

# User manual



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## 1. General information

### 1.1. Presentation of the axm 960

The optical mark reader axm 960 is an automatic unit with a motorised entry feeding tray and two output tray for the document's ejection. Its conception allows a simple handling and easy access to the documents, it's also easy to maintain. Its high transport speed adding to the exclusive feeding and double detection systems make it reliable and effective.

#### 1.1.1. General Technical Information

- Operating temperature : 10 - 40 °C (50 - 104 °F)
- Relative operating humidity: 40 - 80 % without condensation
- Storage temperature : 0 - 40 °C (32 - 105 °F)
- Relative storage humidity: 40 - 80 % without condensation
- Power supply unit : 115-230 V 50/60 Hz
- Power consumption : Running mode: 25 W      Standby: 12 W      OFF : 6 W

### 1.1.2. Mechanical Characteristics :

- Capacity of the input tray: 120 documents (for documents of 100 g/m<sup>2</sup> )
- Capacity of the two output tray: 120 documents each
- Feeding : Automatic.
- Speed of document transport : 0,8 m/s
- Paper weight : 80 to 160 g/m<sup>2</sup>
- Minimum document size : 160 x 60 mm (6.3" x 2.3")
- Maximum document size : 305 x 229 mm (12" x 9")
- Paper quality : Optical reading quality (non-chemical).
- Document alignment : Automatic
- Double feed detection : Automatic (thickness detection).
- Tray management : Controlled by the program

### 1.1.3. MTBF:

#### Feeding:

- Separation belt : 250'000 documents.
- Separation tyre: 250'000 documents.
- Dual feed wheel: 500'000 documents.
- Calling O-ring: 1'000'000 documents

#### Transport:

- Transparent transport wheel: 5'000'000 documents.
- Green transport wheel 3°: 5'000'000 documents.
- Transport O-ring: 1'000'000 documents.
- Transport belt: 3'000'000 documents.

### 1.1.4. Dimensions of the machine :

- Length : 610 mm (24")
- Width : 320 mm (12.6")
- Height : 250 mm (27.6")
- Weight: 12.6 kg (27.78 Lb.)

### 1.1.5. Reading Head

Each track consists of a photosensitive element framed by two LED's (light-emitting diode) illuminating the reading zone.

- Head with red light :  
For fibre pen, pencil or ballpoint pen marks.  
Printout of the polychrome document with clock marks (marks for line synchronisation) in black; marking fields in red, orange or yellow.
- Head with infrared light :  
For pencil marks only.  
Printout of the polychrome document with clock marks (marks for line synchronisation) in black; marking fields in different colours (colour references in the Axiome Technical Application Note)
- Reading adaptation :  
Automatic adaptation to the background colour of the document.
- Paper dust :  
Dust dense and auto-cleansing.
- Mark density :  
Output on 15 independent density levels for each channel. Less insensitive to mirror and fold marks.
- Number of tracks:  
48 at a spacing of 1/6" or  
40 at a spacing of 1/5"
- Number of clock tracks :  
1 for 48 track head  
1 for 40 track head

## 2. Generality and Security

The axm 960 has been designed in compliance with safety regulations applicable to terminals in an office environment. This machine can be used in permanent operation at office temperatures.

The following guidelines must be applied when installing and manipulating the reader.

- The reader is equipped with a power cable, which must be connected to an earthen wall socket.
- When installing the machine make sure the wall socket for the power supply is always within the user's reach.
- Do not connect or disconnect the cables during a thunderstorm.

### !!! WARNING !!!

The covers of the axm 960 must only be removed by first-level maintenance staff and only after the power cable has been disconnected.

- AXIOME Alpha SA refuses to implement warranty or apply maintenance clauses, if it is established that the axm 960 was damaged by manipulation by an unauthorised person.
- For transportation, the machine must be packed in its original packaging to avoid any shock to the mechanical parts.
- This machine weighs 12.6 kg. If it falls, it could cause injury or damage to the reader.



## 3. Transport and installation

### 3.1. Operating environment

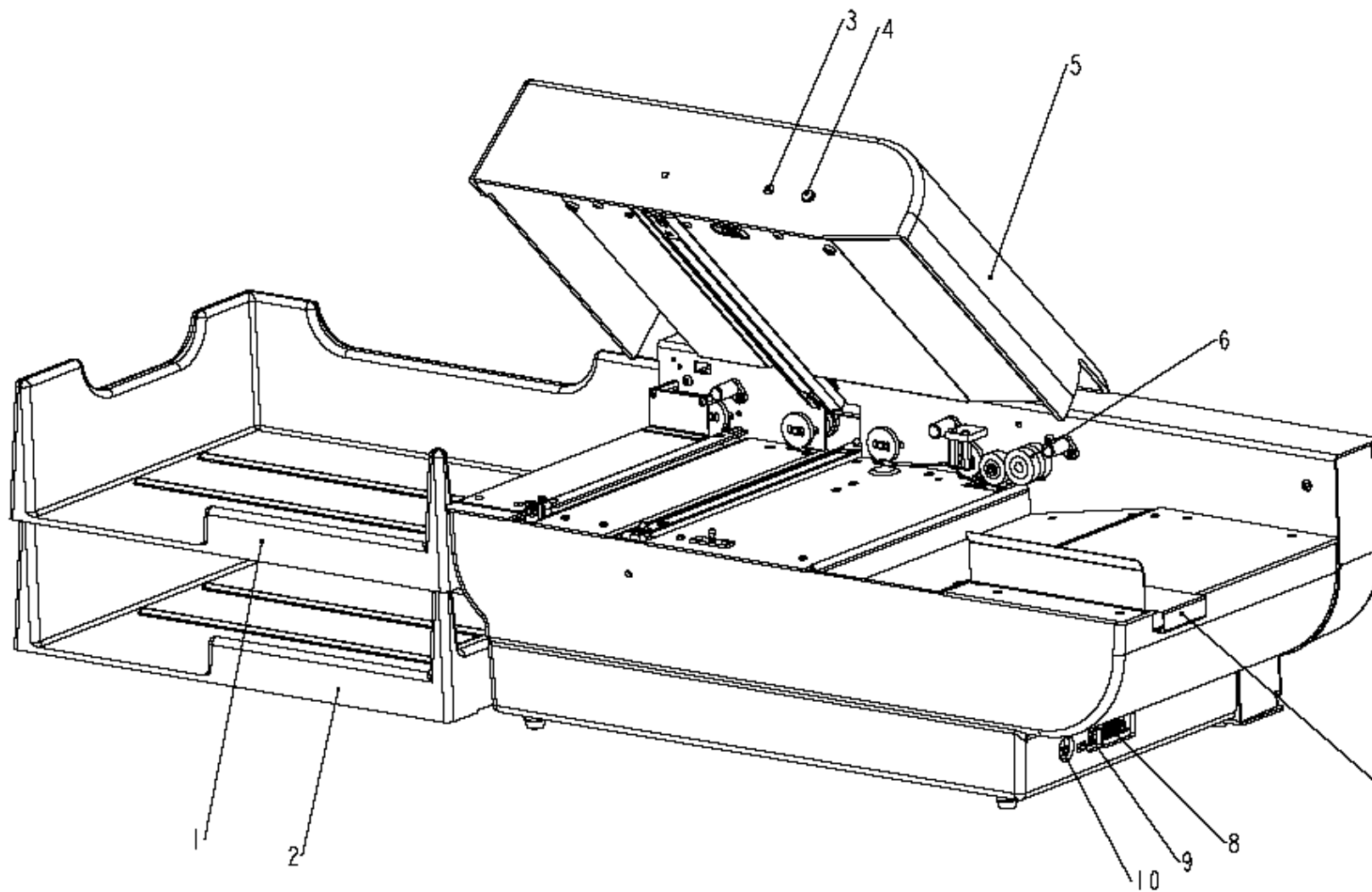
The suitability of the operating environment for the axm 960 is an essential factor for its proper functioning. Issues that must be taken into account are as follows:

- The reader must be placed on a stable, flat and horizontal support.
- The reader must be shielded from all heat sources, such as:
  - direct sunlight;
  - heaters;
  - spot lights and other high heat lights.
- The axm 960 must also be protected from vibrations and humidity (40 to 80% relative humidity, with no condensation).
- Operating temperature range: +10 to +40 °C (50 to 104 °F).
- Storage temperature range: 0 to +40 °C (32 to 104 °F).
- Never operate the axm 960 in atmospheric conditions contaminated by dust or oil products in gaseous state.

When connecting the axm 960 to a power outlet, ensure that it never shares the same outlet as:

- large electric motors;
- refrigerators;
- generally speaking, any equipment generating substantial inductive loads.

## 4. Presentation of the axm 960



- 1) **Primary output tray**
- 2) **Secondary output tray**
- 3) **Panel Led**
- 4) **Control switch**
- 5) **Reading head lid**
- 6) **Calling system mechanism**
- 7) **Entry stop**
- 8) **Service cable plug**
- 9) **USB data cable plug**
- 10) **External power supply plug**

## 5. Connections

### 5.1. Reader's connection

When installing the axm 960 and its peripherals, the cables must be connected in the following order:

- Connect the cable for USB data transfer to the reader's first, then to the PC.
- Connect the external power supply cables first to the reader, then to an earthen wall socket.
- Once these steps have been taken, a pressure on the control switch will switch on the axm 950 and its peripherals.

On the axm 960 the connection plugs are located at the right side of the machine (refer to chapter 4 Presentation of the axm 960, page 10)

### 5.2. Reader's disconnection

- Turn OFF the reader and its peripherals
- Disconnect the power cable
- Disconnect the USB cable for data transfer
- If necessary, disconnect the service cable

#### **!!! WARNING !!!**

If the USB cable is not connected or disconnected, the reader goes automatically switch off (see chapter 6.2.5 Automatic switch off, page 14)

## 6. First use of the reader

### 6.1. Installation of the USB drivers

Before using the axm960 for the first time, it is necessary to install the USB drivers. You can find the drivers on the CD-rom deliver with each AXIOME readers.

The necessary files are located in:

*LCDaxmV12.2005\Utilities\Usb 9xx\Driver USB Axiome*

When the reader is connected to the PC with the USB cable, a new device will be automatically detected. You just have to follow the procedure give by your support. If a special file is requested, you can find it in the Driver USB AXIOME as explain before.

**Remark:** It is necessary to repeat the operation twice before the new device is correctly installed.

### 6.2. Control switch & LED

The control switch presents 4 distinct functions with corresponding LED colouring.

#### 6.2.1. Starting in read mode

Press the control switch until the LED turns green, then release. An auto-test is carried out. If it is unsuccessful the LED flashes red/green. If the problem persists, switch to test mode (see below). If the auto-test was successful, the reader is now in read mode and is ready to be piloted by the communication software.

### 6.2.2. Starting in test mode

Press the control switch until the LED turns red (approx. 2,5 secs.), then release. The reader is now in test mode, ready for various functional tests on the machine. For further information regarding this mode, please refer to chapter 7 Test mode, page 21.

### 6.2.3. Starting in bootstrap loader mode

Press the control switch until the LED turns orange (approx. 5 secs.), then release. The reader is now in bootstrap loader mode, ready for loading of new firmware. For further information on this mode, please refer to Chapter 6.3 Download firmware, page 15.

### 6.2.4. Switching off

Whatever mode the reader is in, press the control switch until the LED turns off (approx. 3 secs.), then release.

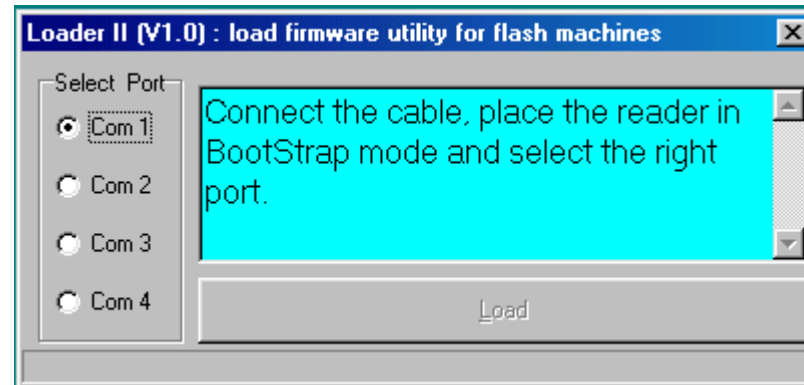
**Remark :** Never unplug the reader without having previously switched the reader off manually, so as not to lose auto-adaptable parameters.

### 6.2.5. Automatic switch off

Disconnecting the USB connection if the reader is ON will automatically start the switch off of the reader (2-3 seconds after disconnection)

### 6.3 Download firmware

1. Run the **Loader2.exe** file located under directory **Firmload axm960**. The default communication port is COM1. If you wish to change it, select . Connect the cable; place the reader in BootStrap mode.



Remark: if communication is established, the reader will respond by giving its name and its release version.

2. Click Load and select the firmware (hex) file to download. During the transfer process, the LED of the control panel flashes orange. The download of the firmware (hex) file takes approximately 50 seconds.

Remark: As soon as the download is finished, the reader is switched off.

## 6.4 Loading a configuration file

The configuration file is a text file containing information such as communication configuration, response format, and automatic configuration according to application requirements. This file will be stored in the flash memory block of the reader and will help to establish communication with the PC.

The configuration file must be sent to the reader in a text file format. It remains stored until the next transfer of a new configuration file.

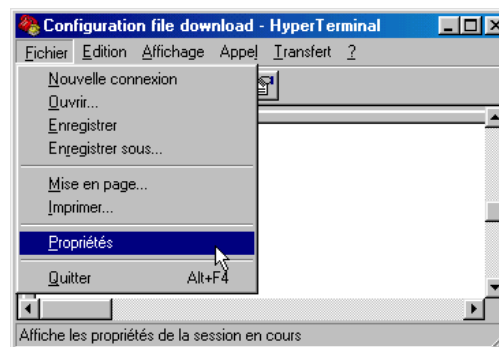
### 6.4.1 Communication :

The transfer will be carried out according to the parameters defined in the last configuration file down-loaded into the reader.

If the parameters are accepted, the reader returns **OK** followed by **<CR>**. In case of errors into the configuration file, the number and the contain of the incorrect line will be returned. The new parameters, in particular the transmission speed, will take effect only after the "OK" reply.

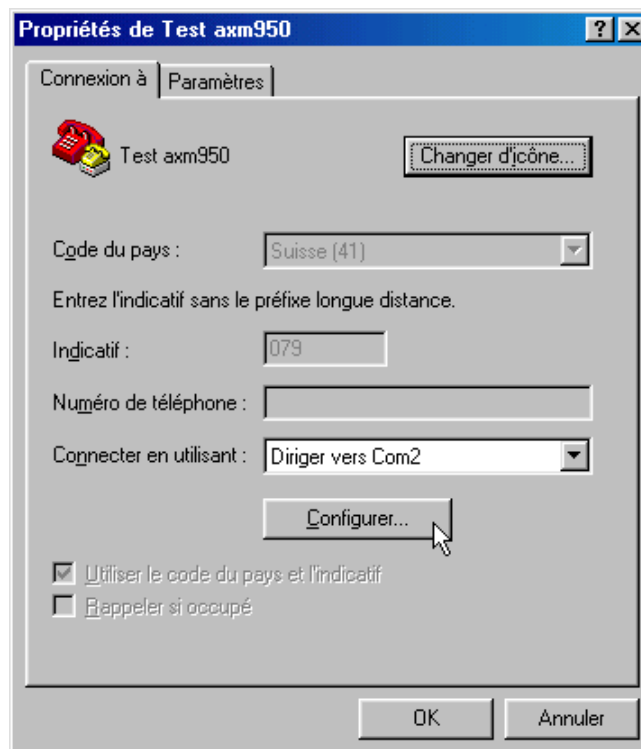
### 6.4.2 How to proceed

1. Run the [HyperTerminal](#) communication program, select FILE, then PROPERTIES.

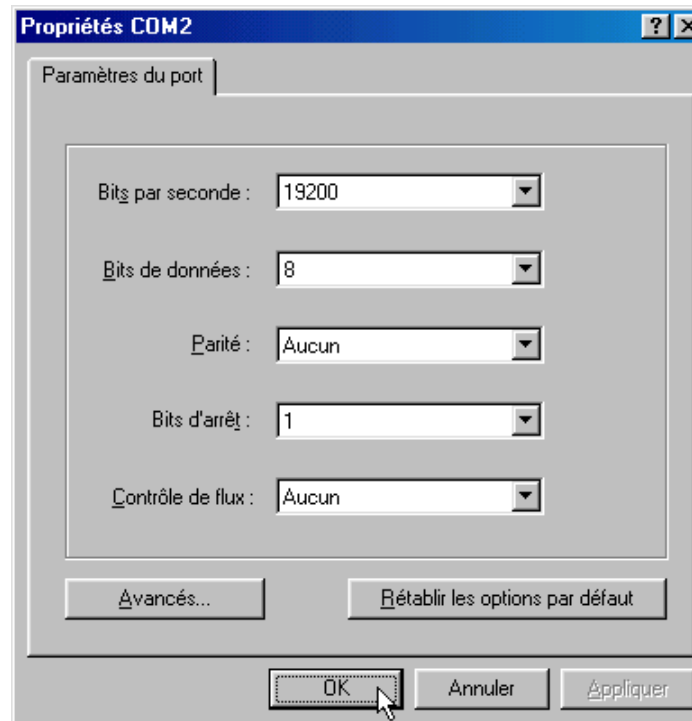




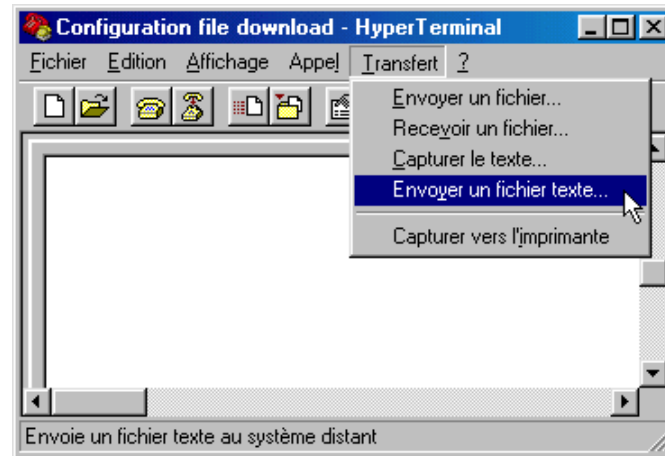
2. Select the communication port to which the reader is connected



3. Select the suggests default communication. There is no importance of the parameters because of the USB communication.



4. Select TRANSFER, and then SEND A TEXT FILE.



5. Select the configuration file you want to download to the reader.

If an error is contained in the configuration file, the reader will answer with **the number and the contain of the incorrect line** followed by **<CR>**.

**Remarks:** It isn't necessary to send the whole parameters each time. Only the modified line needs to be sent. Unmodified parameters maintain the default values.

The configuration file must always be preceded by the "**MD(CONFIG)**" command. If not, the reader will not take the modification into account.

### 6.4.3 Default configuration values

The configuration file set by default into the reader is :

```
@DEFAULT
EXDATAMODE=N, ", $
AUTOCALL=OFF
AUTOEJECT=OFF
READACK=C1<0D>
DATAACK="#"$D<0D>
SYSEERROR="E"$E<0D>
SHEETCTRL=ON
END
```

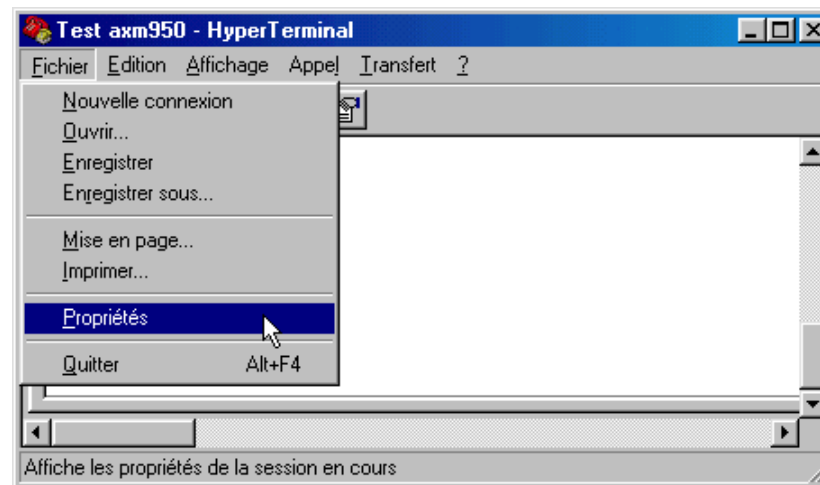
Remarks: The default configuration file (DEFAULT.MAX) is to be found on the cd-rom delivered with the machine.

## 7 Test mode

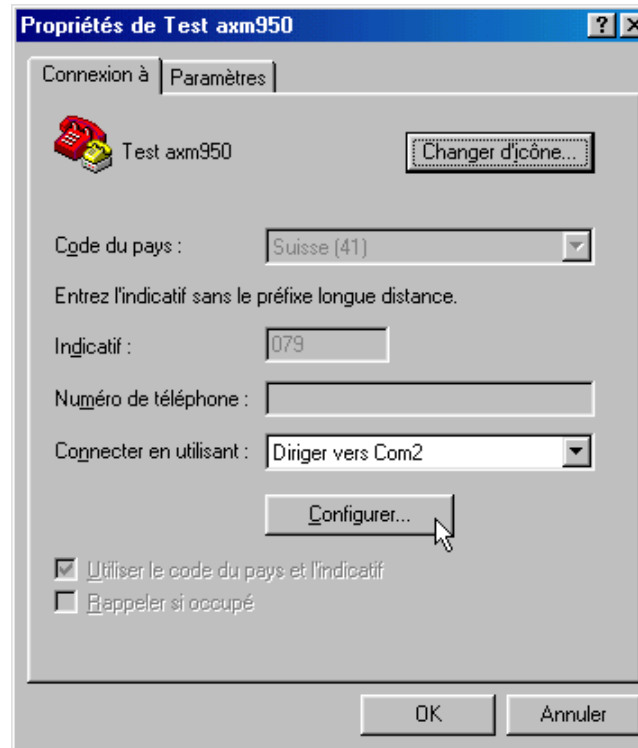
In test mode, it is possible to verify and set-up configuration of various reader functionalities. However, a USB connection with a computer and a [Hyper Terminal](#) type communication programme or equivalent is indispensable.

To do this, please follow the procedure below :

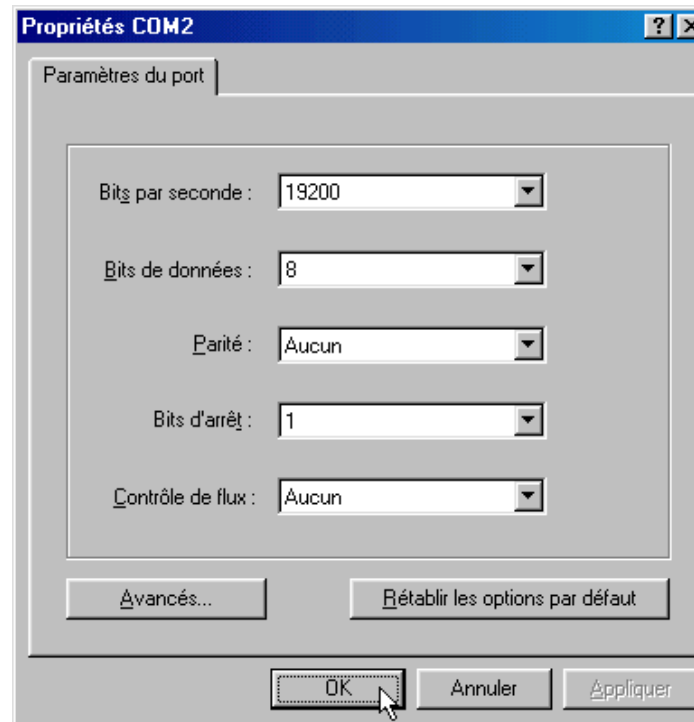
1. Run Hyper Terminal, select FILE , then PROPRIETE



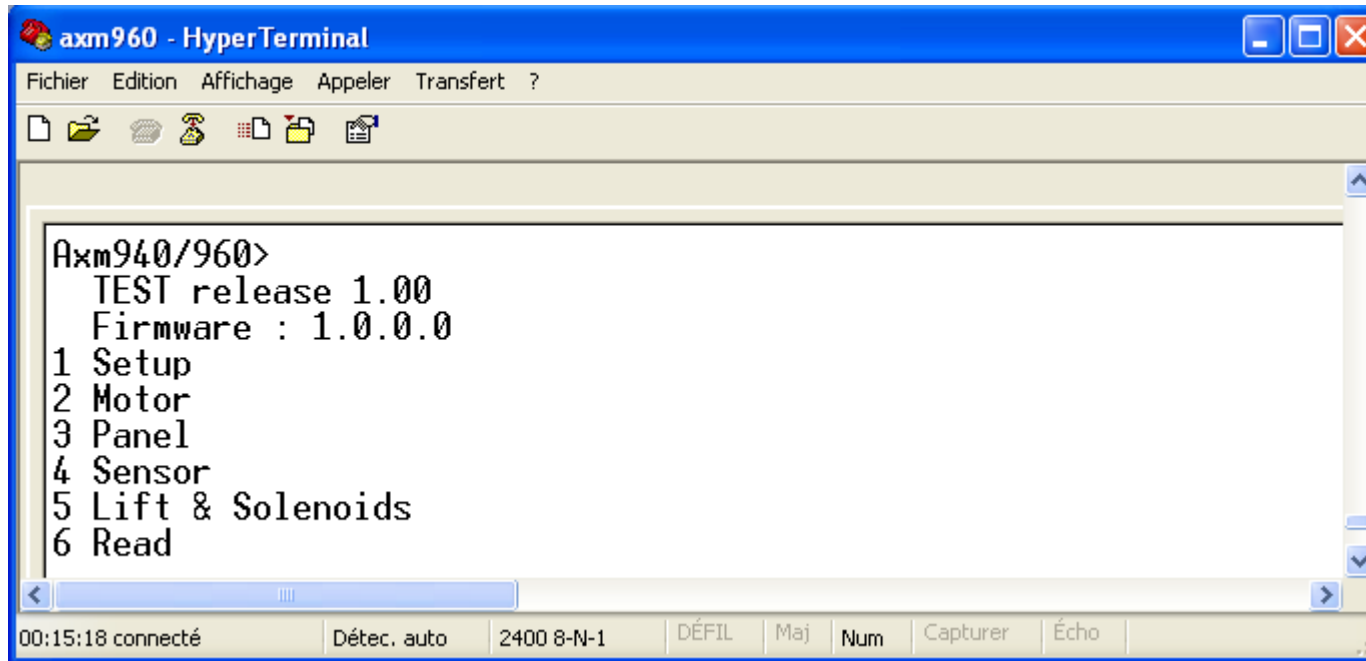
2. Select the communication port to which the reader is connected



3. Use the default parameters.



When the reader is switched to test mode (red LED), the following menu is automatically displayed on the PC monitor screen. If the reader is already in test mode, press escape on the computer keyboard to display the menu.



Remark: To go to the next menu of your choice, press the corresponding key.

To return to the previous menu, press the **ESC** button on your keyboard.

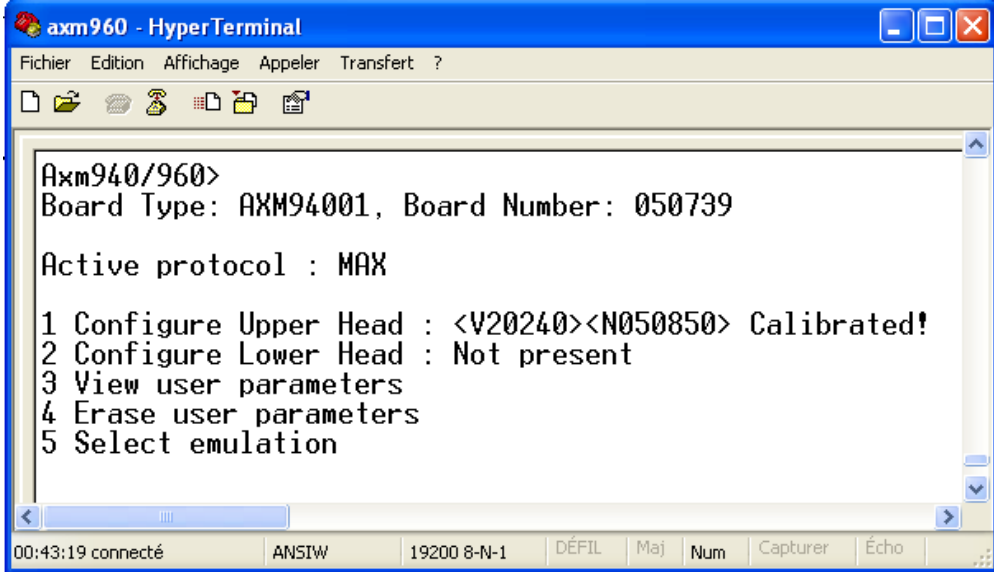


## 7.3 Setup

This list gives the reader configuration, indicating which elements are present or absent. The list only provides status of peripherals, and does not allow correction of errors.

On the main menu the following indications are found:

- CPU Board Type (AXM940xxx)
- CPU Board Serial Number (*050691* in this example)



```
axm960 - Hyper Terminal
Fichier Edition Affichage Appeler Transfert ?
Axm940/960>
Board Type: AXM94001, Board Number: 050739

Active protocol : MAX

1 Configure Upper Head : <V20240><N050850> Calibrated!
2 Configure Lower Head : Not present
3 View user parameters
4 Erase user parameters
5 Select emulation

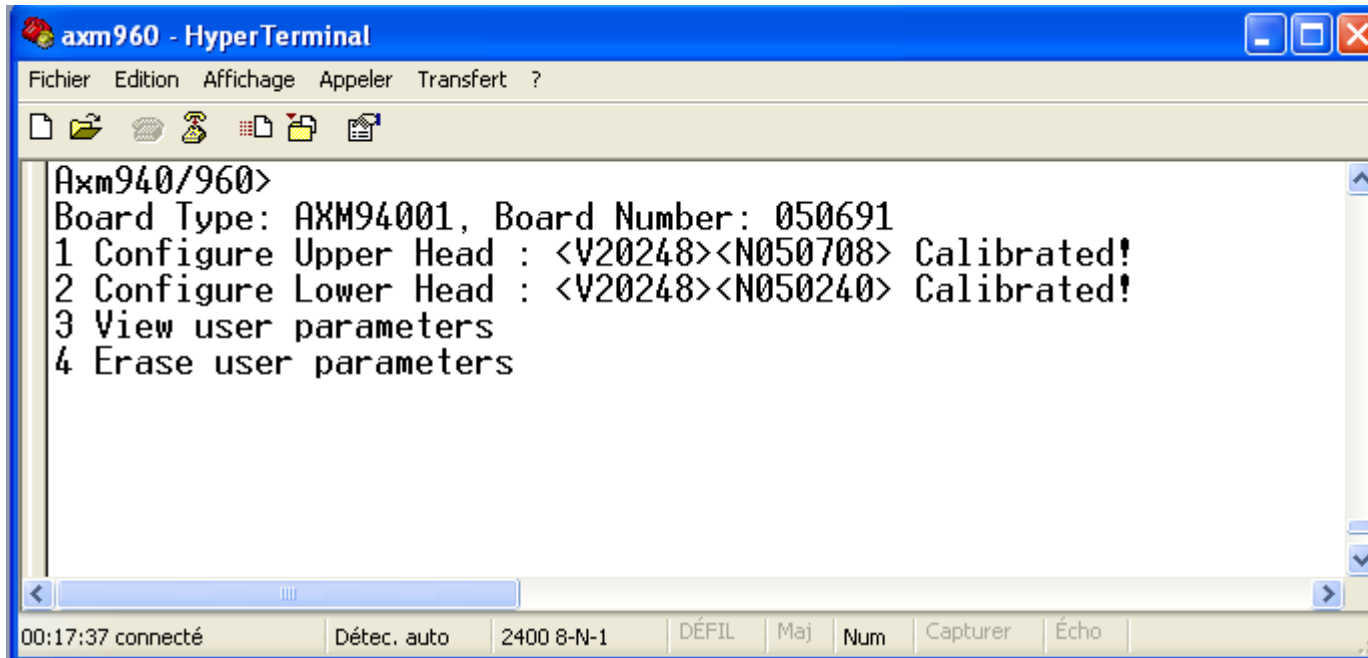
00:43:19 connecté ANSIW 19200 8-N-1 DÉFIL Maj Num Capturer Écho
```

### 7.3.1 Configuration Upper/Lower Head

This menu allows to activate and calibrate the OMR read heads and to verify the read head version and serial number.

- Read head version (V20248)
- Read head serial number (NO50708 for the upper head)

When you start the reader for first time, heads are calibrated.



```
axm960 - HyperTerminal
Fichier Edition Affichage Appeler Transfert ?
Axm940/960>
Board Type: AXM94001, Board Number: 050691
1 Configure Upper Head : <V20248><N050708> Calibrated!
2 Configure Lower Head : <V20248><N050240> Calibrated!
3 View user parameters
4 Erase user parameters
00:17:37 connecté Détec. auto 2400 8-N-1 DÉFIL Maj Num Capturer Écho
```

The OMR read head must be calibrated each time a change is made, so as to ensure correct functioning and good reading. Calibration also results in the activation of the OMR read head.

To carry out calibration, please follow the procedure described below :

- Open the upper lid
- Place a **white sheet which covers all of the canals**
- Press **1** key to calibrate upper head and **2** key for lower head.
- When TMN is successfully calibrated, press the ENTER key to valid the calibration

In case of an error, the first canal having caused problems will be signalled. Canal errors can be due to stains on the sheet of paper.

- An error 0 means clock tracks.
- An error 49 means a general defect .

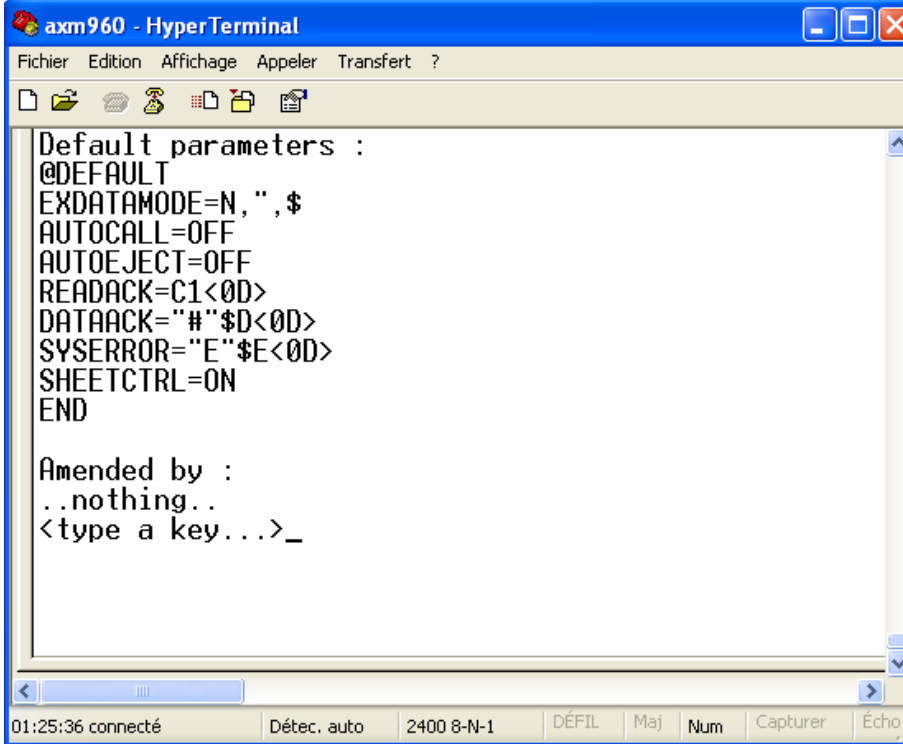
---

**Make sure that the sheet of paper is uniformly white, that it has no stains,  
that all canals of the read head are completely covered by the paper  
and that the head cover is properly closed.**

---

### 7.3.2 User parameters

To be used to visualise and erase data contained in the flash memory.

A screenshot of a HyperTerminal window titled "axm960 - HyperTerminal". The window has a menu bar with "Fichier", "Edition", "Affichage", "Appeler", and "Transfert ?". Below the menu bar is a toolbar with icons for file operations. The main text area displays the following content:

```
Default parameters :  
@DEFAULT  
EXDATAMODE=N,",$  
AUTOCALL=OFF  
AUTOEJECT=OFF  
READACK=C1<0D>  
DATAACK="#"$D<0D>  
SYSERROR="E"$E<0D>  
SHEETCTRL=ON  
END  
  
Amended by :  
..nothing..  
<type a key...>_
```

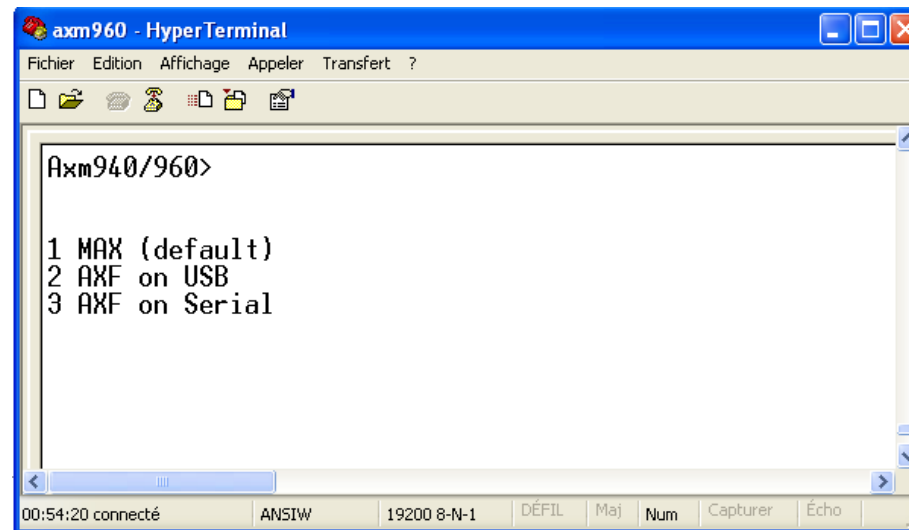
At the bottom of the window, there is a status bar with the following text: "01:25:36 connecté", "Détec. auto", "2400 8-N-1", "DÉFIL", "Maj", "Num", "Capturer", and "Écho".

Erasing user parameters leaves the reader with default parameters.

### 7.3.3 Select emulation

The axm960 permit 3 different types of emulation to be compatible with some obsolete Interpreters.

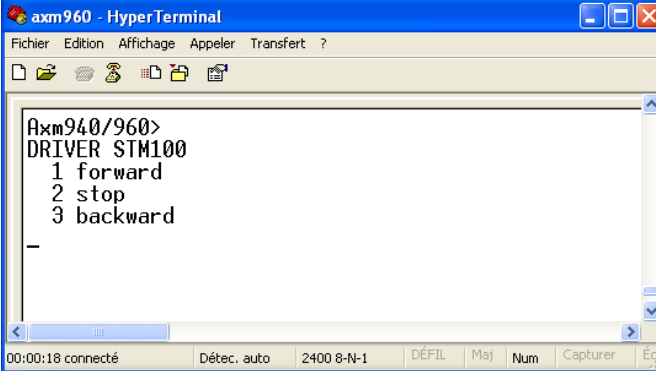
- MAX as default Interpreter
- AXF on USB
- AXF on serial



Remarks: AXF with axm960 is only existing to allows compatibility with old programs. It is not recommended to use AXF for new projects. AXF do not permit to use the all capabilities of the TMN reading heads.

## 7.4 Motor

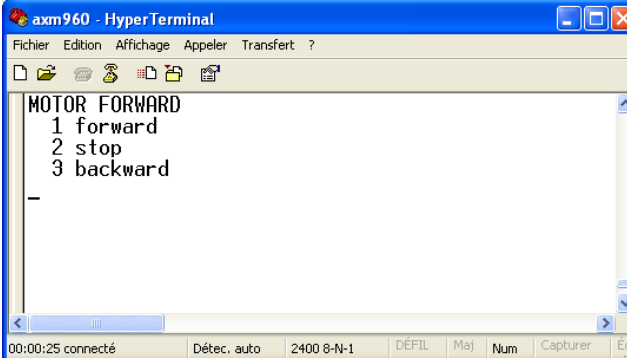
The forward / backward function of the document transport motor can be verified using motor test.

A screenshot of a HyperTerminal window titled "axm960 - HyperTerminal". The window displays a menu for the "Axm940/960" device, specifically for the "DRIVER STM100". The menu options are: "1 forward", "2 stop", and "3 backward". The status bar at the bottom shows "00:00:18 connecté", "Détec. auto", "2400 8-N-1", "DÉFIL", "Maj", "Num", "Capturer", and "Écp".

```
axm960 - HyperTerminal
Fichier Edition Affichage Appeler Transfert ?
Axm940/960>
DRIVER STM100
 1 forward
 2 stop
 3 backward
-
```

### 7.4.1 Motor forward

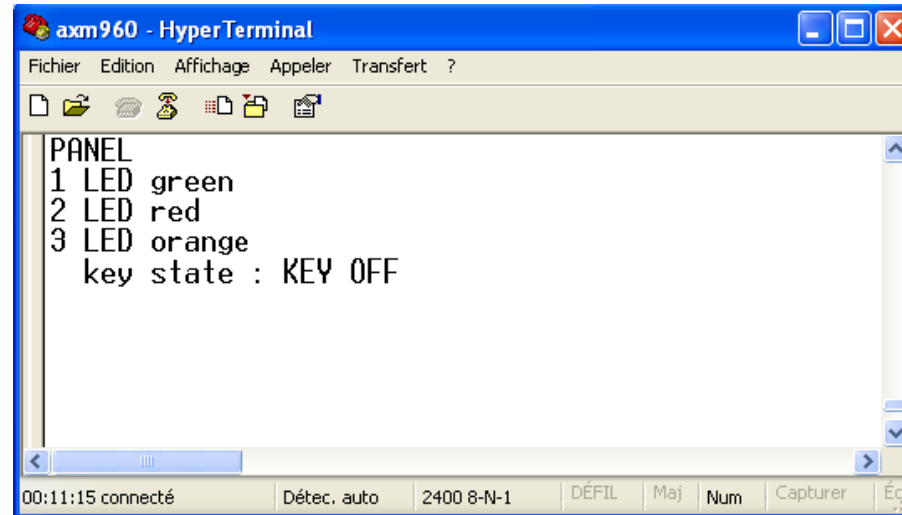
When the 1 key is pressed the motor runs in forward mode and the status is displayed on the screen.

A screenshot of a HyperTerminal window titled "axm960 - HyperTerminal". The window displays the status "MOTOR FORWARD" followed by the same menu options: "1 forward", "2 stop", and "3 backward". The status bar at the bottom shows "00:00:25 connecté", "Détec. auto", "2400 8-N-1", "DÉFIL", "Maj", "Num", "Capturer", and "Écp".

```
axm960 - HyperTerminal
Fichier Edition Affichage Appeler Transfert ?
MOTOR FORWARD
 1 forward
 2 stop
 3 backward
-
```

## 7.5 Panel test

The LED colour function and the control switch can be verified in (front) panel menu.



### 7.5.1 LED test

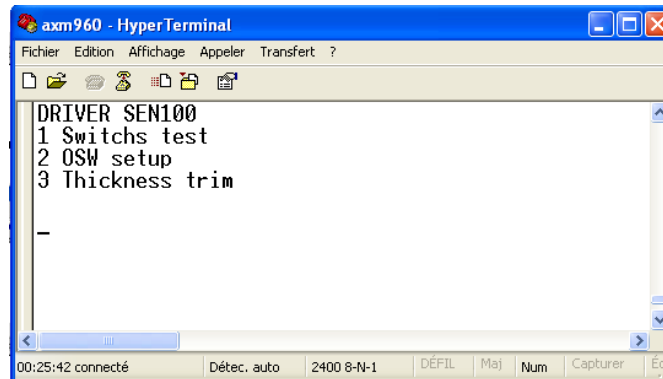
By pressing keys **1**, **2** or **3**, the LED (see position 3 of chapter 4 *Presentation of the axm 960*, page 10) turns green, red, or orange respectively.

### 7.5.2 Key test

The status of the reader's control switch (see position 4 of chapter 4 *Presentation of the axm 960*, page 10) on the screen and indicates whether switch is pressed (KEY ON) or released (KEY OFF).

## 7.6 Sensor test

Optical switch functionalities and thickness detector may be verified in sensor menu.



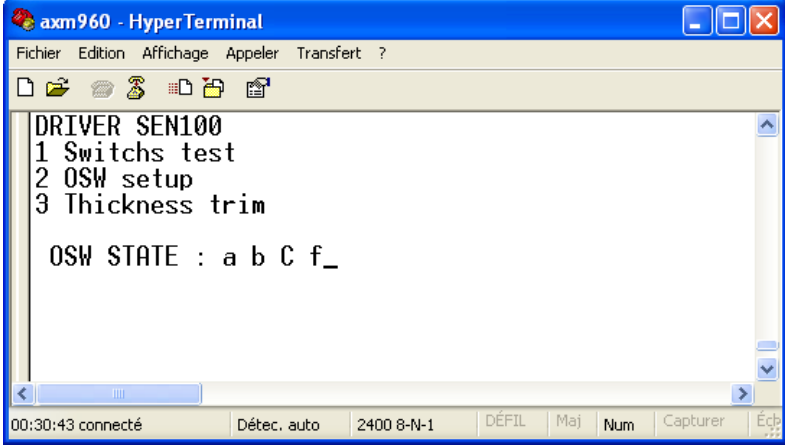
### 7.6.1 Optical switch test

The method to test the optical switch (OSW) is digitally. The functions described further on correspond to the light switches as given below :

- a** input switch : OSW 1
- b** separation switch : OSW 2
- c** output switch : OSW 3
- f** reserve switch : Calling mechanism switch



By closing OSW, the digital status of the corresponding OSW can be obtained (small letter = open / capital letter = closed)

A screenshot of a HyperTerminal window titled "axm960 - HyperTerminal". The window has a menu bar with "Fichier", "Edition", "Affichage", "Appeler", "Transfert", and "?". Below the menu bar is a toolbar with various icons. The main text area contains the following output:

```
DRIVER SEN100
1 Switchs test
2 OSW setup
3 Thickness trim

OSW STATE : a b C f_
```

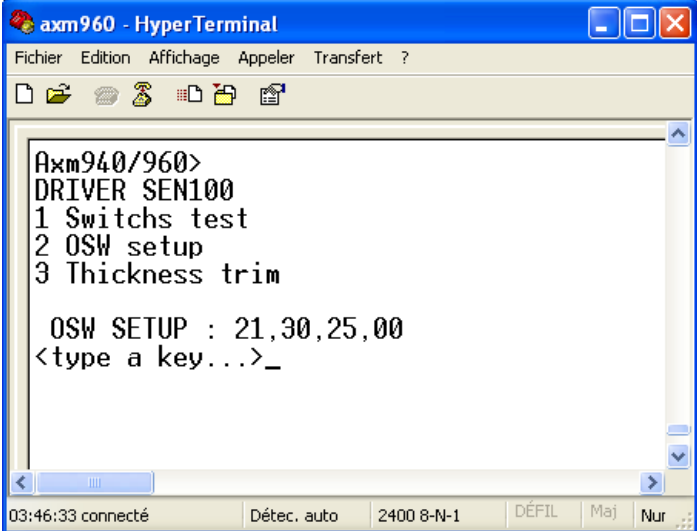
The status bar at the bottom shows "00:30:43 connecté", "Détec. auto", "2400 8-N-1", "DÉFIL", "Maj", "Num", "Capturer", and "Éch".

In case all the OSW are in capital letters, proceed to a setup of the OSW. (see chapter 7.6.2 *OSW setup*, page 34)

## 7.6.2 OSW setup

Light barriers adaptation is done through the Test mode. The adaptation is not continuously made to avoid useless reader's stops. The below operation can be done only during a maintenance service and by trained technicians.

- No document or paper present in the input tray or in the transport mechanism
- Press the key **2** for **OSW setup**
- OSW are automatically set and keep the setting till the next switch calibration
- Values are displayed
- 00, OSW. is not working or not connected
- 06-98, OSW is optimum
- 99, OSW is working but the safety margin is low

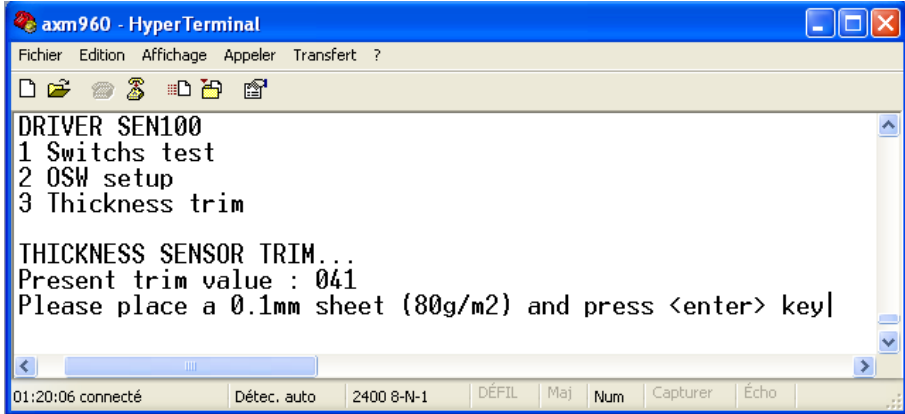


```
axm960 - HyperTerminal
Fichier Edition Affichage Appeler Transfert ?
[Icons]
Axm940/960>
DRIVER SEN100
1 Switchs test
2 OSW setup
3 Thickness trim

OSW SETUP : 21,30,25,00
<type a key...>_
03:46:33 connecté Détec. auto 2400 8-N-1 DÉFIL Maj Nur
```

### 7.6.3 Thickness trim

The below operation can be done only during a maintenance service and by trained technicians. To test the thickness switch, documents of around 1/10 mm in thickness should be used. This is usually the case with 80g/m<sup>2</sup> paper.



```
axm960 - HyperTerminal
Fichier Edition Affichage Appeler Transfert ?
DRIVER SEN100
1 Switchs test
2 OSW setup
3 Thickness trim
THICKNESS SENSOR TRIM...
Present trim value : 041
Please place a 0.1mm sheet (80g/m2) and press <enter> key|
01:20:06 connecté Détec. auto 2400 8-N-1 DÉFIL Maj Num Capturer Écho
```

The displayed value must be situated between 30 and 50. Doing new calibration request a brand new document without fold. When calibration is passed, different values are given.

*Keymean:* Average thickness value on document

*Peak:* Maximal thickness value

*Trim:* New trim value

In this results, the Peak value must be less than 15% upper the Keymean value. If results are not answering this needs, contact Axiome Alpha SA.

## 7.7 Lift and Solenoid test

### 7.7.1 Lift UP/DOWN

Check the functionality of the input lift.

- Press the key **1** and the lift moves up.
- Press the key **2** and the lift moves down.

### 7.7.2 Calling solenoid ON/OFF

The electro-magnet of the document calling system can be verified in this menu.

- By pressing key **3**, the solenoid is fed and should moves down.
- By pressing key **4**, the solenoid is fed and should moves up.

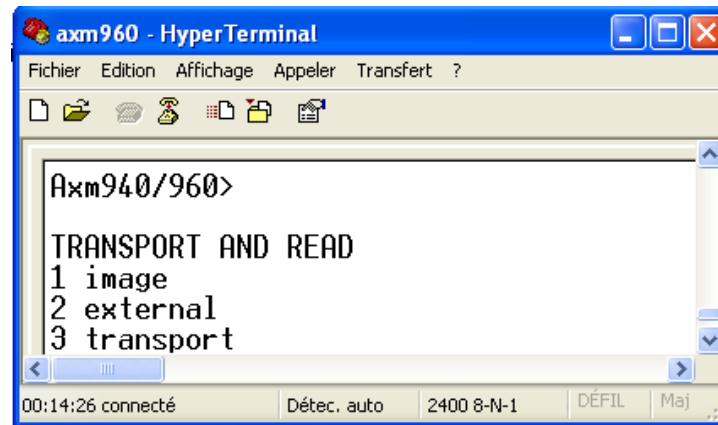
### 7.7.3 Eject solenoid ON/OFF

The electro-magnet of the document ejection system can be verified in this menu.

- By pressing key **5**, the solenoid is fed and should moves down with the ejection mechanism
- By pressing key **6**, the solenoid is fed and should moves up with the ejection mechanism

## 7.8 Read test

Paper transport mechanism, OMR read heads, bar code read heads functions can be verified in the Read menu.



### 7.8.1 Image mode

For this test, at least one OMR read head should be present. In this mode, functioning as well as positioning of the OMR read head can be verified. An image of the document is displayed on the screen and the read level (0 to E) is given for each mark. In this mode the thickness sensor is always activated. To carry out this test, any OMR document may be used, provided that it is well printed and cut as well as the following explanations refer to Axiome TMN test form, with 40 or 48 tracks, delivered with the machine.

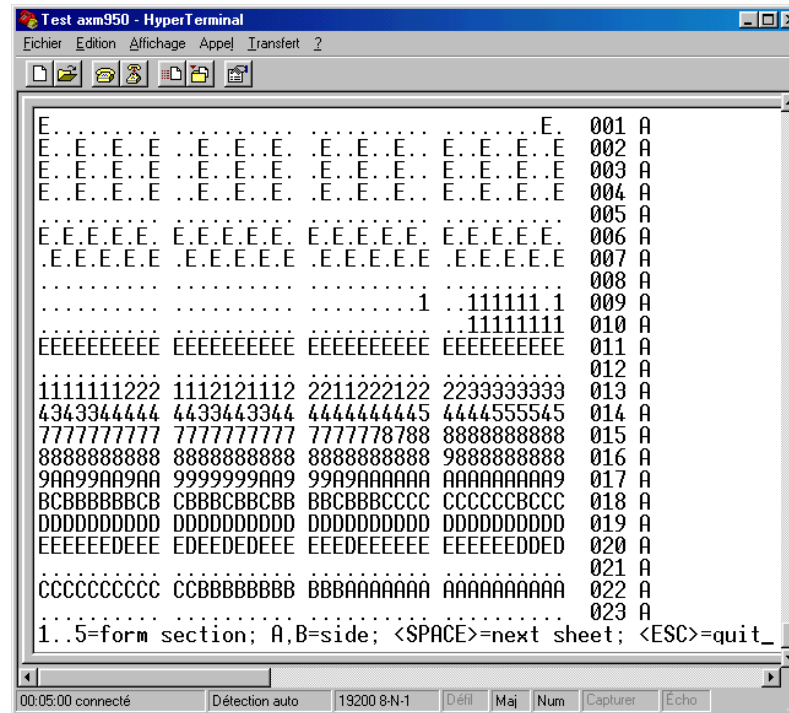


Figure 1

List of commands for the Image Test:

- Key 1 to 5            Display the different part of the form (23 lines per part)
- Key A                Display upper side of the form
- Key B                Display downer side of the form
- Key SPACE           Call next sheet
- Key Esc              Quit ImageTest

Interpertration of the Image test

tracks 2 and 48 (or 40): **first +/- adjustment** of the head position

A value smaller than **D**: indicate a **troubled vision**, glass or marble is dirty

Lines 9 an 10: **Dyslexia**  
The lower and more uniform the value is, the better it is, the maximum value admitted is: **3**.  
One **2** alone inside of points is disquieting

Lines **8, 12, 21, 23**: **Must be empty**.  
No marks

E.....	.....E.	001	A
..D..E..	E..E..E..E	002	A
..E..E..	E..E..E..E	003	A
..E..E..	D..E..E..E	004	A
.....	.....	005	A
E.E.E.D.	E.E.E.D.E.	006	A
.E.E.E.E	.E.E.D.E.E	007	A
.....	.....	008	A
12111111	1111.....	009	A
.....	.....	010	A
EEEEEEEE	EEDDEEEEE	011	A
.....	.....	012	A
12222222	222222232	013	A
44445545	4555545554	014	A
78878888	8888888888	015	A
88989999	8999999999	016	A
A9AAAAAA	AAAAAAAAAA	017	A
CBBCCBC	CCCCCCCC	018	A
CCDCCDCD	DDDDDDDD	019	A
DDEDDDEE	EEEEEEEE	020	A
.....	.....	021	A
78888888	899999A99A	022	A
.....	.....	023	A

Lines 2, 3, 4 : values **D** or **E**  
**fin adjustment**:  
..E..E Shift the  
.4E.4E read head to  
..E..E the left  
side

Lines 6 and 7: values **E**  
**imperative**

Lines 13 to 20: **Sensitivity**  
Increasing from **2** to **E**.  
On the same line, variation maximum **3** levels

Line 22: **Skew**  
Indicates the bias and is very sensitive. Estimate the generally tendency.  
A difference between **4** and **5** levels is acceptable

```

..... 024 A
98999999 8888888887 7777888888 7888888888 8888888887 025 A
..... 026 A
DDDDDEDE EEDEEDDEEE EEEDEEEEEEE EEEEEEEEEEE EDEEDEEDDD 027 A
CCDDDDDD DDDDDDDDDD DDDDDDDDDD DDDDDDDDDD DDDDDDCDDC 028 A
CCCCCCCC CCCDDCCDD CCCCCDDDC CCCCCDDCC CCCCCCCCC 029 A
AAAABABB ABBBBBBBBB BBBBBBBBBB BBBBBBBBBB BBAAABBAA 030 A
999999A9 9A9AAAA9AA AAAAAAAAAA AA9AAAA9A A9999AAA99 031 A
67777787 7878788787 7888888888 7888888888 8877788877 032 A
55556665 5565666666 6666666676 6666676766 6666666665 033 A
21222232 2222322332 3323333343 3333343433 3322233432 034 A
..... 035 A
EEDEEEEE EEEEEEEEEEE EEEEEEEEDD EEEEEEEEEEE EEDDDEEEEE 036 A
.....1. .... 037 A
11222221 1221111111 .111121221 1211.11111 11..112211 038 A
..... 039 A
.E.D.E.E .E.E.E.D.E .E.E.E.E.E .E.E.E.E.E .E.D.E.E.E 040 A
E.E.E.E. E.D.E.E.E. E.E.E.E.E. E.D.E.E.E. E.E.E.E.E. 041 A
..... 042 A
..E..D.. E..D..E..E ..E..E..E. .E..D..E.. E..D..E..E 043 A
..E..E.. E..E..E..E ..E..D..E. .E..E..E.. E..D..D1.E 044 A
..E..E.. E..E..D..E ..E..E..E. .E..E..E.. E..E..E..E 045 A
E..... .....E. 046 A

```

Second part of the test sheet: **Verification**. To interpret in the same way than first part. If the results are very different from the first part, an unstable paper transport can be the reason.

Remarks: Make sure that the document is well cut and not damaged. Little differences, particularly on the lines 9 and 10 are due to printer precision. If in doubt, use more than one test sheet.

Finish the test with a clean, blind colour sheet with 66 clock marks, **no mark may be read**.



### 7.8.2 External mode

With the external mode, the external data (bar code) are decoded and transmit to the terminal window.

### 7.8.3 Transport mode

With the transport test, the transport function can be verified by ejecting 1 document out of 3 into the secondary output tray. In this mode, all read heads are disabled, but the thickness detector remains enabled.

## 8 Spy option for technicians

### AXM960 (from firmware version 1.1.0.12)

#### Use of the integrated “spy” on RS232 interface.

As it is sometime difficult to debug programs using Virtual Communication Port outputting on USB interface, a facility is provided to visualize the communication traffic on the RS232 interface.

In a monitoring terminal, connected on the RS232 interface and setup to 115200,N,8,1, you have to type in capitals :

**SPY1** to supervise the communications of the reader towards the host.

**SPY2** to supervise the communications of the host towards the reader.

**SPY3** to supervise the communication in both directions. [1]

**SPY0** to disable the function. (The function is always disabled at power ON).

[1] The characters are sent such as receipts, no flag does announce of which source they are emitted (host or reader).

Also note that using this function you slow down the reader. That should be used only during the development of a program and on sheet per sheet operation.

## 9 Maintenance

### 9.3 Regularly maintenance

The regularly maintenance can be performed by normal user without any technical training.

- Cleaning the reading head's glasses (duster with alcohol or soaped water)
- Cleaning the separation wheel and separation belt (dry duster or brush)
- Cleaning the light barriers (dry duster or a brush)
- Control the paper transport (duster or a brush)

### 9.4 Service

Service can only be performed by trained people with Axiome's agreement.

- Regularly maintenance
- Control the tyre's wear. Exchange if necessary
- Control the mechanism with the help of the test software (L.B., double sheet detector, lift, output solenoid, motors, display,...)
- Control the separation tyre and separation belt. If necessary change them. Needs new adjustment
- Paper transport with a full batch.

## 10 Parts exchanges and settings

### 10.3 Transport tyres exchange

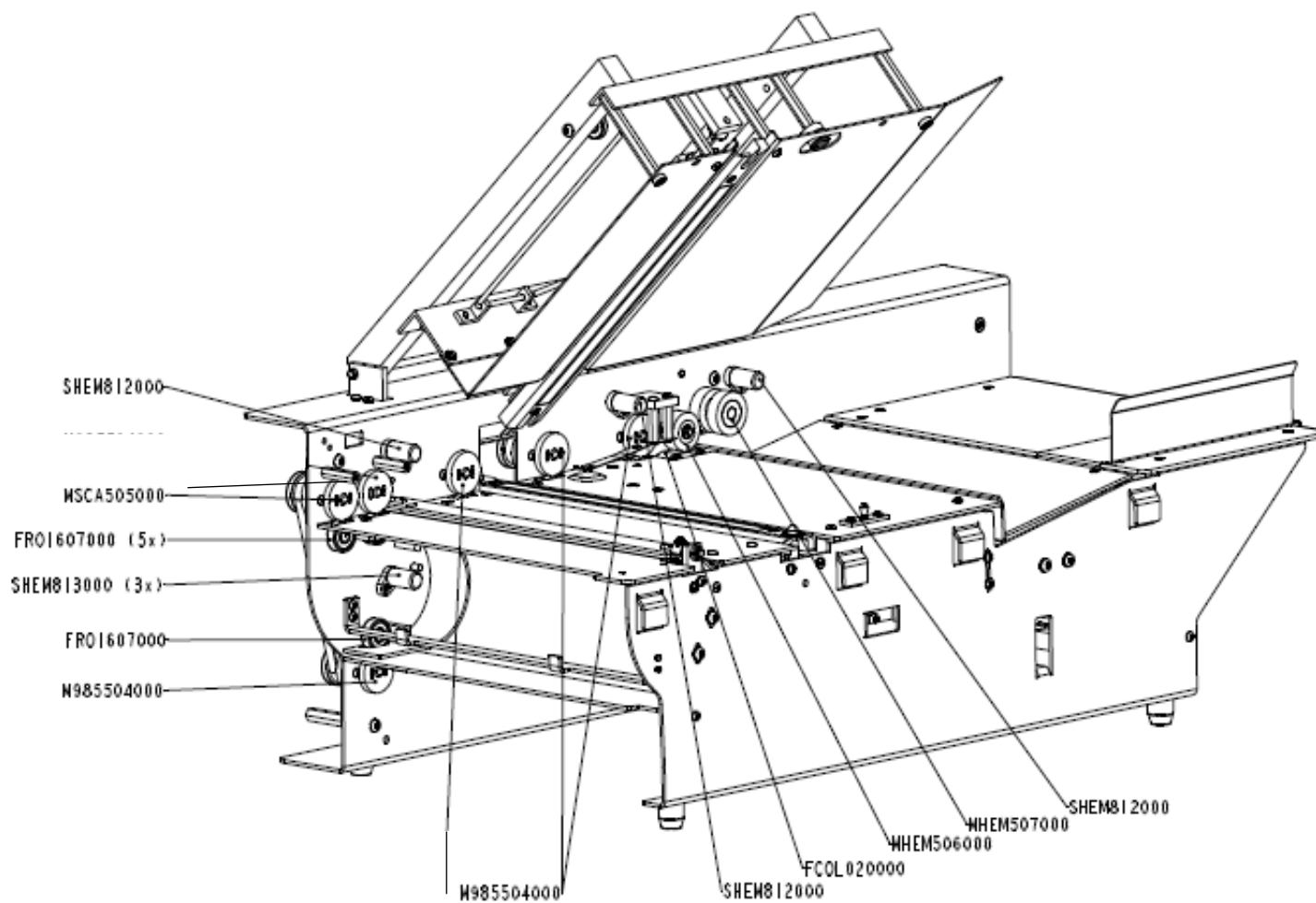
- For the transport tyres, open the upper lid to reach all the tyres
- Removed the wear tyres



For transport quality reasons, all tyres are not similar, respect the here below diagram. Find a complete spare parts list with the tyre reference at the end of the manual.

### 10.4 Separation belt exchange

Can only be performed by trained people.



## 11 Spare parts

The replacement parts for the axm 960 can be ordered from AXIOME Alpha SA or from your retailer.

### Replacement parts for the axm 960

Part Number	Description	Units per machine
M985504000	Transparent transport wheel	5
MSCA505000	Green transport wheel 3°	2
MHEM506000	Separation tyre	1 or 3*
MHEM507000	Dual feed wheel	1
01.002.07003	Separation belt	1
FCOC546000	Transport belt	1
FORE148000	Transport O-ring	1
FORE122000	Calling O-ring	1

\*depend of the reader version. MHEM507000 is mounted with 2 MHEM506000.

## 12 Contacts



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