port B – 2
CN4-9	I/O Port B – 1 (I2C – SDA)
CN4-10	I/O Port B – 0 (I2C – CLK)
CN4-11	Serial port 0 – RX
CN4-12	Serial port 0 – CTS
CN4-13	Serial port 0 – RTS
CN4-14	Serial port 0 – TX
CN4-15	I/O Port A – 7
CN4-16	I/O Port A – 6
CN4-17	I/O Port A – 5
CN4-18	I/O Port A – 4
CN4-19	I/O Port A – 3
CN4-20	I/O Port A – 2
CN4-21	I/O Port A – 1
CN4-22	I/O Port A – 0
CN4-23	IRQ
CN4-24	GND



CN6	Pinout
CN6-1	GND
CN6-2	Serial port 3 – CTS
CN6-3	Serial port 3 – TX
CN6-4	Serial port 3 – RX
CN6-5	Serial port 3 – RTS



CN2	Pinout
CN2-1	NC
CN2-2	GND
CN2-3	GND
CN2-4	+3.3V
CN2-5	NC
CN2-6	BT – RESET
CN2-7	BT – PCM SYNC
CN2-8	BT – CTS
CN2-9	BT – PCM CLK
CN2-10	BT – TX
CN2-11	BT – PCM IN
CN2-12	BT – RTS
CN2-13	BT – PCM OUT
CN2-14	BT – Rx





## **Prices and delivery conditions**

Free2move operates as an OEM manufacturer of customized wireless solutions. Prices are available on request.

The delivery time is dependent on volume. The units presently delivered are engineering samples to selected customers. The delivery times of such samples are approximately 2 weeks.

Bluetooth qualification, CE and FCC approval are in progress. Engineering samples may have limited functionality.



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