

# Microsys

## **MPX Boot Module**

For MPX5200(G) R1

For MPX5200(G) R2

For MPX8349(FA)

## **MPE04 V1 R1**

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## Edition

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## 1. Before Beginning

- Read this 'Getting Started' Guide thoroughly first.
- Make sure that you have understood all of the contents.
- Pay special attention to the sections marked 'WARNING' and 'CAUTION'.

## 2. Safety and Handling Precautions

### 2.1 Definitions



- The sections titled 'WARNING' contain advice which, if disobeyed, may lead to life danger or severe risk of injury, as well as severe damage or destruction of the device.



- The sections titled 'CAUTION' contain advice which, if disobeyed, may lead to risk of injury and damage or malfunction of the device.

### 2.2 Safety Instructions



**WARNING:** DO NOT plug or unplug the MPE04 module to/from the carrier or MPX-module while the power supply is on! Doing so may damage the unit!



**WARNING:** The unit is not protected against water or moisture. DO NOT let the unit get wet. This would lead to severe damage or destruction of the unit!

### 2.3 Handling Instructions



**CAUTION:** All parts have to be handled as ESD-sensitive devices. Unpack and handle them only under ESD-safe conditions. Otherwise the unit may suffer irreparable damage. The manufacturer declines all responsibility for damage due to non-ESD-safe handling!



**CAUTION:** If necessary, clean the unit only with appropriate methods under ESD-safe conditions. DO NEVER use water or strong solvents such as e.g. thinner, benzene, gasoline etc., as these may cause irreparable damage to the unit.



**CAUTION:** DO NOT exceed specified storage and operation temperatures. Do not block free air circulation, as the unit may overheat.

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### 3. Unpacking

When receiving the MPE04-MPX Boot Module, please check that it contains all of the following parts:

- 1 MPE04 MPX Boot Module
- 2 EXM32 Connectors
- 1 CD-ROM with hardware manuals

If any of the above is missing on arrival, please contact your dealer for clearance.



**CAUTION: Unpack only under ESD-safe conditions!**

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## 4. Requirements and Preparations

### 4.1 MPE04-Version

There are different Versions of the MPE04 to work with different MPX-Modules. Reason for difference are:

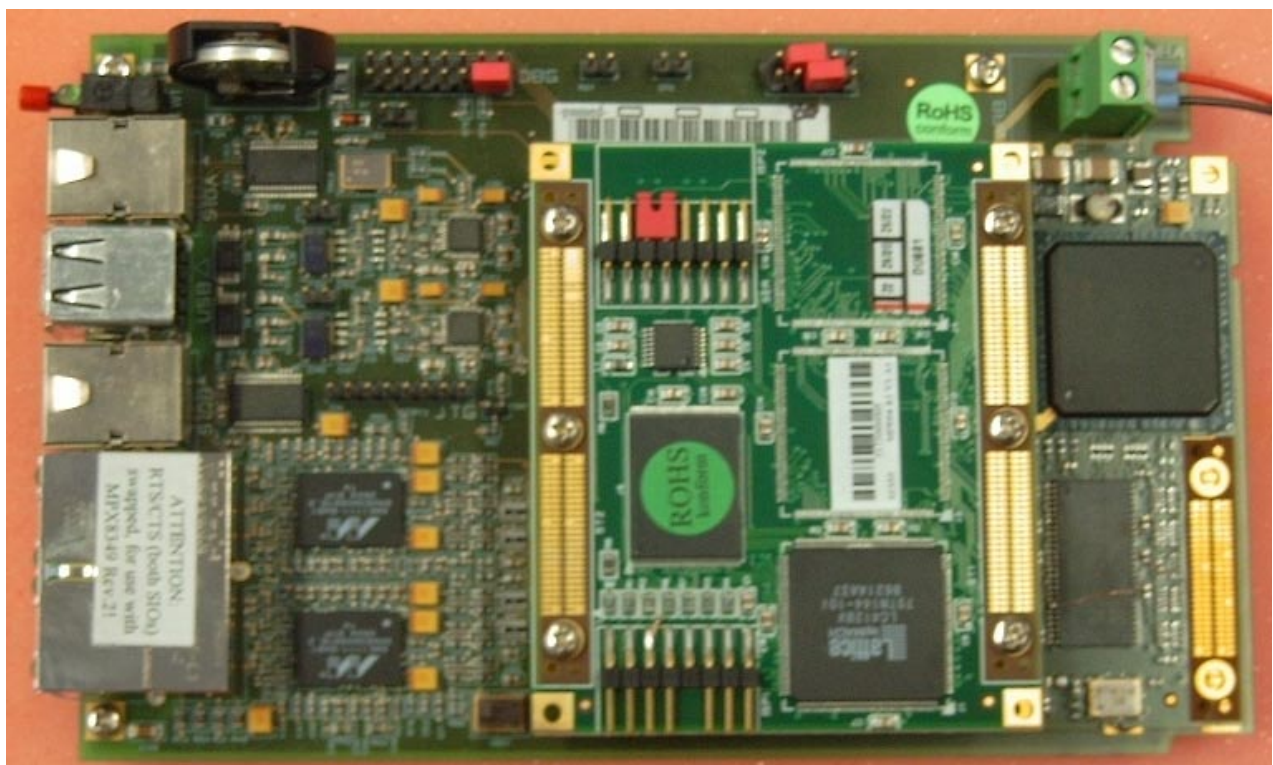
- data width for boot flash (8 or 16 bit)
- different processor interfaces

Make sure you are using the correct version for your MPX-Module. Wrong MPE04-version will cause in malfunction.

Article	Description	PLSI-labling
831 701	MPE04 MPX Boot Module for MPX5200 (G) R1	G 317 01 00
831 703	MPE04 MPX Boot Module for MPX5200 (G) R2	G 317 01 02
831 704	MPE04 MPX Boot Module for MPX8349 (FA)	G 317 11 00

### 4.2 Assemble MPE04 on top of MPX-Module

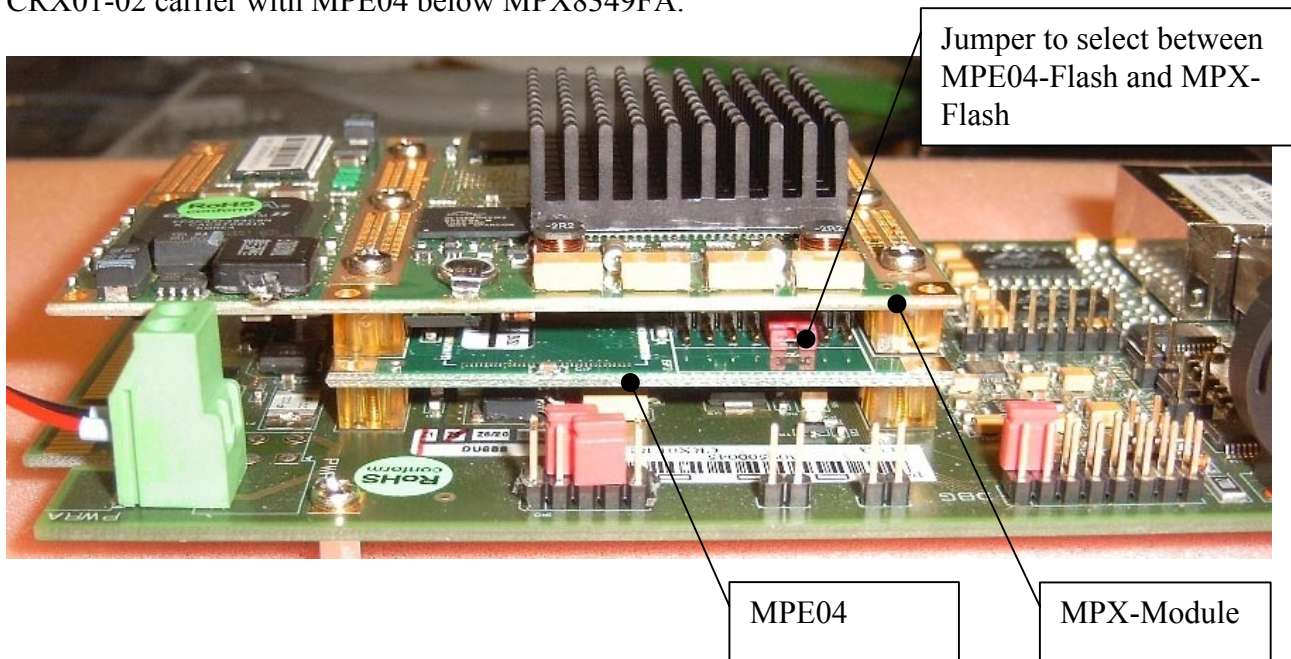
CRX01-02 carrier with MPE04 on top of MPX5200G.



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### 4.3 Assemble MPE04 below MPX-Module

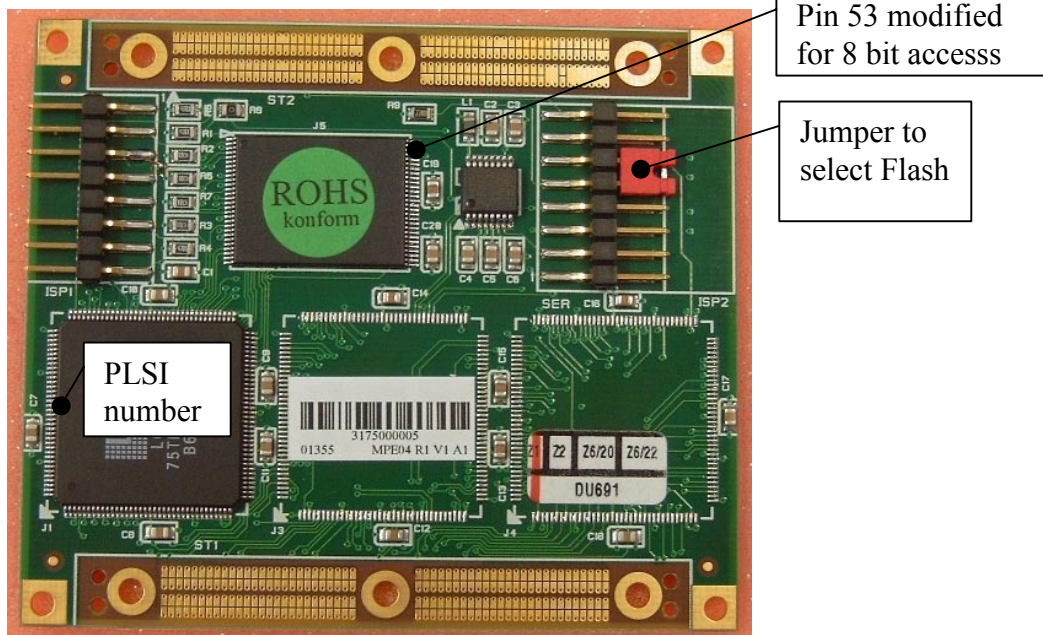
CRX01-02 carrier with MPE04 below MPX8349FA.



Access to the jumper is little difficult.

## 5. Operation

### 5.1 Jumper on MPE04



### 5.2 Copy MPE04-Flash to MPX-Flash

Action	What happens
	MPE04 has to be mounted on top or below MPX-Module
<b>SET</b> Jumper on MPE04 SER5 to SER-6	<b>Disables</b> Flash on MPX-Module <b>Enables</b> Flash on MPE05-Module
Switch on Power or press Reset Button	CPU will boot from MPE04-Flash
cp.b 0xfc000000 0x100000 0x40000	<b>Copy</b> 0x40000 byte from MPE04-Flash to SDRAM Set different length if required
<b>REMOVE</b> Jumper on MPE04 SER5 to SER-6	<b>Enables</b> Flash on MPX-Module <b>Disables</b> Flash on MPE05-Module
protect off 0xfc000000 0xfc03ffff	<b>Enables</b> write access to address range Set different range if required
erase 0xfc000000 0xfc00ffff	<b>Erase</b> data on address range in MPX-Flash Set different range if required
protect off 0xfc000000 0xfc03ffff	<b>Enables</b> write access to address range Set different range if required
cp.b 0x100000 0xfc000000 0x40000	<b>Copy</b> 0x40000 byte from SDRAM to MPX-Flash Set different length if required
reset	<b>Boot</b> from MPX-Flash with new data


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### 5.3 Copy MPX-Flash to MPE04-Flash

Action	What happens
	MPE04 has to be mounted on top or below MPX-Module
<b>REMOVE</b> Jumper on MPE04 SER5 to SER-6	<b>Enables</b> Flash on MPX-Module <b>Disables</b> Flash on MPE05-Module
Switch on Power or press Reset Button	CPU will boot from MPX-Flash
cp.b 0xfc000000 0x100000 0x40000	<b>Copy</b> 0x40000 byte from MPX-Flash to SDRAM Set different length if required
<b>SET</b> Jumper on MPE04 SER5 to SER-6	<b>Disables</b> Flash on MPX-Module <b>Enables</b> Flash on MPE04-Module
protect off 0xfc000000 0xfc03ffff	<b>Enables</b> write access to address range Set different range if required
erase 0xfc000000 0xfc00ffff	<b>Erase</b> data on address range in MPE04-Flash Set different range if required
protect off 0xfc000000 0xfc03ffff	<b>Enables</b> write access to address range Set different range if required
cp.b 0x100000 0xfc00 0000 0x40000	<b>Copy</b> 0x40000 byte from SDRAM to MPX-Flash Set different length if required
reset	<b>Boot</b> from MPE04-Flash with new data
	<b>Remove</b> Jumper on MPE04 SER-5 to SER-6 to boot from MPX-Module

## 5.4 Flash to Starting the Board

Turn on the power switch on the power supply, if applicable.  
The two LEDs close to the power switch on the CR825 should be lit now.

 **CAUTION:** If not both LEDs are lit, IMMEDIATELY switch off both the power supply and check for the reason of power failure!

The board will boot, and the terminal starts displaying boot messages.

NOTE: The exact readout may differ, depending on the specific hardware in use. Also, the software release is subject to change. The basic principles however stay the same.

```
U-Boot 1.1.1 (Jun  4 2004 - 13:27:34)

CPU:   MPC5200 (JTAG ID 0001101d) at 396 MHz
       Bus 132 MHz, IPB 66 MHz, PCI 33 MHz
Board: MicroSys PM520
I2C:   85 kHz, ready
DRAM:  64 MB
FLASH: 8 MB
PCI:   Bus Dev VenId DevId Class Int
       00 0c 1057 5803 0680 00
       00 0d 1000 000f 0100 00
In:    serial
Out:   serial
Err:   serial
Net:   FEC ETHERNET
IDE:   Bus 0: not available

Type "run flash_nfs" to mount root filesystem over NFS

Hit any key to stop autoboot:  0
=>
```

## 5.5 The U-Boot Prompt Commands

Boot procedure ends up with a command prompt.

From this point, you can issue various commands to configure future booting, install software into flash and start existing applications. The "help" command gives a complete list of all implemented commands, and "help <command>" gives more details about the respective command's syntax.

The complete description can be found in the "U-Boot and Linux Guide" from [www.denx.de](http://www.denx.de).

The following section will give a brief overview of some of the most important commands.

<value> designates mandatory parameters.

[value] designates optional parameters.

All address values are entered in hexadecimal digits, without extra pre- or suffixes.

### 5.5.1 setenv - Set environment variable

Syntax: setenv <variable\_name> [value]

Sets environment variable variable\_name with value.

If value is omitted, variable\_name is erased.

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### **5.5.2 printenv - Print environment variables**

Syntax: printenv

Prints (shows) a list of all environment variables currently set.

### **5.5.3 saveenv - Save environment variables**

Syntax: saveenv

Saves current environment variable settings to non-volatile memory.

### **5.5.4 tftpboot - Load software via TFTP into DRAM**

Syntax: tftpboot <target\_address\_in\_dram> <filename>

Loads a piece of software via TFTP to DRAM.

NOTE: The tftpboot command gives information on the real file size after successful transfer. It is important to take note of this reported file size, if the software is to be moved into Flash memory later. See commented example in section 5.3.

### **5.5.5 protect - Turn on/off write protection on Flash memory**

Syntax: protect <on|off> <start\_adress> <end\_address>

Switch write protection on/off for specified area of Flash memory.

NOTE: Start and end addresses must match block start and end addresses of the Flash memory, otherwise the command will fail. See example in section 5.3.

### **5.5.6 era - Erase Flash memory**

Syntax: era <start\_address> <end\_address>

Erase specified Flash memory area. The area has to be un-protected before being able to erase.

### **5.5.7 cp.b - Copy binary**

Syntax: cp.b <source\_start\_address> <target\_start\_address> <number\_of\_bytes>

Copies number\_of\_bytes in binary mode from source\_start\_address to target\_start\_address.

This is most often used to transfer downloaded software from DRAM to Flash memory, after un-protecting and erasing Flash.

NOTE: number\_of\_bytes is given in plain hexadecimal digits, without pre- or suffix. Enter the exact value that tftpboot has reported after download!

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