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memjet[®]

SpeedStar Troubleshooting Guide



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GENERAL

Documents to read before (available on ftp)

Print engine:

- OEM Setup and Operations Guide
- OEM Troubleshooting Guide
- OEM Service and Repair Guide
- Technical Specifications

SpeedStar:

- Training – software module
- Troubleshooting Flowchart
- SSC Release Notes

Checklist before doing any support

- Firmware is 120524_f / 120209_h
- Driver is R11 / R10
- Liberty is 1.2.9rc1
- Print engine is Z3 / Z4
- USB cable is attached to print engine
- TTL cable is attached to print engine
- Preventive maintenance is done / sensors are clean
- KWS = 7
- NVM pages_per_cut = -1
- .NET 3.5, 4 is installed

Recommended:

- ZX stream is saved to file for further analysis
- Envelope guide & mud flap installed

Divide et impera

- In case of printing problem
 - print without winders
 - print without Liberty (from SpeedStar from prn file)
- In case of mainboard problem
 - remove all modules (including CMOS battery) from mainboard, then install them again one by one



Dead engine: When is a print engine dead?

After Dediprog re-flash, the putty output is empty or not interpretable, green LED is off.

EWS: How can I reach the print engine information page?

Open Internet Explorer in the embedded XP and go to the address 125.240.90.2.

Firmware: How can I burn the firmware?

mech_state should return STANDBY before running Step 2 and Step 4!

SysAid: Mandatory data to upload

- LibertyConfig.ini
- debug_data_vX.txt (X: actual version available on own-x ftp)



LIBERTY

Ink level is not correct

1. Level printer correctly
2. Click on the 'ink tanks' icon in Liberty, it will re-test the ink levels.
3. Report problem with cartridge S/N

Liberty not starting

Engine IP address dropout

How to detect:

```
net_myIP
```

does not return 125.240.90.2

How to fix:

```
net_myIPv4 enable 1
net_myIPv4 config static
net_myIPv4 IP 125.240.90.2
net_myIPv4 submask 255.255.255.0
net_myIPv4 gateway 125.240.90.1
```

Engine MAC address dropout

How to detect:

```
net_MAC_addr
```

does not return 0101010101

How to fix:

```
net_MAC_addr 0101010101
```

Firmware dropout

How to detect:

After starting the engine PuTTY returns:

```
ABCDGK012LMNPQRST
```

```

BootCode: Ver = 2010-2-23, v.1 program:28, platform:1
Processor speed 650, Memory Size 67108864, ASIC ID 0x1162620

```

How to fix:

Burn the firmware by running

Step 3; Step 4

OR

Re-flash with DediProg, than adjust NVM getset, IP and MAC address settings.

Mainboard IP address misconfiguration

```
D:\>ipconfig
```

```
Windows IP Configuration
```

```
Ethernet adapter Local Area Connection:
```

```

    Connection-specific DNS Suffix . :
    IP Address. . . . . : 192.168.1.24
    Subnet Mask . . . . . : 255.255.255.0
    IP Address. . . . . : fe80::204:5fff:feb2:a3d0%4
    Default Gateway . . . . . : 192.168.1.1

```

```
Ethernet adapter Local Area Connection 2:
```

```

    Connection-specific DNS Suffix . :
    IP Address. . . . . : 125.240.90.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

```

Ethernet adapter Local Area Connection 2 IP Address is not 125.240.90.1

Launching Liberty crashes print engine**How to detect:**

The print engine crashes everytime Liberty is launched with print engine already activated. So, a new request of starting print engine by Liberty crashes the print engine. After that, Liberty crashes with a Windows error.

How to fix:

The problem happens because Liberty can't read the print engine status. Follow these steps until the problem ceases:

1) Check that the start cable is connected well to the CIS board.

- 2) Replace the start cable.
- 3) Replace the CIS board.

Logging: How can I disable Liberty logging?

See Appendix A for complete configuration file.

1. Go to Liberty's folder
2. Open logger_config.xml
3. Under this section:

```
<appender name="Application" type="log4net.Appender.RollingFileAppender">
```

add:

```
<threshold value="OFF" />
```

4. Under this section:

```
<appender name="CIS" type="log4net.Appender.RollingFileAppender">
```

add:

```
<threshold value="OFF" />
```

5. Under this section:

```
<appender name="PrintEngine" type="log4net.Appender.RollingFileAppender">
```

add:

```
<threshold value="OFF" />
```

Paper feed function does not work

Clean the gap sensor

PRN folder is full

- delete folder contents
- upgrade Liberty to 1.2.8rv4

Sending any print job crashes Liberty

Reinstall driver



EMBEDDED MAINBOARD

General problem solution for the mainboard

- 0) Check Black Screen issue troubleshooting documents
 - 1) If the fan is not spinning then check
 - a. the power cable
 - b. the fuse panel: the voltage should not drop below 12.0V, it should be in the 12.0 – 12.2 V range (and the power cable should be OK)
 - 2) If the fan is spinning up for a while and stops then
 - a. remove all cables and modules from the mainboard, leave only the RAM module and the power cable
 - b. if you don't hear the beep sound then move the RAM module to the other slot
 - c. if you still don't hear the beep sound then clear CMOS
 - d. if you still don't hear the beep sound then replace the RAM module with another one
 - 3) Remove the CMOS battery and power up the mainboard, set LVDS in BIOS (follow Black Screen issue documentation)

CMOS keeps resetting

- Replace the CMOS battery
- Move the RAM module to another slot

Firewall rules

1. JetDirect – 9100/tcp opened
2. TeamViewer – 5938/tcp opened
3. SLP/TCP – 427/tcp opened
4. SLP/UDP – 427/udp opened

Type: What kind of mainboard is in the printer?

Enter BIOS setup. The BIOS field is MX525D for the new mainboard. The old mainboard's BIOS does not contain the type, however, after switching on the printer you should see IXBDN-D510 on the screen.



PRINT ENGINE: ERROR MESSAGES

Crit 63 03-phead offline cancelpage

1. Clean printhead contact sensors.
2. Replace print head
3. Flash Omnipac
4. Replace Omnipac

CARTRIDGE_MISSING_X

- clean cartridge chip with isopropyl alcohol
- clean chip readers with isopropyl alcohol
- run cm_ink
- replace ink cartridge

DATA_PATH_UNDERRUN

- clean the encoder wheel
- reduce image complexity
- reduce print speed to 6 IPS
- check for NVIMG corruption → update EEPROM with Step 1
- use Adobe Reader 9 (good) instead of 10 (bad) for printing

Fatal 71 02 offline cancelpage

Dongle

Please ensure:

1. That P2002 on the MPCA has not been lifted from the solder pads on the PCA
2. That there is insulating tape on the dongle covering the solder pads
3. That the wires between the dongle PCA and P2002 are connected to the dongle PCA and to the connector

Incorrect NVM settings

Interruption in the sensor power

How to detect:

```
gpio_pin_get SNSR_PWR_B_EN
```



returns 0

How to fix:

```
gpio_pin_set SNSR_PWR_B_EN 1
ss_home
mech_clear_error
```

Lift sensor dirty

Clean lift sensor

Service station connection fault

Eject service station, unconnect, connect, home
Clean service station
Replace service station

Service station is in wrong position**How to fix:**

```
maint_enable 0
ss_goto cap
gpio_pin_get SS_LIFT_UP
ss_down
gpio_pin_get SS_LIFT_UP
maint_enable 1
```

Explanation:

The state of the lift sensor can be checked by running the following TCL commands after the engine is fully booted:

- 1) `maint_enable 0` (disables maintenance to prevent the maintenance state machine from overriding commands to position the maintenance module)
- 2) `ss_goto cap` (moves to the capped position and raises the cap)
- 3) `gpio_pin_get SS_LIFT_UP` (should return a 1 indicating that cap is lifted and that the sensor is reading the correct position. Verify that the cap is lifted to the full height; if not then there is a problem with the lift mechanism. If the cap is lifted, then there is a problem with the sensor).
- 4) `ss_down` (lowers the cap)
- 5) `gpio_pin_get SS_LIFT_UP` (should return a 0 indicating that the cap is down).



6) maint_enable 1 (re-enable the maintenance state machine).

Service station position unknown

How to detect:

```
ss_pos
```

returns unknown unknown

How to fix:

1. Clean service station
2. Replace lifter arm if broken
3. Clean sensor sled
4. Replace sensor sled

Old firmware

Upgrade firmware to at least 120209_h, if possible, with DediProg

Paper sensor connectivity

Follow CF07 of OEM Troubleshooting Guide

Valve is giving a clicking noise

Move the valve to all possible positions by ids_valve:

```
ids_valve openink
ids_valve openair
ids_valve closed
```

Valve motor problem

Valve motor broken, or blocked by a particle. So engine can't recognize its position. Disassemble and check, replace if needed.

Valve position unknown

How to detect:

```
gpio_pin_get IDS_VALVE_POS1
```

returns 1

AND

```
gpio_pin_get IDS_VALVE_POS2
```



returns 1

How to fix:

This can be due to misalignment of the disk on the valve shaft and may require replacement of the pinch valve (try manually cycling the valve using tcl commands to openink, openair, & closed and see if the appropriate position is returned). Before attempting to change out the valve, de-power the engine, then remove and reinsert all electrical connectors at the valve. If this fails to correct the problem, then the valve needs to be replaced.

Appendix A - Capturing the sensor/encoder data during lifter arm movement for reporting to Memjet

For servo move debounce to work the following settings and their values should be set (this is the default on power up):

```
TCL> servo_debounce SSLift
15
```

```
TCL> vars_getset servo_disable_gpio_debounce
0
```

--- Instructions for collecting sensor history information ---

1. turn off maintenance:

```
maint_enable 0
```

2. add lift sensor to servo history:

```
servo_sensor SSLift 0 SS_LIFT_UP
```

3. store lift servo history:

```
servo_history_store SSLift
```

4. go to known position and set start servo position to 0:

```
ss_down; servo_pos SSLift 0
```

5. reset servo history:

```
servo_history_reset
```



6. run lifter servo for ~2 rotations:

```
servo_move SSLift 50000 150000
```

7. on PC run this command to download servo history:

```
usbcmd.exe -c servo_history > sslift.txt
```

8. go back to known position and turn maintenance back on:

```
ss_down; maint_enable 1
```

MAINTENANCE_BUSY

Entry/exit sensors indicate paper inside the engine

How to detect:

```
gpio_pin_get PZONE_ENTRY_SNSR
```

returns 1

AND

```
gpio_pin_get PZONE_EXIT_SNSR
```

returns 1

How to fix:

- Check for paper pieces left inside the engine
- Clean both sensors

NVM dropout

How to detect:

```
nvm_getset mpcarev
```

returns 3

```
nvm_getset wiper_motor
```

returns none



```
nvm_getset pump_motor
```

returns 0

How to fix:

```
nvm_getset mpcarev 5  
nvm_getset wiper_motor E  
nvm_getset pump_motor B  
shutdown 1
```

PAPERPATH_CUTTER_ERROR

reset

PAPERPATH_FEED_TIMEOUT

- clean sensors
- check paperpath
- check paper settings & positioning

PAPERPATH_PAPERJAM

- clean entry/exit sensors



PRINT ENGINE: HARDWARE

Service station got stuck in engine

1. Loosen screws attaching lifter motor bracket to lower clamshell assembly so that lifter motor helical gear disengages from main gear on lifter arm shaft.
2. Rotate lifter arm shaft to reduce stress on lifter arms in the event that the cap, platen, or wiper is jammed while turning maintenance sled drive gear toward engine exit to eject maintenance sled.

Service station horizontal movement problem



Adjust small cog wheel (pointed with arrow) nearer to the big one.

Streaking head

1. Wet wipe head
2. Use Liberty maintenance functions (color mix / streaking in Liberty 1.3)

If still streaking:

Remove print head and place it on fiber free cloth, soak cloth well with water and leave the head there for 24 hrs.

Clean print head with wet clothes.

Clean service station (take SS out, remove wiper roller and check for contamination between transfer roller and doctor blade – clean it if there was any found).

Prime head in printer.

Print test page.

If still streaking, use clear color mix and streaking maintenance.

Print test page.

If still streaking, register issue on Sysaid together with the scanned/photo image of both test pages, PH manufacturing date and ph_qa output.



PRINT ENGINE: OTHER ERRORS

Buffer boxes are full of ink

```
ids_deprime_buffer_box
```

Ink cartridge not priming

- clean the chip
- wet wipe the head
- try with another head
- replace the cartridge

Slow priming method 1

```
ids_valve openink  
ids_pump 20 20  
ids_valve closed
```

Slow priming method 2

```
ids_valve openink  
ids_pump 50 50  
ids_valve closed
```

Ink cartridge not recognized

Dirty chip on the cartridge

Clean the chip with isopropyl alcohol

Dirty chip reader in the engine

Clean the reader with isopropyl alcohol

'cartridge inserted' event lost

```
cm_ink  
ids_qa  
ids_retest_low
```



Head not priming

1. Wet wipe
 - a) Release print head
 - b) Wet wipe the head
 - c) Install head
2. Run prime printhead level 2
3. Change head

Restarts: Omnipec restarts randomly

- 1) Replace print head
- 2) Re-burn Omnipec memory chip with Dediprogram
- 3) Replace Omnipec

Slow: Print engine getting slower before cut

enable mid job maintenance, increase NVM/job mid roll2cut (mm)

Service Station is moving up and down without stopping

Clean lifter arm sensor:





DRIVER

General: driver install log

Having any problem during driver installation please upload the install log to Sysaid.

To access the driver install log, go to c:\Windows(whatever the OS)\Windows\Temp\PrinterInstall.log.

There may be several files (PrinterInstall1.log, PrinterInstall2.log, etc.), but PrinterInstall.log (without a number) will be the latest (also check the date). This file will be the log for the NorthStar installation.

After updating driver it is not possible to send a printjob to the printer

Switch off bi-directional. (printer properties/ports)

SLP

0) Restart SLP service and check again (My computer/manage/services/service location protocol/restart)

1) There is already the option to install the printer if it isn't found via SLP by manually entering the IP address.

2) In some cases, it was discovered that the computer on which we were attempting to install the driver had lots of old IP ports setup including the IP address the printer was on. We deleted these and could then successfully locate the printer and install the driver.

Installation: Driver installation not possible

Connect the USB cable to the computer and install the printer via USB. After that change the port settings to Ethernet.



APPLICATOR

Commands: What are the applicator commands?

Commands are received through TCP/IP connection on port 9101.

Printer also needs special HW altering and different Liberty and firmware.

Implemented commands for controlling:

- **START** (start the actual printjob)
- **LABEL_REMOVED** (printed label is removed, printer will start move the paper backwards)
- **CUT**
- **FEED**
- **UNFEED**
- **CLEAR_MECH_ERROR** (can be used to clear engine errors from the applicator PC)
- **STATUS**
- **CLEAR_ALL_JOB** (removes all preloaded job from print queue)
- **PAPERMOVE_STARTED**: before each print job a "PAPERMOVE_STARTED" string (ended by newline) is sent through the existing TCP connection to the controller. Right after, printing starts and paper starts moving.
- **PAPERMOVE_STOPPED**: when a print job finishes successfully, right after the paper moving has been stopped a "PAPERMOVE_STOPPED" string (ended by newline) is sent through the existing TCP connection to the controller.



APPENDIX A – DISABLE LIBERTY LOGGING – LOGGER_CONFIG.XML

```

<?xml version="1.0" encoding="utf-8" ?>
<log4net>
  <appender name="Console" type="log4net.Appender.ConsoleAppender">
    <layout type="log4net.Layout.PatternLayout">
      <!-- Pattern to output the caller's file name and line number -
->
      <conversionPattern value="%5level [%thread] (%file:%line) -
%message%newline" />
    </layout>
  </appender>

  <appender name="Application"
type="log4net.Appender.RollingFileAppender">
    <file value="D:\SpeedStar\Log\Liberty.log" />
    <appendToFile value="true" />
    <maximumFileSize value="100KB" />
    <maxSizeRollBackups value="5" />
    <threshold value="OFF" />

    <layout type="log4net.Layout.PatternLayout">
      <conversionPattern value="%date [%thread] %level %logger -
%message%newline" />
    </layout>
  </appender>

  <appender name="CIS" type="log4net.Appender.RollingFileAppender">
    <file value="D:\SpeedStar\Log\Liberty_CIS.log" />
    <appendToFile value="true" />
    <maximumFileSize value="100KB" />
    <maxSizeRollBackups value="5" />
    <threshold value="OFF" />

    <layout type="log4net.Layout.PatternLayout">
      <conversionPattern value="%date [%thread] %level %logger -
%message%newline" />
    </layout>
  </appender>

  <appender name="PrintEngine"
type="log4net.Appender.RollingFileAppender">
    <file value="D:\SpeedStar\Log\Liberty_NS.log" />
    <appendToFile value="true" />
    <maximumFileSize value="100KB" />
    <maxSizeRollBackups value="5" />
    <threshold value="OFF" />

    <layout type="log4net.Layout.PatternLayout">
      <conversionPattern value="%date [%thread] %level %logger -
%message%newline" />
    </layout>
  </appender>

  <appender name="DatabaseAppender "
type="log4net.Appender.AdoNetAppender">

```

```

    <bufferSize value="100" />
    <connectionType value = "System.Data.SQLite.SQLiteConnection,
System.Data.SQLite, Version=1.0.66.0, Culture=neutral,
PublicKeyToken=db937bc2d44ff139"/>
    <connectionString value="Data
Source=d:\\database\\log4net.s3db;Version=3;" />
    <commandText value="INSERT INTO Log (Date, Level, Logger, Message)
VALUES (@Date, @Level, @Logger, @Message)" />
    <parameter>
        <parameterName value="@Date" />
        <dbType value="DateTime" />
        <layout type="log4net.Layout.RawTimeStampLayout" />
    </parameter>
    <parameter>
        <parameterName value="@Level" />
        <dbType value="String" />
        <layout type="log4net.Layout.PatternLayout">
            <conversionPattern value="%level" />
        </layout>
    </parameter>
    <parameter>
        <parameterName value="@Logger" />
        <dbType value="String" />
        <layout type="log4net.Layout.PatternLayout">
            <conversionPattern value="%logger" />
        </layout>
    </parameter>
    <parameter>
        <parameterName value="@Message" />
        <dbType value="String" />
        <layout type="log4net.Layout.PatternLayout">
            <conversionPattern value="%message" />
        </layout>
    </parameter>
</appender>

<logger name="Application">
    <level value="DEBUG" />
    <maximumfilesize value="256KB" />
    <param value="DEBUG" name="Threshold" />

    <appender-ref ref="Application" />
</logger>

<logger name="Database">
    <level value="DEBUG" />
    <param value="DEBUG" name="Threshold" />

    <appender-ref ref="DatabaseAppender" />
</logger>

<logger name="CIS">
    <level value="DEBUG" />
    <maximumfilesize value="256KB" />
    <param value="DEBUG" name="Threshold" />

    <appender-ref ref="CIS" />
</logger>

<logger name="PrintEngine">
    <level value="INFO" />

```

```
<maximumfilesize value="256KB" />  
<param value="DEBUG" name="Threshold" />  
  
<appender-ref ref="PrintEngine" />  
</logger>  
  
</log4net>
```

