

# FRM220 NMC Upgrade Procedure

The information within this document is intended for experienced service personnel with knowledge of TCP/IP networking, PC networking configuration, serial terminal configuration and operation.

Failure to follow steps precisely could leave the flash on the embedded device in an unusable state, requiring factory assistance.

Failure of boot code upgrade requires the factory to physically replace the flash chip, which is a surface mounted component, soldered with RoHS compliant materials (non-lead).

Please be warned and please be careful. **Stable AC power is a MUST!! during flash update**

**Prerequisites:**

FRM220 20U Chassis with NMC, (any version prior to 1.32 must upgrade bootloader!!)

DB9F to DB9M 1:1 cable

Notebook or PC with available COM port and TCP/IP ready

Console emulation software (PuTTY, HyperTerminal or Tera Term)

TFTP server (CTCU TFTP Server for Windows)

Upgrade firmware, for version 1.92, released as 'updater.bin' boot code version 1.4, 'kernel12314.gz' and 'romfs192.gz' files which are Unix GZipped image files (DO NOT UNZIP these files.) Boot code must be updated if NMC version is prior to v1.32. Any version prior to 1.86 also requires updating the kernel to build 12314.

**Procedure:**

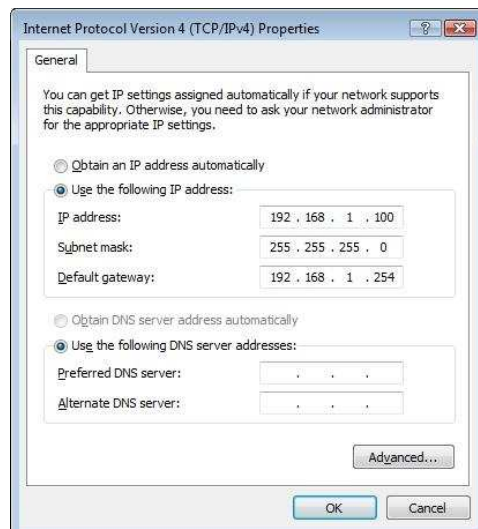
1. Connect the NMC' DB9F serial port to the desktop's or laptop's COM port with 1:1 configuration cable.

2. Start the terminal application and configure it for:

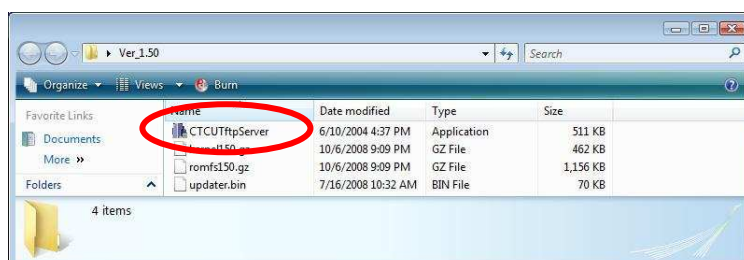
- a. 115.2k baud
- b. 8 pits
- c. no parity
- d. 1 stop bit
- e. no flow control

3. Connect the NMC's RJ-45 Ethernet port to the desktop's or Laptop's Ethernet LAN port. Configure TCP/IP settings on the PC as follows:

- a. static IP 192.168.1.100
- b. subnet mask 255.255.255.0
- c. gateway 192.168.1.254

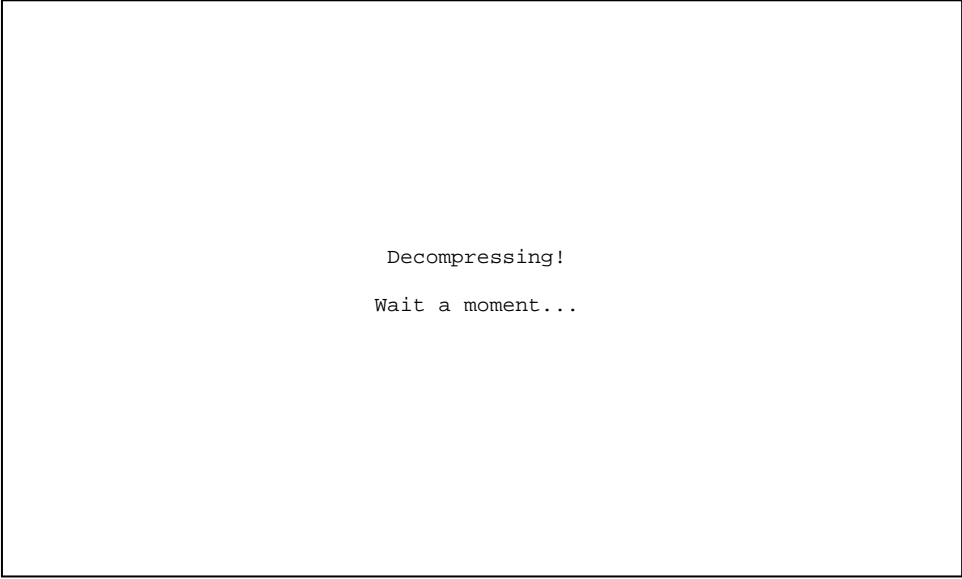


4. Start the TFTP application program by double-clicking. It was extracted with the upgrade package. If the firewall complains, select 'Unblock'. Make sure all 'gz' and 'bin' files are located in the same directory as the TFTP application program.



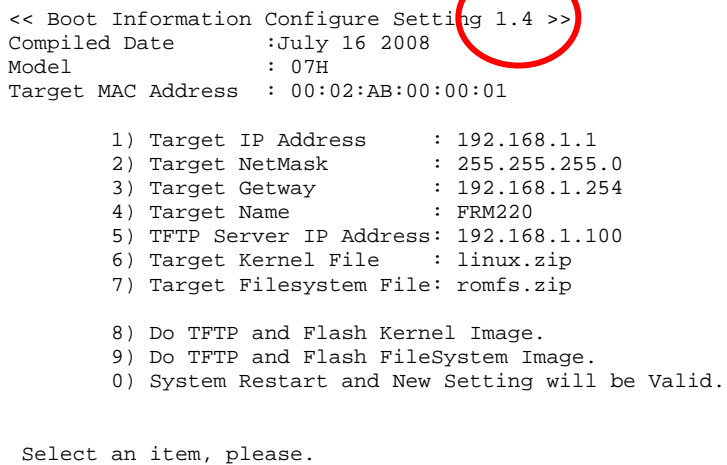
(If NMC is v1.32 or above, bootloader should not require upgrade. Skip to step 10.)

5. Power on the chassis, hot plug the NMC, or reboot the NMC. Immediately press '&' (the shift key and 7 on US keyboard) once as soon as you see the below decompressing screen. If you see the prompt 'CTCUBoot >>' then you pressed '&' twice. Enter the 'boot' command and try again. Press '&' quickly, only once.



```
Decompressing!  
Wait a moment...
```

6. If you do not see the following "Boot Information" screen, repeat step 5 again until you see this display. Check the 'System Configure Setting' version. If it is V1.4, skip to step #10. Otherwise, proceed with the boot code upgrade.



```
<< Boot Information Configure Setting 1.4 >>  
Compiled Date      :July 16 2008  
Model              : 07H  
Target MAC Address : 00:02:AB:00:00:01  
  
1) Target IP Address      : 192.168.1.1  
2) Target NetMask        : 255.255.255.0  
3) Target Getway         : 192.168.1.254  
4) Target Name           : FRM220  
5) TFTP Server IP Address: 192.168.1.100  
6) Target Kernel File    : linux.zip  
7) Target Filesystem File: romfs.zip  
  
8) Do TFTP and Flash Kernel Image.  
9) Do TFTP and Flash FileSystem Image.  
0) System Restart and New Setting will be Valid.  
  
Select an item, please.
```

7. Boot Code upgrade: The below screen is an example of a version 1.3 boot code that needs to be updated. Make changes to each of the lines indicated with arrows.

```
<< Boot Information Configure Setting V1.3 >>
Compiled Date:Nov 29 2007
Model          : FRM220
Serial Number   : 12345678

Target MAC Address : 00:02:AB:05:02:66

1) Target IP Address      : 10.1.1.51  ←
2) Target NetMask         : 255.255.255.255 ←
3) Target Getway          : 255.255.255.255 ←
4) Target Name            : FRM220
5) TFTP Server IP Address: 10.1.1.219 ←
6) Target Kernel File     : linux.zip ←
7) Target Filesystem File: romfs.zip ←

8) Do TFTP and Flash Kernel Image.
9) Do TFTP and Flash FileSystem Image.
0) System Restart and New Setting will be Valid.

Choice an item, please.
```

- (1) Target IP Address: [192.168.1.1](#)
  - (2) Target NetMask: [255.255.255.0](#)
  - (3) Target Gateway: [192.168.1.254](#)
  - (5) TFTP Server IP Address: [192.168.1.100](#)
  - (6) Target Kernel File: [kernel12314.gz](#) (or newer)
  - (7) Target Filesystem File: [romfs192.gz](#) (or newer)
  - (0) Press '0' to restart system, press '&' to re-enter System Configure Setting
- (Always REBOOT after changing any system information!!)**  
Double check and correct any missing item.

```
<< Boot Information Configure Setting V1.3 >>
Compiled Date:Nov 29 2007
Model          : FRM220
Serial Number   : 12345678

Target MAC Address : 00:02:AB:05:02:66

1) Target IP Address      : 192.168.1.1  ←
2) Target NetMask         : 255.255.255.0 ←
3) Target Getway          : 192.168.1.254 ←
4) Target Name            : FRM220
5) TFTP Server IP Address: 192.168.1.100 ←
6) Target Kernel File     : kernel12314.gz ←
7) Target Filesystem File: romfs192.gz ←

8) Do TFTP and Flash Kernel Image.
9) Do TFTP and Flash FileSystem Image.
0) System Restart and New Setting will be Valid.

Choice an item, please.
```

Now, press 'Shift-b' to start and complete the Ethernet auto-negotiation. You should see:

```
Wait for auto-negotiation complete...
OK
100MB - Full Duplex
Waiting for download ...
```

If you see Timeout message, check connections and settings and press 'Shift-b' again. You may need to press Shift-b a few times until the auto-negotiation has been successful.

Now at the "Waiting for download .." message, press 'Shift-g'. You will have completed TFTP transfer when you see the following screen:

```

Release Date:Nov 29 2007 / 15:10:45
*****
FRM220 Updater Version 1.3 [Revision: 1 ]

Copyright (c) 2007 CTC UNION TECHNOLOGIES CO.,LTD
*****

<<FRM220 Boot Loader - Version 1.3>>

FRM220 SNMP card is Found!

WARNING: FRM220 Boot Loader will be updated!

-- Press any key to continue --
  
```

8. At the 'Press any key to continue' prompt, press any key (line space bar).

**WARNING!!! Do not allow any power interruption until completed successfully!!!**

```

Flash programming ..... OK!
ROM code update succeeded!
  
```

```
-- Press any key to reboot --
```

9. When you see the decompressing screen, press 'Shift-7' once. Check and confirm the boot version is now 1.4. The boot code upgrade was successful. The TFTP server will show successful file transfer.

```

<< Boot Information Configure Setting 1.4 >>
Compiled Date      :July 16 2008
Model             : 07H
Target MAC Address : 00:02:AB: 05:02:66

1) Target IP Address      : 192.168.1.1
2) Target NetMask        : 255.255.255.0
3) Target Getway         : 192.168.1.254
4) Target Name           : FRM220
5) TFTP Server IP Address: 192.168.1.100
6) Target Kernel File    : kernel12314.gz
7) Target Filesystem File: romfs192.gz

8) Do TFTP and Flash Kernel Image.
9) Do TFTP and Flash FileSystem Image.
0) System Restart and New Setting will be Valid.

Select an item, please.
  
```

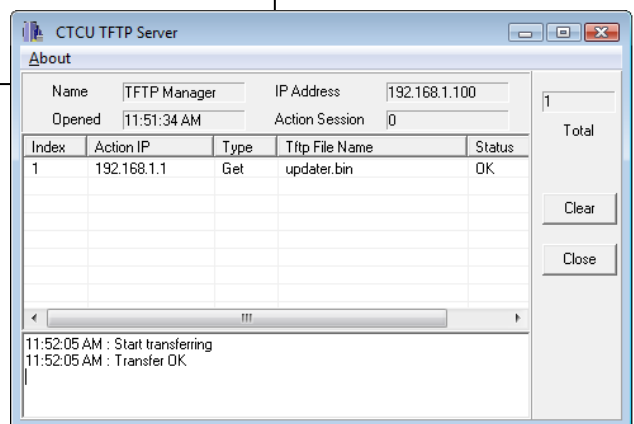
Boot code upgrade is complete!!

Continue :

Keyin "8" : Do TFTP and Flash Kernel Image  
(answer 'y' to replace image)  
then

Keyin "9" : Do TFTP and Flash FileSystem Image  
(answer 'y' to replace image)  
then

Keyin "0" : System Restart



\*\*\*\*\*Skip to Step #18\*\*\*\*\*

10. Kernel Upgrade: Reboot the NMC and allow it to completely boot. (Boot loader must be ver 1.4!! NMC version must be 1.32 or above. If not, start over at step 1.) Upgrade may also be performed on an online system, adjust the IP settings of TFTP server and image names without changing NMC IP address. For version prior to 1.86, kernel requires update.

```

*****
*** CTC UNION TECHNOLOGIES CO., LTD. ***
*** FRM220 NMC VER. 1.32 ***
*****
This Chassis ID:[00] Cascade:[Yes] Monitored Chassis ID:[00]
Chassis List:
#0:[X] #1:[ ] #2:[ ] #3:[ ] #4:[ ] #5:[ ] #6:[ ] #7:[ ] #8:[ ] #9:[ ]

<1>:SLOT #01 > NMC & Chassis <B>:SLOT #11 > FRM220-10/100I
<2>:SLOT #02 > FRM220-10/100I <C>:SLOT #12 > FRM220-10/100I
<3>:SLOT #03 > FRM220-10/100I <D>:SLOT #13 > FRM220-10/100I
<4>:SLOT #04 > FRM220-10/100I <E>:SLOT #14 > FRM220-10/100I
<5>:SLOT #05 > FRM220-10/100I <F>:SLOT #15 > FRM220-10/100I
<6>:SLOT #06 > FRM220-10/100I <G>:SLOT #16 > FRM220-10/100I
<7>:SLOT #07 > FRM220-10/100I <H>:SLOT #17 > FRM220-10/100I
<8>:SLOT #08 > FRM220-10/100I <I>:SLOT #18 > Empty
<9>:SLOT #09 > FRM220-10/100I <J>:SLOT #19 > Empty
<A>:SLOT #10 > FRM220-10/100I <K>:SLOT #20 > Empty
<->:Monitor previous chassis <+>:Monitor next chassis
<L>:SNMP System Configuration Setup
<M>:SNMP Manager Configuration Setup
<P>:Password Setup
<R>:Reboot <Z>:Logout

```

11. Key in the 'L' command to enter the SNMP System Configuration Setup.

```

*****
*** CTC UNION TECHNOLOGIES CO., LTD. ***
*** FRM220 NMC VER. 1.32 ***
*****
<< SNMP System Configuration Setup >>
Model= FRM220
S/N= 123456789
Target MAC Address= 00:02:ab:06:20:20
<1>: Target IP= 192.168.1.1
<2>: Target Netmask= 255.255.255.0
<3>: Target Gateway= 192.168.1.254
<4>: Target Name= FRM220
<5>: TFTP Server IP= 192.168.1.100
<6>: TFTP Download Kernel= kernel133.gz
<7>: TFTP Download File System= romfs133.gz
<8>: Load default settings and write to system.
<9>: Do TFTP and Flash Kernel function.
<A>: Do TFTP and Flash File System function.
<ESC>: Write to system and go to previous menu.

Please select an item.

```

12. If required, change the settings to match these below.

- (1) Target IP Address: 192.168.1.1
- (2) Target NetMask: 255.255.255.0
- (3) Target Gateway: 192.168.1.254
- (5) TFTP Server IP Address: 192.168.1.100
- (6) Target Kernel File: kernel12314.gz
- (7) Target Filesystem File: romfs192.gz

(ESC) to write the changes.

**Be sure to reboot the NMC after any of these system changes.**

(online traffic will not be effected when NMC is rebooted)

13. Open a command window on the laptop or desktop PC and ping the NMC. Make sure the network connection works and is reliable.

```

C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.0.6000]
Copyright (c) 2006 Microsoft Corporation. All rights reserved.

C:\Users\admin>ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:

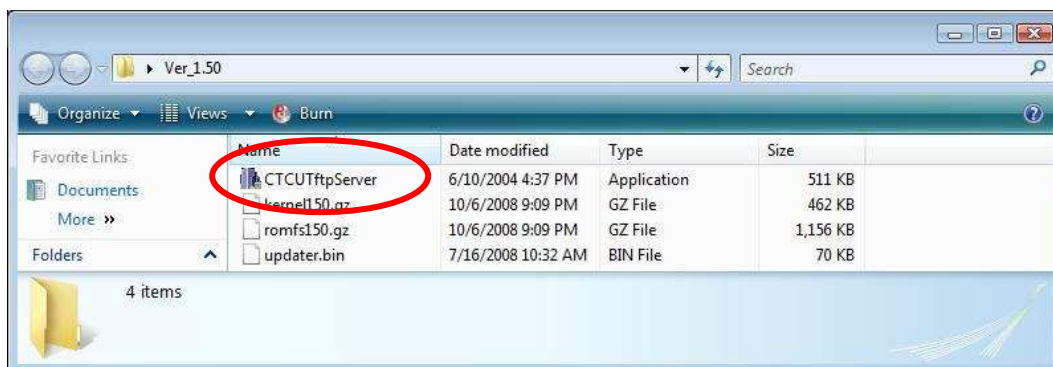
Reply from 192.168.1.1: bytes=32 time=8ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64
Reply from 192.168.1.1: bytes=32 time<1ms TTL=64

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 8ms, Average = 2ms

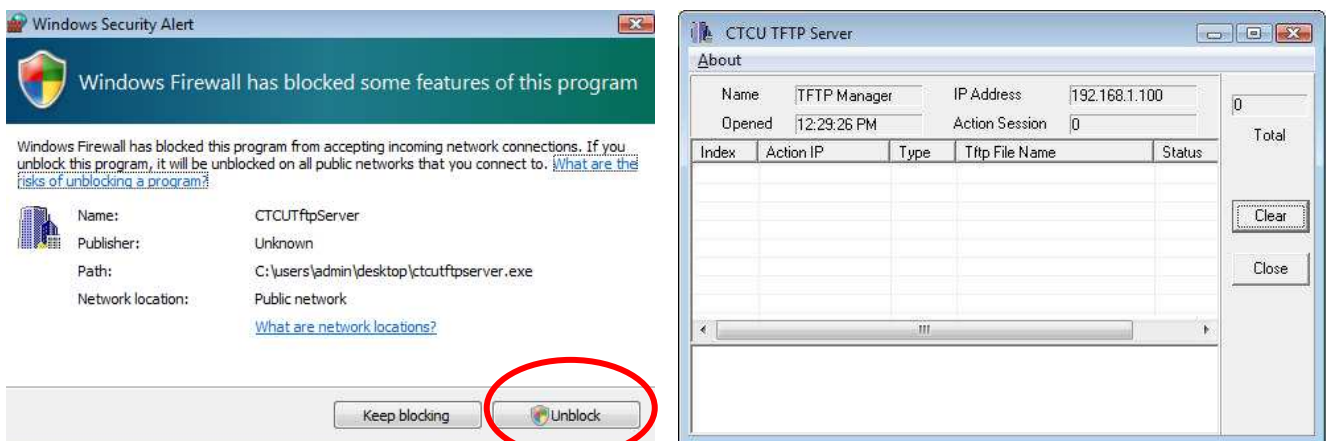
C:\Users\admin>

```

14. On the laptop or PC, if the TFTP application is not already running, start it now by double clicking the server icon. Note: A Linux box on the network can also act as a TFTP server if configured properly. You can even upload the files to your TFTP server and then perform upgrade from Web interface of FRM220-NMC remotely.



(It is necessary to disable the built-in firewall in Windows temporarily to perform the upgrade process.)



Some anti-virus programs also include firewall. Make sure all firewalls are disabled or unblocked for the TFTP server.

15. On the laptop or PC, in the terminal screen and while in the SNMP System Configuration Setup, press the '9' key to do kernel upgrade.

```

Do TFTP and Flash File System function.
Are you sure?['y' or 'n']
Start TFTP and Flash File System. Please Wait.....
Upgrade Success!

*****
*** CTC UNION TECHNOLOGIES CO., LTD. ***
*** FRM220 NMC VER. 1.32 ***
*****

<< SNMP System Configuration Setup >>
Model= FRM220
S/N= 111111111
Target MAC Address= 00:02:ab:06:20:20
<1>: Target IP= 192.168.1.1
<2>: Target Netmask= 255.255.255.0
<3>: Target Gateway= 192.168.1.254
<4>: Target Name= FRM220
<5>: TFTP Server IP= 192.168.1.100
<6>: TFTP Download Kernel= kernel12314.gz
<7>: TFTP Download File System= romfs192.gz
<8>: Load default settings and write to system.
<9>: Do TFTP and Flash Kernel function.
<A>: Do TFTP and Flash File System function.
<U>: Upgrade Line Card Menu.
<ESC>: Write to system and go to previous menu.

Please select an item.

The settings were modified.

```

**Dots are added during flashing  
DO NOT POWER OFF!!!!**

16. On the laptop or PC, in the terminal screen and while in the SNMP System Configuration Setup, press the 'A' key to do filesystem upgrade.

```

Do TFTP and Flash File System function.
Are you sure?['y' or 'n']
Start TFTP and Flash File System. Please Wait.....
Upgrade Success!

```

**Dots are added during flashing  
DO NOT POWER OFF!!!!**

17. Press 'ESC' to the main menu and press 'R' to reboot the NMC with new kernel & filesystem.

```

*****
*** CTC UNION TECHNOLOGIES CO., LTD. ***
*** FRM220 NMC VER. 1.32 ***
*****

This Chassis ID:[00] Cascade:[Yes] Monitored Chassis ID:[00]
Chassis List:
#0:[X] #1:[ ] #2:[ ] #3:[ ] #4:[ ] #5:[ ] #6:[ ] #7:[ ] #8:[ ] #9:[ ]

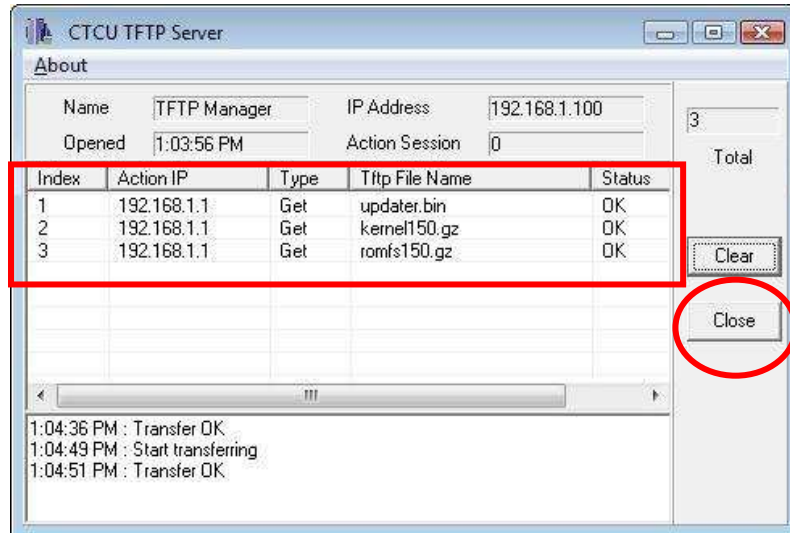
<1>:SLOT #01 > NMC & Chassis
<2>:SLOT #02 > FRM220-10/100I
<3>:SLOT #03 > FRM220-10/100I
<4>:SLOT #04 > FRM220-10/100I
<5>:SLOT #05 > FRM220-10/100I
<6>:SLOT #06 > FRM220-10/100I
<7>:SLOT #07 > FRM220-10/100I
<8>:SLOT #08 > FRM220-10/100I
<9>:SLOT #09 > FRM220-10/100I
<A>:SLOT #10 > FRM220-10/100I
<B>:SLOT #11 > FRM220-10/100I
<C>:SLOT #12 > FRM220-10/100I
<D>:SLOT #13 > FRM220-10/100I
<E>:SLOT #14 > FRM220-10/100I
<F>:SLOT #15 > FRM220-10/100I
<G>:SLOT #16 > FRM220-10/100I
<H>:SLOT #17 > FRM220-10/100I
<I>:SLOT #18 > Empty
<J>:SLOT #19 > Empty
<K>:SLOT #20 > Empty
<->:Monitor previous chassis <+>:Monitor next chassis
<L>:SNMP System Configuration Setup
<M>:SNMP Manager Configuration Setup
<P>:Password Setup
<R>:Reboot

```

**Reflects the previous  
version before reboot**



18. Confirm TFTP transfer was OK and then close the TFTP server application. (should indicate the new version kernel and filesystem files)



19. Reboot the NMC with new kernel and filesystem. Confirm the version is now 1.87.

```

*****
*** CTC UNION TECHNOLOGIES CO., LTD. ***
*** FRM220 NMC VER. 1.92 ***
*****
This Chassis ID:[00] Cascade:[Yes] Monitored Chassis ID:[00]
Chassis List:
  #0:[X] #1:[ ] #2:[ ] #3:[ ] #4:[ ] #5:[ ] #6:[ ] #7:[ ] #8:[ ] #9:[ ]

<1>:SLOT #01 > NMC & Chassis          <B>:SLOT #11 > FRM220-10/100I
<2>:SLOT #02 > FRM220-10/100I          <C>:SLOT #12 > FRM220-10/100I
<3>:SLOT #03 > FRM220-10/100I          <D>:SLOT #13 > FRM220-10/100I
<4>:SLOT #04 > FRM220-10/100I          <E>:SLOT #14 > FRM220-10/100I
<5>:SLOT #05 > FRM220-10/100I          <F>:SLOT #15 > FRM220-10/100I
<6>:SLOT #06 > FRM220-10/100I          <G>:SLOT #16 > FRM220-10/100I
<7>:SLOT #07 > FRM220-10/100I          <H>:SLOT #17 > FRM220-10/100I
<8>:SLOT #08 > FRM220-10/100I          <I>:SLOT #18 > Empty
<9>:SLOT #09 > FRM220-10/100I          <J>:SLOT #19 > Empty
<A>:SLOT #10 > FRM220-10/100I         <K>:SLOT #20 > Empty
<->:Monitor previous chassis    <+>:Monitor next chassis
<L>:SNMP System Configuration Setup
<M>:SNMP Manager Configuration Setup
<P>:Password Setup
<R>:Reboot    <Z>:Logout

```

This completes the successful upgrade of the FRM220 NMC. View the 'release\_note.txt' file in this package for changes in this version.

<END>



## Fiber Series

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