Orion3 & MiniFlex SD Card Application Note

Contents

1 Summary

This document describes the SD card functionality and possible commands. The SD card option for Orion3 and MiniFlex modems allows an easy software upgrade or exchange of a broken unit in the field without using a computer. Beside the advantage of an easy field handling, the SD card can also be an additional backup system for configuration files.

2 Available Units with SD Card

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Orion3 LTU	Orion3 NTU DIN-Rail
FG-PAM-SRL-2E1B/4Eth-RP,V90 FG-PAM-SR2L-4E1B/4Eth-RP,V93 FG-PAM-SR2L-2E1B/N64/4Eth-RP,V94 FG-PAM-SR4L-4E1B/4Eth-RP,V96 FG-PAM-SR4L-4Eth,V98 FG-PAM-SR4L-2N64/4Eth,V98	FG-PAM-RAIL2N-2E1B/2Eth, V81 FG-PAM-RAIL2N-2E1B/2Eth-24V, V81 FG-PAM-RAIL2N-2Eth, V83 FG-PAM-RAIL2N-2Eth-24V, V83 FG-PAM-RAIL4N-4Eth, V84 FG-PAM-RAIL4N-4Eth-24V, V84 FG-PAM-RAIL4N-4Eth-24V, V84I FG-PAM-RAIL4N-2E1B/2Eth-24V, V84E FG-PAM-RAIL4N-3Eth,V84S FG-PAM-RAIL4N-3Eth-24V,V84S FG-PAM-RAIL2N-N64/2Eth, V88 FG-PAM-RAIL2N-N64/2Eth-24V, V88
*N64 can be replaced by any daughter card like V.24, 4xV.24, RS-485, E0 etc	

MiniFlex SHDSL	MiniFlex FOM2
MF-PAM-RAIL2N-2Eth-12V, V1 MF-PAM-RAIL2N-2Eth-24V, V1 MF-PAM-RAIL2N-2Eth-230V, V1	MF-FOM-RAIL2N-2Eth-12V, V1 MF-FOM-RAIL2N-2Eth-24V, V1 MF-FOM-RAIL2N-2Eth-230V, V1

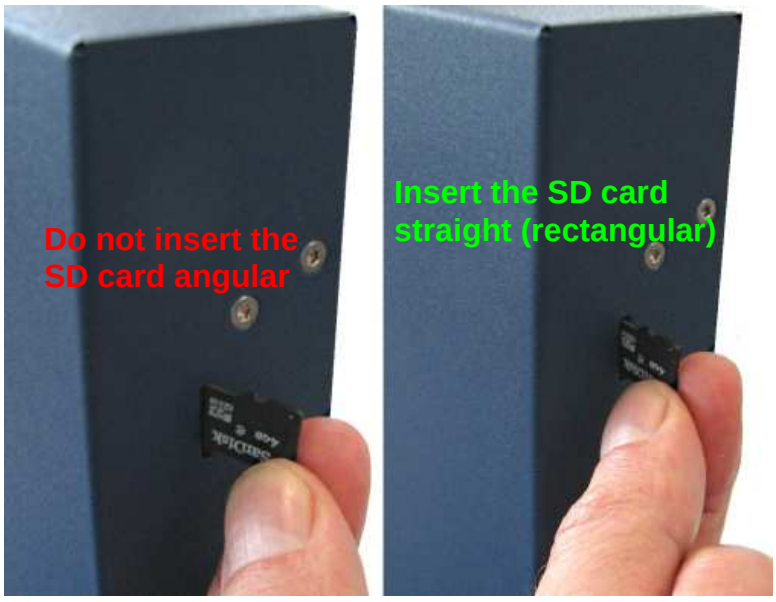
3 Supported SD Card

Only the following formatted microSD cards are supported: SDHC. The size of the microSD card is 11mm x 15mm x 1mm. Any capacity is supported from 4 GB to 64 GB with the FAT16 or FAT32 file system.

ATTENTION
UNFORMATTED microSD CARDS CAN NOT BE HANDLED. PLEASE ALSO CARE ABOUT THE OPERATING TEMPERATURE RANGE OF THE MICRO SD CARD. IT MUST BE COMPLIANT TO THE REQUIREMENT OF YOUR APPLICATION.

Recommended microSD card:
SDSDQM-004G-B35: SanDisk® MicroSDHC™ Card 4GB Class 4, -25℃ to +85° C

Please be careful when inserting the SD card into the unit. Insert the SD card straight and care not to miss the card holder.



4 Software Commands

4.1 <SD SNAPSHOT> Command

This command generates the SNAPSHOT DAT, APP.BIN, LDR_xTU.BIN and STARTUP.CFG files in the O3MF directory on the SD card. This command is only available if the SD card is inserted.

4.2 <SD DIR> Command

This command shows the content of the SD card. This command is only available if the SD card is inserted. Example:

```
CO_FMM>SD DIR
SD Card contents:
   813k  /O3MF/APP.BIN
 65024   /O3MF/LDR_NTU.BIN
 21166   /O3MF/STARTUP.CFG
   167   /O3MF/SNAPSHOT.DAT
 21166   /O3MF/PROFILE1.CFG
 22381   /O3MF/PROFILE2.CFG
```

Possible Files:

APP.BIN:	Modem software
LDR_xTU.BIN:	System loader file (x can be N or L)
STARTUP.CFG:	Startup configuration
SNAPSHOT.CFG:	Checksum file (APP.BIN, LDR_xTU.BIN, STARTUP.CFG)
PROFILEx.CFG:	Configuration files (x is a number from 0 to 9)
MODEMVIEW.TXT:	Command MODEMVIEW output file

4.3 <SD DEL [NAME]> Command

This command allows deleting files from the SD card. This command is only available if the SD card is inserted. Example:

```
CO_01_FMM>SD DEL /O3MF/APP.BIN
```

4.4 <SD SAVE [N=0..9]> Command

The <SD SAVE> command generates a configuration file and saves it to the SD card. The SD SAVE<CR> generates the STARTUP.CFG file while <SD SAVE x>generates the desired PROFILEx.CFG file. Only a startup configuration can be saved. This command is only available if the SD card is inserted.

4.5 <SD LOAD [N=0..9]> Command

The <SD LOAD> command downloads the configuration file from the SD card to the unit. The <SD LOAD> selects the STARTUP.CFG file while <SD LOAD x> selects the desired PROFILEx.CFG file. This command is only available if the SD card is inserted.

4.6 <SD BOOT [ON/OFF]> Command

The <SD BOOT> command enables/disables the automatically SD card Software Upgrade feature during the boot sequence. If this feature is activated (SD BOOT ON) the software will compare the SNAPSHOT.DAT, APP.BIN, LDR_xTU.BIN and STARTUP.CFG files with the software and configuration files from the unit during the boot sequence. If any differences will be detected the corresponding software/configuration file from the SD card will be downloaded to the unit.

4.7 <SD STATUS> Command

The <SD status> command shows if the SD BOOT is enabled and the SD card information. Example:

```
CO_01_FMM>SD STATUS
SD Boot    : OFF
Card type  : SDHC
Capacity   : 3781M
Blocks     : 7744512
Read err   : 0
Write err  : 0
FAT        : FAT32
Partition size : 3768M
Free space     : 3766M
Snapshot files
        /APP.BIN, correct
        /LDR_LTU.BIN, correct
        /STARTUP.CFG, correct
```

SD STATUS	
SD BOOTs	Status of the automatically SD card Software Upgrade feature
Card type	Type of the inserted SD card
Capacity	Capacity of the SD card
Blocks	Number of the usable blocks on the SD card
Read err	Number of read errors
Write err	Number of write errors
FAT	File format used on the SD card
Partition size	Partition size on the SD card
Free space	Usable Space on the SD card
Snapshot files	Status of every file that is checked during the boot sequence in case <BOOT ON> is activated. Correct indicates that the actual software / configuration file from the unit is equal to the file on the SD card.

4.8 <MODEMVIEW> Command

The <MODEMVIEW> command generates a MODMVIEW.TXT file and saves it to the SD card if a formatted SD card is inserted.

4.9 <CONFIRM> Command

The <CONFIRM> command generates a STARTUP.CFG file and saves it to the SD card if a formatted SD card is inserted.

5 Application 1: Save Configuration Files

With the two commands <SD SAVE x> and <SD LOAD x> you can save and load up to 10 configuration files. With other words, you can configure an Orion3 or MiniFlex modem and don't forget to apply and confirm the configuration:

ATTENTION
DON'T FORGET TO WRITE THE CONFIGURATION IN THE STARTUP CONFIGURATION WITH THE FOLLOWING COMMANDS:

2 <↵>	Go to Fault and maintenance management (FMM)
<APPLY ALL> <↵>	Apply all configurations (written in the running config.)
<CONFIRM> <↵>	Confirm all configurations (written in the startup config.)

With the command <SD SAVE x> you can then save the startup configuration in a file with the name PROFILEx.CFG.
With the command <SD LOAD x> you can then load the saved file to your unit.

Inside the configuration file PROFILEx.CFG you can see the MAC and IP address. If you load the saved file by the command <SD LOAD x>, the MAC address will not be overwritten. But the IP address will be taken from the PROFILEx.CFG. If you do not like to have the IP address overwritten you can just delete with a computer the IP address from the PROFILEx.CFG.

PROFILEx.CFP

```
NET.MAC_ADDRESS
00 0F D9 04 AB 4A
M.DEVICE_ID
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF\
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF\
FF
SNMP.TRAPIP.0
00 00 00 00
SNMP.TRAPIP.1
00 00 00 00
SNMP.COMMUNITY
70 75 62 6C 69 63 00 00 00 00 00 00 00 00 00 00\
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

M.SECURE
00
SNMP.BLOCK_SNMP_SET
01
M.ALARM_CUTOFF_OLD
FF
NET.IP
C0 A8 00 EB
NET.NETMASK
FF FF FF 00
NET.GATEWAY
C0 A8 00 FE
ETH.ETH_SPEED.0
00
ETH.ETH_SPEED.1
00
ETH.ETH_SPEED.2
00
ETH.ETH_SPEED.3
00
ETH.ETH_SPEED.4
00
VLAN.VLANID.0
01 00
.
.
```

PROFILEx.CFP corrected by computer

```
NET.MAC_ADDRESS
00 0F D9 04 AB 4A
M.DEVICE_ID
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF\
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF\
FF
SNMP.TRAPIP.0
00 00 00 00
SNMP.TRAPIP.1
00 00 00 00
SNMP.COMMUNITY
70 75 62 6C 69 63 00 00 00 00 00 00 00 00 00 00\
00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

M.SECURE
00
SNMP.BLOCK_SNMP_SET
01
M.ALARM_CUTOFF_OLD
FF
NET.NETMASK
FF FF FF 00
NET.GATEWAY
C0 A8 00 FE
ETH.ETH_SPEED.0
00
ETH.ETH_SPEED.1
00
ETH.ETH_SPEED.2
00
ETH.ETH_SPEED.3
00
ETH.ETH_SPEED.4
00
VLAN.VLANID.0
01 00
.
.
.
.
```

6 Application 2: Software Upgrade with SD Card

This chapter describes the software upgrade on a target unit by the SD card from a reference unit.

6.1 Target Unit Preparation

- The target unit must have a software that supports the SD card option (software version 1.6.6 or higher).
- Make sure that the SD BOOT is switched ON. You can check this with SD STATUS after the installation of the unit.

6.2 Reference Unit Preparation with SD Card

- Download the desired software version (1.6.6 or higher) to an equal unit version than the target unit.
- Insert the formatted and empty SD card and wait 10 seconds.
- Enter <SD STATUS> command and check if the SD card was detected (check the FAT parameter).
- Enter <SD SNAPSHOT> command to generate the required files in the O3MF folder.
- In case you only want to upgrade the software (without having the same startup configuration) please enter the command <SD DEL /O3MF/STARTUP.CFG>.
- Remove the SD card.

6.3 Target Unit Software Upgrade with SD Card

- Power OFF the target unit (in case of using an LTU unit, just remove the unit from the rack).
- Insert the SD card.
- Power ON the target unit (in case of using an LTU unit, just insert the unit into the rack).
- If the software on the SD card compared to the software of the target unit is different an automatic software upgrade will be initiated. So after approximately 30 seconds the green LED's from the target unit will start blinking. This indicates that the unit does a software upgrade. After completing the software upgrade the target unit will restart.

7 Application 3: Exchange Units in the Field with SD Card

In some networks it is convenient to have just a few units as spare parts. The only problem in such installations could be that when a unit gets broken, you have to exchange the unit with the right software version, the right configuration and the correct IP address.
If you have units with SD card installed (software version 1.6.6 or higher), this problem is solved. Just be sure that all units have a SD card inserted and all units are configured with the command <SD BOOT ON>. If this is the case, the exchange of any defect unit can be realised in very simple way (and without any computer).

7.1 Exchange Procedure in the Field

- Remove the broken unit.
- Remove the SD card from the broken unit.
- Insert the SD card in the new unit.
- Install the new unit (preconfigured in the lab with command <SD BOOT ON>, software version 1.6.6 or higher).