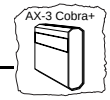


Preface

Thank you for purchasing the AX-3 Cobra+ twinax 5250 protocol converter. This manual will guide you through a step-by-step installation procedure. Once installed, the AX-3 Cobra+ is set to IBM 3812/5219 emulation as factory default. You can change it to IBM 4214, 4230, 5256, 5224 or 5225 emulation.

About Axis

Axis Communications, founded in 1984, is one of the world's fastest growing companies in the CD-ROM server, network print server, network camera and IBM printer interface market. The head quarters are located in Lund, Sweden, with subsidiaries in Beijing, Boston, Paris, London, Shanghai, Singapore, Tokyo, and Hong Kong. Please refer to *Appendix F - How to contact Axis*, on page 89. Axis Communications has a distributor network operating in more than 60 countries worldwide, marketing four product lines:

IBM Mainframe and S/3x – AS/400 Printer Interfaces. These products include a wide range of plug-in interfaces and stand-alone products such as the AXIS Cobra+, AXIS 330/370 Cobra, AXIS HP MIO, the AXIS AFP IPDS-to-PostScript converter, and the AXIS AFP MIO/IOP IPDS-to-PCL converters.

Network Print Servers. These intelligent Ethernet and Token Ring print servers support a wide range of LAN protocols. The Axis NPS 530, 550, and AXIS 150, 540, 560, 560/100, 570, 570 MIO are Ethernet print servers, while the Axis NPS 630, 650, and AXIS 640, 660, 670, 670 MIO are Token Ring print servers.

Network CD-ROM Servers. AXIS StorPoint CD multiprotocol CD-ROM servers provide a flexible and cost-efficient solution for sharing CD-ROMs across the network. They are available in Ethernet and Token Ring versions.

Network Camera Server. The AXIS NetEye 200 Network Camera attaches directly to an Ethernet network. It supports TCP/IP and Internet-related protocols. This product replaces closed circuit video, or PC with framegrabber, at a lower cost.

About this manual

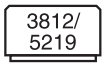
This manual will guide you through simple step-by-step installation and set up procedures.

Introduction. Describes the main features of the AXIS AX-3 Cobra+ Protocol Converter - how it works and where to use it.

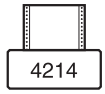
Basic Installation. Contains complete instructions on how to connect your AXIS AX-3 Cobra+ to your printer and the IBM system.

Setting Up... Contains three sections, each one describing in detail the configuration, advanced functions, and problem solving for the AXIS AX-3 Cobra+.

This manual describes the AX-3 Cobra+ in IBM 3812/5219 emulation. Most functions are common to 3812/5219 and 4214 emulation. However, functions that are specific to a particular emulation are identified by one of the following symbols:

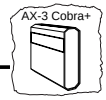


Indicates information that only applies in IBM 3812/5219 emulation.



Indicates information that only applies in IBM 4214 emulation.

Every care has been taken in the preparation of this manual; if you detect any inaccuracies or omissions, please inform us at the address on the back cover. Axis Communications AB cannot be held responsible for any technical or typographical errors and reserves the right to make changes to the product and manuals without prior notice.



Emission notices

USA This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference. Shielded cables should be used with this unit to ensure compliance with the Class A limits.

Europe This digital equipment fulfils the requirements for radiated emission according to limit B of EN55022/1994, and the requirements for immunity according to EN50082-1/1992 residential, commercial, and light industry. (Compliance is not valid for unshielded network and printer cables.)

Trademark Acknowledgements IBM, Lexmark, Epson, Fujitsu, OKI, HP, Canon, Kyocera, and Xerox, are registered trademarks of the respective holders.

AXIS AX-3 Cobra+ User's Manual	Revision 6.01
Part No: 12853	Dated: July 1997

Table of Contents

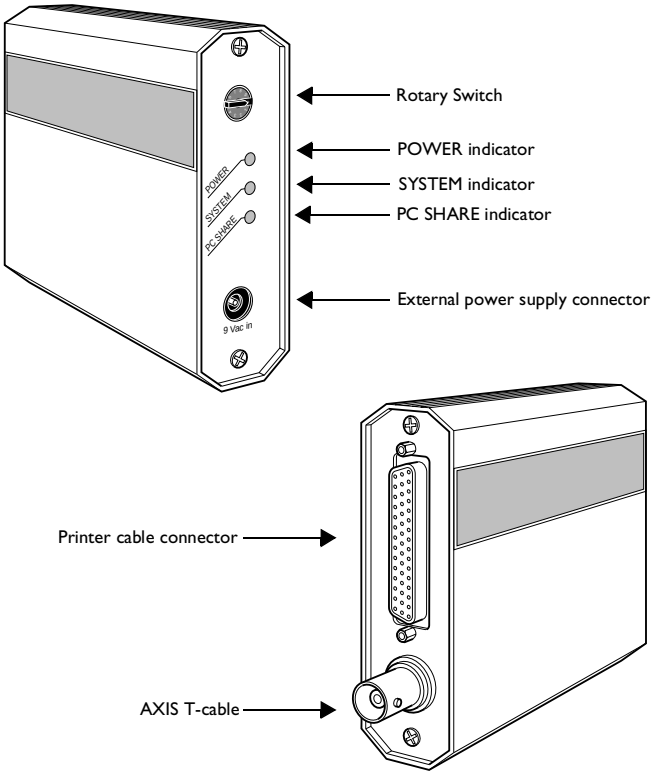
Section 1 Introduction

The AX-3 Cobra+

The AX-3 Cobra+ is a protocol converter, which makes it possible to connect a PC type printer to an IBM 5250 (twinax) environment.

The AX-3 Cobra+ has a twinax connector for incoming system data and a printer cable connector for outgoing ASCII data. Power is supplied via the printer's parallel connector or from an optional external power supply.

The picture below shows the front and back panels.



AX-3 Cobra+ front and back panels

Theory of Operation

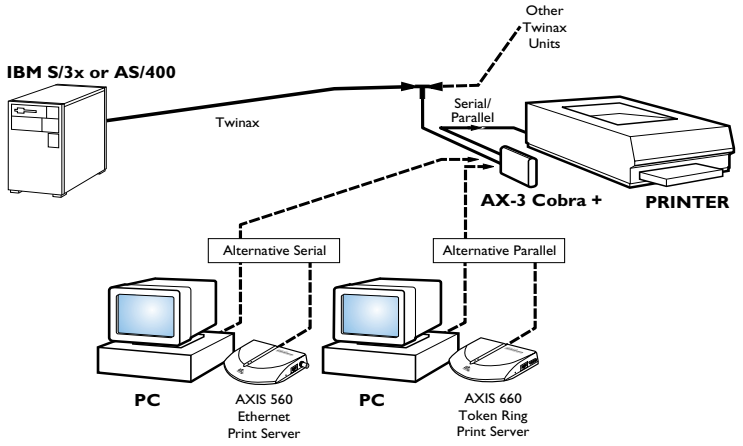
Print data from an IBM host is in a format that cannot be recognized by PC type printers.

The AX-3 Cobra+ converts IBM control and character codes to ASCII control commands and characters, which are recognizable by the PC type printer.

Together, the AX-3 Cobra+ and the attached printer will appear to the IBM host as an original IBM twinax printer.

In addition, the AX-3 Cobra+ can let any parallel and/or serial device share the printer with the IBM Host. The printer sharing function works automatically, using an optional cable.

The picture below shows a typical use of the AX-3 Cobra+ including the printer sharing function.

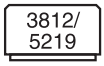


AX-3 Cobra+ printer sharing function

ASCII Printer Drivers

The AX-3 Cobra+ can utilize many of the functions resident in the attached printer, such as underlining, page formatting and paper source selections. The control commands for these functions reside in the Printer Drivers. Standard printer types are covered, see *"Printer Drivers"* page 67 for a list of available Printer Drivers.

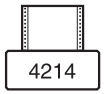
IBM Printer Emulation



The following IBM printers can be emulated by the AX-3 Cobra+ and an attached PC type laser printer:

- IBM 3812/5219 *(default)*

Additional matrix emulations (see page 15):

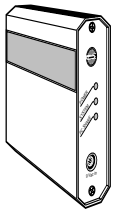


- IBM 4214
- IBM 5256
- IBM 5224
- IBM 5225

See page 83 for technical specifications.

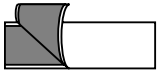
Section 2 Basic Installation

Unpacking

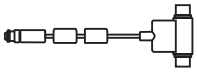


The following items are included in the standard delivery (part no: 0036-2 or 0036-8):

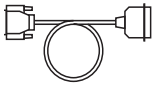
- AX-3 Cobra+
- AX-3 Cobra+ User's Manual (part no: 12853)



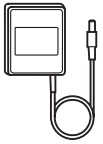
- Self-adhesive Velcro ribbons (part no: 11584 and 11585)



- Axis T-cable (part no: 12554)

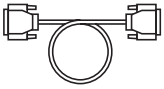


- Centronics parallel printer cable (part no: 12755)

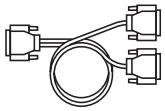


Optional:

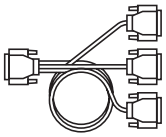
- External Power Supply US/Canadian (part no: 12919)
- External Power Supply European (part no: 13599)
- External Power Supply UK (part no: 12866)
- External Power Supply Australian (part no: 12867)
- External Power Supply Japan (part no: 13949)



- Serial (RS-232C) printer cable (part no: 12756)



- PC-Host 2-way sharing cable; serial PC in, serial printer attachment (part no: 12757)
- PC-Host 2-way sharing cable; parallel PC in, parallel printer attachment (part no: 12998)



- PC-Host 3-way sharing cable; serial and parallel PC in, parallel printer attachment (part no: 12758)

Printer Attachment

First you establish contact between the AX-3 Cobra+ and the PC type printer. Checking that the printer is ready for use and that the printer cable matches the printer connector (parallel or serial).

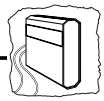
An optional external power supply may be required, if the printer is unable to supply the AX-3 Cobra+.

We recommend that you mount the AX-3 Cobra+ to the side of your printer using the self-adhesive Velcro ribbons.

1. Switch off the printer.
2. Connect the cable from the AX-3 Cobra+ to the printer.
3. Set the rotary switch to position '9' (test printout function).
4. Switch on the printer.
5. Connect the optional external power supply (if needed).

The POWER indicator (green) is lit and the SYSTEM indicator (green) will flash for a few seconds.

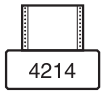
If the POWER indicator is not lit, the printer is unable to supply power to the AX-3 Cobra+. Connect an external power supply to the AX-3 Cobra+.



The AX-3 Cobra+ will produce a test printout on the printer which shows the firmware revision and basic configuration. The default configuration is for an HP LaserJet II/III printer.

Example:

```
******** TEST PRINTOUT ********
AX-3 Cobra+ 3812/5219  Ver 5.23  960311

Printer Driver: #70 HP LaserJet II/III

IBM Printer Emulation____ IBM 3812/5219
System Language__________ International Set 5
ASCII Char. Set__________ Roman-8
```



Test the printout in IBM 4214 emulation, see page 15.

The default configuration will support HP LaserJet II/III printers. If you want to change the configuration, you can do this later when the AX-3 Cobra+ has been installed towards the host. You can also alter the standard configuration before continuing with system attachment see page 14.

The test printout will show if the AX-3 Cobra+ has been configured for your printer by the dealer/distributor.

Example:
The printout below shows that this AX-3 Cobra+ has been configured for a Canon LBP-8III printer:

```
******** TEST PRINTOUT ********
AX-3 Cobra+ 3812/5219  Ver 5.23  960311

Printer Driver: #72 Canon LBP-8III

IBM Printer Emulation____ IBM 3812/5219
System Language__________ International Set 5
ASCII Char. Set__________ PC-850
```

System Attachment

When your AX-3 Cobra+ is configured, and verified by a test printout, the next step is to connect it to the IBM host.

1. Find a free device address on the twinax port. The selected address must be configured to hold an IBM printer of the type the AX-3 Cobra+ will emulate. If in doubt, ask your system manager.
2. Switch off the AX-3 Cobra+ by switching off the printer, or if an external power supply is used, by unplugging the power cord.
3. Set the device address (0-6) on the rotary switch.
4. Connect the Axis T-cable bar to the twinax cables. Please do not disconnect the Twinax line without permission from your system manager.
5. Connect the third end of the Axis T-cable to the AX-3 Cobra+.
6. Switch on the AX-3 Cobra+ (switch on the printer or plug in the external power supply).

The POWER indicator is lit. The SYSTEM indicator flashes for a few seconds and is then constantly lit.

To verify the attachment, make a printout.

You have completed the installation procedure, and your AX-3 Cobra+ is ready for use. It will not need any attendance or service during normal operation.

Change Emulation Laser/Matrix

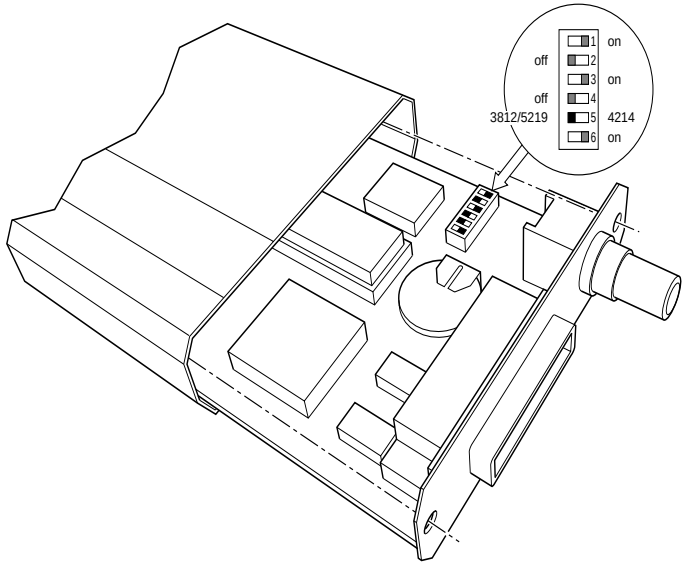
The factory default emulation of the AX-3 Cobra+ is IBM 3812/5219 laser printer. You can easily change the emulation to IBM 4214 matrix printer on the DIP switch inside the AX-3 Cobra+.

The AX-3 Cobra+ must be switched off and disconnected from the System, the printer and the power supply.

Caution

- ❑ The AX-3 Cobra+ circuit board is static-sensitive. Mishandling may cause permanent damage to its components. Make sure to take all recommended precautions related to static-sensitive devices. Use a non-metallic tool to adjust the switches

1. Unscrew the two screws on the back panel.
2. Gently pull the back panel. The attached circuit board with the DIP switch will slide out of the box.



AX-3 Cobra+ DIP Switches

3. Set switch 5 to position ON (4214 emulation). Be careful not to move any of the other switches. The illustration above shows the default settings of all switches.
4. Push the circuit board back into position within the box.
5. Tighten the two screws on the back panel.
6. Attach the AX-3 Cobra+ to the printer and make a test printout. See page 12.

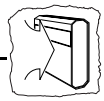
Printout:

```
******** TEST PRINTOUT ********
AX-3 Cobra+ 4214 Ver 5.31  960311

Printer Driver: #30 Generic Printer

IBM Printer Emulation____ IBM 4214 model 2
System Language__________ International Set 5
ASCII Char. Set__________ US ASCII
```

7. Attach the AX-3 Cobra+ to the System. See page 14.

Notes:

- ❑ Error Message E2 will be printed and should be ignored.
- ❑ The AX-3 Cobra+ is automatically set to factory default state when changing between 3812/5219 and 4214 emulation.



Section 3 Configuration

Although the AX-3 Cobra+ is prepared for operation at delivery, you may want to alter the configuration. A test printout will verify the current configuration, see page 12.

The configuration can be done in two ways:

- **Configuration from a Terminal**
  This method is described in this section. The configuration method requires a dedicated IBM 5250 terminal such as a 3180, 3179, 3197, 347x or 348x.

  Alternatively a PC equipped with a 5250 terminal emulation board or an Axis EMMA board (part no: 0041-1) can be used.

- **Configuration from the System**
  The AX-3 Cobra+ can also be configured using down-loaded programming sequences from the system, see page 33.

Configuration from a Terminal

The AX-3 Cobra+ is equipped with a menu-driven Configuration Utility. This provides a step-by-step method to adapt the AX-3 Cobra+ to your IBM host and printer. Follow these steps to start the configuration:

1. Switch off the AX-3 Cobra+. If the power is taken from an attached printer, then switch the printer off. If you are using an external power supply, unplug the power cord.
2. Connect a terminal to the AX-3 Cobra+ using the Axis T-cable, and switch the terminal on. The terminal should be terminated.
3. Set the rotary switch in position '7' and switch the AX-3 Cobra+ on. Wait a few seconds until the SYSTEM indicator has stopped flashing.
4. Select position '9'. Wait until the SYSTEM indicator starts to flash.
5. Select position '7'.

Within a few seconds, the Key Definitions Menu should appear on your terminal.

If you want to restart the configuration, just switch the AX-3 Cobra+ off and repeat from step 3.

The rest of this section is a guide to the Configuration Utility.

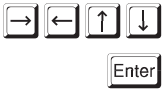
Key Definitions

```
=====================================================
 AX-3 Cobra+ 3812/5219  Ver 5.23              960311
=====================================================
 KEY DEFINITIONS

_Right
 Left
 Up
 Down
 Enter









 Assign cursor keys
```

The first menu is for assigning the specific keys to be used in the configuration. No other keys than the five assigned can be used.

Press the key you wish to assign when the corresponding value is highlighted.

The highlight will move to the next value after the key has been assigned.



Right, Left, Up and *Down* are normally assigned to the cursor keys, and *Enter* to the 'Enter' or 'Return' key.

When you have assigned the five keys, the Main Menu will be shown.

Basic Configuration

The Main Menu is shown after you have assigned the keys.

```
=================================================
 AX-3 Cobra+ 3812/5219     Ver 5.23          960311
=================================================
 MAIN MENU

_Basic Configuration
 Printer Attachment
 View Configuration
 Print Parameters List
 Print EBCDIC to ASCII table
 Edit Parameters
 Set Factory Defaults
 Save
 Exit



 Use <Up><Down> to move, <Enter> to select
```

All entries are described on page 31.

The 'Basic Configuration' entry initiates a configuration procedure which will guide you through a sequence of submenus. You will be prompted for selections in the following order:

1. Printer Driver
2. IBM Printer Emulation
3. System Language

Additional selection in IBM 3812/5219 emulation:

4. ASCII Character Set

↑ ↓, Enter — Select 'Basic Configuration'.

The Printer Driver submenu is shown.

Note: ❑ If an incorrect selection is made during the Basic Configuration, press *Enter* until the Main Menu appears, and re-enter the Basic Configuration.

Select Printer Driver

This submenu is shown after you have selected 'Basic Configuration' in the Main Menu.

```
==================================================
                  BASIC CONFIGURATION
==================================================
 MAIN MENU

_HP LaserJet II/III
 Kyocera
 Canon LBP-8111
 IBM Laser (PPDS)
 HP LaserJet 4




 Use <Up><Down> to move, <Enter> to select
```

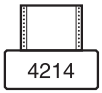
A printer driver is a device driver containing all the variables, including command sequences and character sets, required to drive a particular range of printers.

The default printer driver is HP LaserJet II/III.

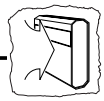
If your printer is not listed, consult your printer manual.

↑ ↓, Enter

Select the Printer Driver matching your printer.



In matrix emulation other printers are available. See page 67 for a list of Printer Drivers. See page 15 for instructions on changing between laser and matrix emulations.



Select IBM Printer Emulation

This submenu is shown after you have selected Printer Driver.

```
=====================================================
                  BASIC CONFIGURATION
=====================================================
 IBM PRINTER EMULATION

_IBM 3812/5219









 Use <Up><Down> to move, <Enter> to select
```

The AX-3 Cobra+ together with the PC type printer will appear to the IBM system as an original IBM twinax printer. You have to select which IBM printer emulation that is to be used.

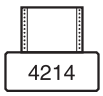
The default printer emulation is IBM 3812/5219.

↑ ↓, Enter

Select the IBM Printer Emulation matching your system configuration.

Note:

- ❑ Make sure the device address on the twinax port is configured according to the IBM Printer Emulation.



You can select one of the following matrix emulations: IBM 4214 *(default)*, IBM 5256, IBM 5224, IBM 5225. See page 12.

It is also possible to select IBM Printer Emulation using the rotary switch. See page 82

Select System Language

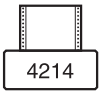
This submenu is shown after you have selected IBM Printer Emulation.

```
======================================================
                  BASIC CONFIGURATION
======================================================
 SYSTEM LANGUAGE

 037 US English/Canadian
 273 German/Austrian
 274 Belgian
 275 Brailian
 276 Canadian French
 277 Danish/Norwegian
 278 Finnish/Swedish
 280 Italian
 281 Japanese English
 282 Portuguses
 284 Spanish Speaking
 285 UK English
 297 French
_500 International Set 5


 Use <Up><Down> to move, <Enter> to select
```

You have to set up the AX-3 Cobra+ for the System Language matching your IBM system configuration in order to obtain correct language specific characters.

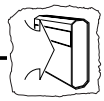
The default is International Set 5.

Select the System Language corresponding to your IBM system configuration.



End of configuration in matrix emulation.

The Basic Configuration is completed, and the Main Menu is displayed again.



Select ASCII Character Set (5219)

This submenu is shown after you have selected System Language. It is only applicable in IBM 3812/5219 emulation.

```
=====================================================
                  BASIC CONFIGURATION
=====================================================
 ASCII CHARACTER SET

 US ASCII
 PC-8
_Roman 8
 PC-850
 Editable Set









 Use <Up><Down> to move, <Enter> to select
```

This is the ASCII Character Set to be used in the printer.

↑ ↓, Enter

Select ASCII Character Set.
Make sure the character set is available in the printer.

The best selection is PC-850 (if available).

The Editable Set selects the PC-850 set with a possibility to edit the Translation Table to meet your requirements. See page 38

End of configuration.
The Basic Configuration is now completed, and the Main Menu is displayed again.

Save the Configuration

↑ ↓, Enter

Select 'Save' in the Main Menu.

The following submenu is shown:

```
==================================================
                        SAVE
==================================================
 SAVE SETTINGS PERMANENTLY


_Yes
 No









 Use <Up><Down> to move, <Enter> to select
```

↑ ↓, Enter

Select 'Yes' to save the current configuration permanently.

The Main Menu is displayed.

Note:

- The previous configuration remains in the permanent memory until you select 'Save'. If you exit without saving, the changes you have made to the configuration will be lost at the next power-off.

Exit the Configuration

↑ ↓, Enter **Select 'Exit' in the Main Menu.**

The following submenu is shown:

```
==================================================
                          EXIT
==================================================
 EXIT CONFIGURATION


_YES
 NO



 Please remember to set the Device Address on the
 Rotary Switch! Power off before connecting to the
 system.




 Use <Up><Down> to move, <Enter> to select
```

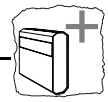
↑ ↓, Enter **Select 'Yes' to exit the Configuration.**

The Configuration Utility is terminated and the screen is left blank. Disconnect the terminal and connect the AX-3 Cobra+ to your IBM system.

If you select 'No' in this submenu the Main Menu will be displayed again.

Note:

- If you exit without saving, the changes you have made to the configuration will be lost at the next power-off.



Section 4 Advanced Functions

The AX-3 Cobra+ supports a number of functions beyond standard IBM printer operation.

During normal mode of operation, AX-3 Cobra+, together with your printer, emulates the IBM twinax printer selected in your configuration. In addition, the Extended Emulation Mode gives you access to functions not available in standard IBM printers.

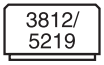
The examples in this section are intended to give you an overview of how to use the advanced functions in the Extended Emulation Mode and the PC-Host Sharing function.

Extended Emulation Mode

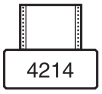
The advanced functions that you can access in the Extended Emulation Mode are:

- Transparency
- Configuration from the System
- Character Translation
- User Definable Strings

Additional IBM 3812/5219 emulation functions:



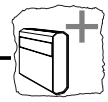
- Editable Font Selection Strings
- Customized Printout
- Bar code Printing (optional)
- String Substitutions (optional)



Additional IBM 4214 emulation function:

- Bar Code Printing
- String Substitutions

The functions are programmed, and called, by text sequences inserted into your documents. The sequences are inserted between enter and exit commands that control the Extended Emulation Mode, see page 33.



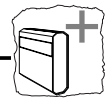
Main Menu

A number of the advanced functions can be programmed or edited using Configuration from a Terminal. The Main Menu is displayed when the configuration is started, see page 18.

```
================================================
 AXIS AX-3 Cobra+ 3812/5219     Ver 5.23    960103
================================================

 MAIN MENU

_Basic Configuration
 Printer Attachments
 View Configuration
 Print Parameter List
 Print EBCDIC to ASCII table
 Edit Parameters
 Set Factory Defaults
 Save
 Exit




 Use <Up><Down> to move, <Enter> to select
```

Basic Configuration	see page 20
Printer Attachment	select parallel or serial printer connection and set serial parameters
View Configuration	display the basic configuration.
Print Parameter List	print the parameter list, see page 65.
Print EBCDIC to ASCII table	print the translation table, see page 77

Edit Parameters	tailor the settings to meet specific needs.
Set Factory Default	reset the configuration to defaults.
Save	store current configuration permanently.
Exit	exit configuration.



Configuration from the System

This function allows you to configure the AX-3 Cobra+ without using the Configuration from a Terminal as described on page 18.

By inserting configuration commands in your document, you can tailor the AX- 3 Cobra+ to meet special requirements for certain print jobs.

Example:

`&&??&&P`	*(Enter extended emulation mode)*
`%P`	*(Configuration lead-in sequence)*
`=207,72`	*(Printer Driver = Canon LBP-8III)*
`=10,1`	*(System Language = US English/Canadian)*
`=54,4`	*(ASCII Character Set = PC-850)*
`=206`	*(Initialize settings)*
`%`	*(Configuration trailer sequence)*
`&&??000`	*(Resume normal emulation mode & save settings)*

The example shows how to select a Printer Driver and program the Basic Configuration parameters.

The first line is to enter the Extended Emulation Mode.

'%P' tells the AX-3 Cobra+ that configuration commands are to follow. '=' indicates a command line. Each command line has a function or parameter number.

'207' is a function number, followed by a comma and a value. '206' is also a function number. Please refer to the Technical Reference for a description of functions and their values.

'10' is a parameter number, followed by a comma and a value. '54' is also a parameter. See page 68 for a description of the parameters and their values.

'%' indicates the end of the configuration commands.

The last line is to exit the Extended Emulation Mode and to save the settings permanently.

Note: ❑ The comments (within brackets) should not be included in your document.

Transparency

IBM PC Support Virtual Printer is one way of sending data transparent to the printer. This method is always active and is not described in this manual.

This section describes the AX-3 Cobra+ specific transparency methods.

The Transparency function allows you to send data directly to your printer without any conversion (pass-through). The data could be ASCII printer commands unsupported by AX-3 Cobra+.

Be careful when using the Transparency function for generating printable characters, selecting fonts or making text positioning. The AX-3 Cobra+ supports these functions in normal emulation mode, and your settings may be overridden by the system.

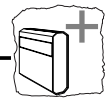
The transparency function is mainly intended for down-loaded fonts, printing logos and forms and similar applications.

The function is accessed in Extended Emulation Mode.

The Single-byte Transparency function is called by a percent sign in your document ('%') and it will pass through one subsequent ASCII byte (hexadecimal).

The Multi-byte function is started by two successive percent signs. When the start sequence ('%%') is found, the AXIS AX-3 Cobra+ Cobra assumes hexadecimal data until a terminating percent sign occurs.

Example (Multi-byte Transparency on HP LaserJet):



You want the text to have an underlined part in the middle. Assuming that you have an HP LaserJet, 'start underline' and 'stop underline' are defined by the ASCII codes $1B, $26, $64, $44 and $1B, $26, $64, $40 respectively:

```
This is %%1B266444%underlined%%1B266440% text
```

Printout:

```
This is underlined text
```

Please refer to the manual for your PC type printer for information on ASCII printer commands.

Note:

- To access the Transparency function, Extended Emulation Mode must be entered.

Configuration and Transparency Sequences

The Start and Stop Transparency and Configuration are controlled by three string parameters:

- *Transparency Lead-In Sequence (#041)*, empty by default.
- *Configuration Lead-In Sequence (#042)*, empty by default.
- *Transparency/Configuration Trailer Sequence (#043)*, empty by default.

See page 68 for a description of the parameters.

Define the Sequences

The parameters are defined when Extended Emulation Mode is entered.

Example:

Enter Extended Emulation Mode and set the Transparency Lead-In Sequence to '%%', the Configuration Lead-In Sequence to '%P' and the Trailer Sequence to '%':

```
&&??%%P          (Enter Extended Emulation Mode and set parameters)
```

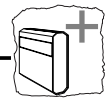
Redefine the Sequences

The parameters can be redefined using text sequences in the document.

Example:

Change the Transparency Lead-In Sequence from '%%' to '!?<' (EBCDIC codes $4F,$6F,$4C).
Also, change the Trailer Sequence from '%' to '>&' (EBCDIC codes $6E,$50):

```
%P                  (Configuration lead-in sequence)
=41,$4F,$6F,$4C     (Change the transparency lead-in seq. to '!?<')
=43,$6E,$50         (Change the configuration trailer seq. to >&')
=205                (Save settings permanently)
>&                  (Configuration trailer seq. (new))
```



Notes:

- ❑ To redefine the sequences, Extended Emulation Mode must be entered. The sequences are reset if you exit and re-enter Extended Emulation Mode. See above.
- ❑ The sequences are redefined immediately. Therefore, the new sequence '>&' must be used as Configuration Trailer Sequence in the document.

Example:

Use the new sequences in the same as the example on page 34 (Multi-byte Transparency on HP LaserJet):

```
This is !?<1B266444>&underlined!?<1B266440>& text
```

Printout:

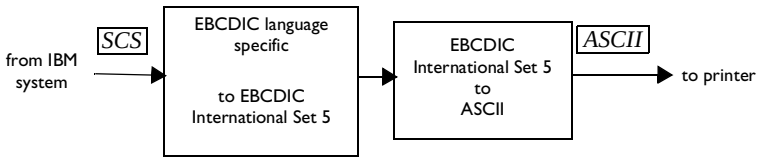
```
This is underlined text
```

Edit Translation Tables

Normally, there is no need to edit the translation tables. The character translation tables activated by the Printer Driver and System Language selections are designed to produce the same printouts as the emulated IBM printer.

If you should need to make further adjustments, this section explains the character translation process and how to modify the translation tables to meet specific needs.

Character Translation



Character translation diagram

SCS data stream EBCDIC language specific characters are first translated into EBCDIC International Set 5 characters. This is the internal character representation in the AX-3 Cobra+. The EBCDIC International Set 5 characters are then translated into ASCII codes, which are sent to the printer.

The EBCDIC language specific-to-EBCDIC International Set 5 translation table is determined by the selected System Language.

The EBCDIC International Set 5-to-ASCII table is determined by the selected Printer Driver.

You have access to the table that translates the EBCDIC International Set 5 codes to ASCII codes. Appendix B shows a printout of the characters for each EBCDIC International Set 5 code.

To be able to edit the translation table you have to select the Editable Set. This is done in the Basic Configuration, see page 20, or as shown in the example below. Before editing, the Editable Set equals the PC-850 character set.

Example:

To change a left bracket '[' *(EBCDIC International Set 5 code $4A)* to a left bracket '{' which has ASCII value $7B. Insert the following programming sequences in your document:

```
%P                  (Configuration lead-in sequence)
=54,5               (Select Editable Set)
=203,$4A,$7B        (Translate EBCDIC Int. 5 $4A to ASCII $7B)
=206                (Initialize settings)
=205                (Save settings permanently)
%
```

Note: ❑ To edit, Extended Emulation Mode must be entered.

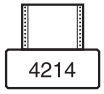
'54' is the Parameter number. '5' selects the Editable Set, see page 65.

'203' is the function number, '$4A' is the EBCDIC International Set 5 code and '$7B' is the new ASCII value (old ASCII value is deleted).

'206' and '205' are also function numbers.

From now on, a left bracket '[' is replaced by '{' in printouts.

You can modify any number of cells in the table by adding lines with function 203 calls.



In 4214 emulation software, you can edit the Translation Table although you cannot select ASCII Character Set.

User Definable Strings

There are ten parameters in the Parameter List that can be programmed as User Definable String *(Parameters #120 - #129)*.

A common application is to program and store various printer control commands, and send them to the printer using string references rather than the commands themselves. Please refer to the manual for your PC type printer for information on ASCII printer commands.

Programming the Strings

Example: (HP LaserJet):

You want to store commands for underlining text. Assuming that you have an HP LaserJet, 'start underline' and 'stop underline' are defined by the ASCII codes $1B, $26, $64, $44 and $1B, $26, $64, $40 respectively:

```
%P                      (Configuration lead-in sequence)
=120,$1B,$26,$64,$44    (Program parameter # 120 to 'start underline')
=121,$1B,$26,$64,$40    (Program paramemter # 121 to 'stop underline')
%                       (Configuration trailer sequence)
```

Note: Strings are programmed in Extended Emulation Mode.

The maximum String length is determined by the Free String Area.

'120' and '121' are the Parameter numbers. These are referred to as User Definable Strings '0' and '1' respectively.

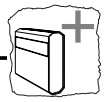
Using the Strings

Example (HP LaserJet):

To underline text in a document using strings number '0' and '1':

```
This is %Z0underlined%Z1 text
```

Note: To use the Strings, Extended Emulation Mode must be entered.



Printout:

```
This is underlined text
```

Editable Font Selection Strings (5219)

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The AX-3 Cobra+ fully supports the system command for selecting fonts, and this section gives an introduction to fonts and font selections.

This feature is applicable only in 3812/5219 emulation mode.

Font Identification Number

The system specifies which font the IBM 3812/5219 printer should use by the Font Global Identifier (FGID).

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The FGID specifies:

- Fixed pitch value (CPI value) / Proportionally Spaced Characters
- Typeface (character style)

A PC type printer cannot recognize the FGID. It has to be translated into a Font Selection String, which is an ASCII string.

The Font Selection String

The translation to recognizable font information is controlled by 50 string parameters (Parameters #150 - #199).

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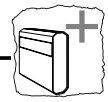
Each string parameter contains:

- FGID (two hexadecimal bytes)
- Character Spacing (one hexadecimal byte)
- ASCII Character Set (one hexadecimal byte)
- Font Selection Sequence (any number of hexadecimal bytes)

Example (HP LaserJet):

Bytes 1 - 2 are the FGID number.
'$0055' is the FGID for the IBM 3812/5219 font Courier12.

```
#170 ___________  $00 $55 $3C $00 $1B $28 $73 $33 $54
```



Byte 3 is the Character Spacing in units of 1/720 inch.

'$3C' gives 720/60 which equals 12 CPI. For proportionally spaced fonts, byte 3 sets the width of the space character.

Byte 4 is the ASCII Character Set.

The value '$00' activates the Character Set selected in the Basic Configuration.

Byte 5 and following.

All bytes after the fourth byte is the Font Selection Sequence that is sent to the printer to select a font. In the above example it contains a sequence to select the typeface Courier in the printer (see HP LaserJet manual).

The Font Selection Sequence does not need to contain a pitch selection sequence.

Since the AX-3 Cobra+ uses the printer's own fonts, some of the predefined FGIDs will result in the same font being printed (see page 75 for a list of predefined FGIDs). To get access to more fonts you can use external font cartridges for your printer. It may also be necessary to change some Font Selection Strings to make the AX-3 Cobra select the fonts you need.

Edit a Font Selection String

All 50 predefined Font Selection Strings are fully editable. You can, for example, define new FGIDs, change Character Spacing and modify Font Selection Sequences.

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5219

Example (HP LaserJet):

To change the translation of FGID $0055 from Courier 12 CPI to Elite 12.2 CPI.

`%P`	*(Configuration lead-in sequence)*
`=170,$00,$55,$3B,$00,$1B`	*(Program parameter #170)*
`$28,$73,$32,$54`	*(Continued)*
`%`	*(Configuration trailer sequence)*

'170' is the parameter number, followed by the new Font Selection String (on two lines).

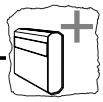
Parameter #170 now looks like this:

```
#170 ____________ $00 $55 $3B $00 $1B $28 $73 $32 $54
```

Byte 3 has changed. New Character Spacing is 12.2 CPI.

Byte 9 has changed. The new Font Selection Sequence selects typeface Elite in the HP LaserJet printer.

Note: ❑ To edit, Extended Emulation Mode must be entered.



Customized Printout (5219)

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5219

You can control printer parameters like text orientation, left and top margins and page length. These functions apply only in IBM 3812/5219 emulation.

Text Orientation

Depending on the system and the configuration of the AX-3 Cobra+ documents may be printed in one of the following ways:

- Portrait Orientation
- Landscape Orientation
- COR (Computer Output Reduction, Landscape and reduced font size).

By default, the orientation is automatically selected. You can control the orientation using Configuration from the System.

Example:

`%P`	*(Configuration lead-in sequence)*
`=53,3`	*(Set parameter #53 to 3)*
`%`	*(Configuration trailer sequence)*

Notes:

- ❑ To edit, Extended Emulation Mode must be entered.
- ❑ The setting may be overridden by the System.
- ❑ "53" is the Parameter number. "3" indicates always Portrait Orientation.

Left and Top Margin Reduction

It is possible to move text to the left or upwards on the paper if you want to reduce the margins.

Example:
To move the text 1/3 inch to the left and 1/2 inch upwards:

```
%P          (Configuration lead-in sequence)
=55,24      (Move text to the left 24/72 inch)
=56,36      (Move Text upwards 36/72 inch)
%           (Configuration trailer sequence)
```

Notes:

- ❑ To Edit, Extended Emulation Mode must be entered.
- ❑ "55" and "56" are the Parameter numbers, followed by the respective movement values in units of 1/72 inch. If any value is set too large, the text will not be printed properly on the paper area.

Vertical Compression

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5219

It is possible to compress the distance between lines. This is useful if the lines are lost at the bottom of each page.

Example:

To compress the page length by 5%:

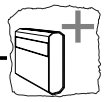
```
%           (Configuration lead-in sequence)
=57,5       (Compress page length by 5%)
%           (Configuration trailer sequence)
```

Note:

- ❑ To change, Extended Emulation Mode must be entered.

'57' is the Parameter number. The value '5' will reduce the distance between lines by 5%.

The setting does not affect the printing of the Parameter List or the EBCDIC to ASCII table.



Left and Top Margin - COR

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5219

It is possible to adjust the top and left margins when COR is used.

Example:

To set the top margin and the left margin to 1 inch:

```
%P                    (Configuration lead-in sequence)
=58,72                (Set left margin to 72/72 inch)
=59,72                (Set top margin to 72/72 inch)
%                     (Configuration trailer sequence)
```

'58' and '59' are the Parameter numbers. The value '72' sets the margins to 1 inch.

String Substitutions

This function is useful when you want to print a document that is prepared for a different PC type printer than yours.

This function is only applicable in IBM 4214, 5256, 5224 or 5225 emulation as standard. For 3812/5219 emulation optional firmware is available. Please contact your dealer/distributor.

The document contains control commands for a specific printer, and you have to convert these commands in order to print this document with your printer. Instead of changing the document, you can let the AXIS AX-3 Cobra+ do the conversion for you by using String Substitution.

The String Substitution function will search the data stream for a specified sequence of ASCII characters and substitute them with another sequence. Note that this function operates after the character and control code conversion.

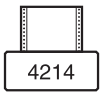
Example:
Assume that you have an HP LaserJet. The document is prepared for an IBM Proprinter and contains 'start underline' and 'stop underline' pass-through commands at several locations. To print the document with an HP LaserJet, the sequences must be converted.

To 'start underline', the IBM Proprinter uses ASCII value string $1B, $2D, $31 and the HP LaserJet uses $1B, $26, $64, $44.

'Stop underline' commands are $1B, $2D, $30 and $1B, $26, $64, $40 respectively.

Below, you will see how to program these substitutions both from a terminal and from the system.

Programming String Substitutions from a Terminal



Start the Configuration from Terminal as described on page 18.

1. **Select the Edit Parameters entry in the Main Menu.** Match and Substitute Strings start from parameter #150.
2. **Edit the first two string substitution pairs.** Use the cursor keys to edit.

The Edit Parameters Menu now looks like this:

```
=====================================================
                    EDIT PARAMETERS
=====================================================
                                Free String Area: $1AA0

 #150 Match String  1_____ $1B,$2D,$31.
 #151 Subst. String 1_____ $1B,$26,$64,$44.
 #152 Match String  2_____ $1B,$2D,$30.
 #153 Subst. String 2_____ $1B,$26,$64,$40.
 #154 Match String  3_____ .
 #155 Subst. String 3_____ .
 #156 Match String  4_____ .
 #157 Subst. String 4_____ .
 #158 Match String  5_____ .
 #159 Subst. String 5_____ .


 Use cursor keys to edit, <Enter> to exit
```

When a Match String is encountered in the ASCII data stream, it will be replaced by the subsequent Substitute String.

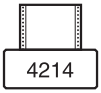
The maximum Match String length is 50 bytes. The maximum Substitute String length is determined by the Free String Area.

Notes:

- ❑ Extensive use of Substitutions may slow down the printing speed.
- ❑ Changing Printer Driver will delete all String Substitutions.
- ❑ In 3812/5219 mode string substitution strings start at string #70.

Programming String Substitutions from the System

The same programming example as above can also be obtained by inserting the following lines into your document. String Substitutions are programmed in Extended Emulation Mode.




```
%P                              (Configuration lead-in sequence)
=150, $1B, $2D, $31             (Start underlining- Proprinter)
=151, $1B, $26, $64, $44        (Start underlining - HP LaserJet)
=152, $1B, $2D, $30             (Stop underlining - Proprinter)
=153, $1B, $26, $64, $40        (Stop underlining - HP LaserJet)
=205                            (Initialize settings)
=206                            (Save setting permanently)
%                               (Configuration trailer sequence)
```

Bar Codes

This function gives you easy access to a range of standard bar code types. You can design every single bar code printout to meet your specific requirements, such as width and height.

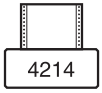
This function is only applicable in IBM 4214, 5256, 5224 or 5225 emulation as standard. For 3812/5219 emulation optional firmware is available. Please contact your dealer/distributor.

There are two functions and two parameters that are used for printing bar codes:

- Function '211' defines the bar code.
- Function '212' prints the bar code.
- Bar Code Driver (#053).
- Bar Code Attributes (#054).

The definition has to be done before a bar code can be printed. See page 68 for a description of the parameters.

Define Bar Codes



The function '211', which is to be inserted into a document, has the following syntax:

- 211, value 1, value 2, value 3, value 4, value 5

The function number is followed by five bar code specification values. All five values must be specified:

Value 1: Bar Code Type. Selectable values (in decimal):

1= Code 39

3= UPC-A

8= EAN8

9= EAN13

12= 2 of 5 Interleaved

13= Codabar Matrix

17= Code 128

Value 2: Module Width as a multiple of 1/120 inch.

The value may range from 1 to 32 (in decimal).

Value 3: Bar Code Height in number of lines (1/6 inch).

The value may range from 1 to 32 (in decimal).

Value 4: Human Readable Text. Selectable values:

0 = No textline below the bar code

1 = Human readable textline below the bar code.

2 = Human readable textline below the bar code with empty line in between.

Value 5: Horizontal Bar Code Start Position in 1/12 inch steps.

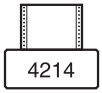
The value may range from 1 to 255 (in decimal).

Note: ❑ When you set the horizontal width and start position, make sure that the printout will fit on the paper area.

Print Bar Code

The function '212' prints a bar code according to the settings in the bar code definition. The syntax is as follows:

212,"bar code data"



Example

```
%P                          (Configuration lead-in sequence)
=211,9,2,2,1,10             (Define Bar Code)
=212 "123456789012"         (Print Bar Code)
%                           (Configuration trailer sequence)
```

Note: ❑ To Define and Print bar code, Extended Emulation Mode must be entered.

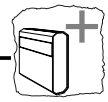
Printout:

PC-Host Sharing

The AX-3 Cobra+ is capable of receiving input data both from the IBM host and any PC (serial or parallel). Using the AX-3 Cobra+ PC-Host sharing function rather than an external printer sharing device gives you the following advantages:

- Switching between one or two PCs and host is done without operator intervention.
- Host settings and the current print position are restored after a PC printout.
- Three optional PC-Host sharing cables are available:
  - 2-way sharing cable for parallel PC input.
  - 2-way sharing cable for serial PC input.
  - 3-way sharing cable for serial and parallel PC input.
- Four string parameters are provided to facilitate PC printout customization, *e.g.* a different character set or printer emulation:
  - *Host-PC Serial String (#59/61)* is sent *before* a serial PC printout.
  - *Host-PC String (#64)* is sent *before* a parallel PC printout.
  - *PC-Host String (#58/60)* is sent *after* a PC printout.
  - *PC-Host TOF String (#65)* is sent if the PC printout did not end with a Form Feed command.
- One yes/no parameter, *Resend Host-PC sequence (#047),* which forces the Host-PC serial or parallel sequences *(#59/61 or #64)* to be sent between two PC printouts if the timer *PC-Host Time-out (#39)* has expired.

Note: ❑ You can interface with other types of computers such as workstations, LAN print servers, etc., provided that the computer has a PC-compatible parallel or serial output (see page 8).



Configuration

Make sure that the AX-3 Cobra+, the printer and the PC are switched off.

1. Connect the PC-Host sharing cable, leading from the AX-3 Cobra+ to your printer and to the PC (or PCs).
2. Switch on all units.

For PC serial printing, make sure that the PC's serial parameters match the AX-3 Cobra+ configuration. The following DOS commands will set the PC port COM1 to match the default settings of the AX-3 Cobra+ serial parameters and print a directory listing:

```
MODE COM1:96,n,8,2,p    (Set the serial parameters for COM1)
DIR >COM1               (Print a directory listing for verification)
```

For PC parallel printing it is recommended to set the DOS parallel printer timeout to infinite with the following command:

```
MODE LPT1:,,P           (Set the timeout to infinite)
```

Section 5 Solving Problems

This section helps you to solve any problems that might arise when installing or using your AX-3 Cobra+ interface. There are three major areas of difficulty:

- Missing printouts
- Incorrect printouts
- Host communication problems
- Use the following checklists to pinpoint the possible cause. If your problems should continue, please contact your dealer/distributor.

Missing Printouts

In case of missing printout, check the following:

1. **Is the POWER indicator on?**
   No: Your printer cannot supply the AX-3 Cobra+. You must use an external power supply (see page 11).

2. **Is the attached printer on-line (Ready)?**
   No: Set the printer on-line (see the printer manual).

3. **Is the printer correctly attached?**
   Make sure that the AX-3 Cobra+ printer cable is connected to the proper port. If your printer has both parallel and serial input ports, the printer must be set up for the printer cable type (parallel/serial) you are using.

4. **For serial attached printers: Are the serial parameters correct?**
   Make sure that the baud rate, stop bits, parity and word length settings match your printer settings. These parameters are found under the 'Printer Attachment' entry in the Main Menu (see page 31). When using XON/XOFF protocol, PC-Host Timeout (#39) must be set to zero.

5. **System printouts: Is the SYSTEM indicator on?**
   No: The AX-3 Cobra+ is not correctly connected to the system, or the power-up routine has been disturbed. See checklist on page 60.

6. **PC printouts: Is the PC-Host Sharing Configuration correct?**
   See page 54.

Incorrect Host Printouts

There are three major types of incorrect printouts:

Some Characters are Printed Incorrectly

- **Characters like ä ü Ä Ü are printed as** { } [ ]
  Most likely an incorrect System Language has been selected. Select the System Language matching your system configuration see page 24.
- **Characters like é ì ô ü are printed as e i o u**
  Your printer has not been set up for the character set matching the ASCII Character Set selection. Make sure that you have selected the correct Printer Driver and the correct ASCII Character Set in the Basic Configuration.

If this doesn't help, your printer may not be able to print all the characters that the system produces. Print out the EBCDIC-to-ASCII translation table (see page 81), and compare this to the table on page 77. In some cases it is possible to edit the translation table, or to select another character set in your printer. Consult your distributor for further details.

Corrupted Printouts

This is generally caused by selecting a Printer Driver not matching your printer. The control commands will then be misinterpreted by the printer, causing corrupted printouts. If changing Printer Driver does not help, you can use the ASCII hexdump function (page 62) to locate the control commands causing the problem.

Incorrect Page Breaks

This may be caused by an incorrect Printer Driver selection. There may also be a printer problem, causing it not to print all lines on a page.

In IBM 3812/5219 emulation, the AX-3 Cobra+ can be set to compress pages vertically, see page 46.

Host Communication Problem

In case of missing system printouts, please follow this checklist.

1. **Is the SYSTEM indicator lit?**
   Yes: The printer may not be properly connected. Please refer to page page 12.
2. **Is the device address correct?**
   Make sure the rotary switch is set to the desired device address. Switch the AX-3 Cobra+ off and on. Permissible values for the device address are within the range 0 to 6.
3. **Does the host configuration match the AX-3 Cobra+ configuration?**
   The AX-3 Cobra+ must be configured according to the IBM printer that has been defined for the device address on the twinax port.
4. **Has the print job been released from the host?**
   Check that Vary On has been made and that the print job has been released from the print queue. Ask your System Manager.
5. **Is the twinax line terminated?**
   The last unit on the twinax line must be terminated. Check that all units along the twinax line are installed correctly and that the termination is correct.
6. **Are any cables broken?**
   Check that the cables are properly connected and fully functional.

Reporting Problems

If you run into problems that you can't solve on your own, it is important that you make an error report for your System Manager or distributor. The error report should include:

- A printout with a description of the errors
- If possible, a correct printout
- A Parameter List
- A System and ASCII hexdump

If you need technical support, please contact your dealer. If they can't help you, they will forward your request through the appropriate channels.

If you are connected to Internet, have a look at the Axis WWW Home Page at **http://www.axisinc.com/** or **http://www.axis.com/** Here you can find information about the company and our products. You can also down-load on-line manuals, tools such as the Acrobat Reader for different platforms, and the latest versions of the software utilities. You can also get files and information through anonymous ftp: log in to **ftp.axisinc.com** or **ftp.axis.com** and go to the /pub/axis directory, or enter **ftp://ftp.axisinc.com/pub/axis** or **ftp://ftp.axis.com/pub/axis** in your WWW browser.

Printing the Parameter List

The Parameter List shows the complete configuration. A selection of parameters are described on page 68. To print the Parameter List, do as follows:

1. Switch the AX-3 Cobra+ and the printer off and on. Make sure that your printer is on-line.
2. Set the rotary switch to '9', and wait for approx. 3 seconds until the SYSTEM indicator starts to flash. You are now in the Test Mode.
3. Set the rotary switch to '8' to start the printout.
4. Set the rotary switch to '9' when the printout is completed. The SYSTEM indicator will stop flashing.
5. Select the device address to resume normal print operation.

Producing Hexdumps

A hexdump is a printout where the input data stream is printed as hexadecimal byte values rather than being interpreted as characters and control codes. The AX-3 Cobra+ features two different types of hexdump modes:

- **System hexdump**
  This mode will trap the input SCS data *before* the character and control code conversion. The data is printed as EBCDIC hexadecimal values.
- **ASCII hexdump**
  The input data is converted to ASCII hexadecimal values *after* the character and control code conversion but *before* printing. This mode is useful if you want to see what printer control command a certain IBM control code corresponds to.

To produce a hexdump, do as follows:

1. Switch the printer and AX-3 Cobra+ off and on.
2. Set the rotary switch to '9', and wait for approx. 3 seconds until the SYSTEM indicator starts to flash. You are now in the Test Mode.

3. Select position ‘4’ for system hexdump, or position ‘3’ for ASCII hexdump.
4. Repeat your print job. The data will now be printed in hexadecimal form.
5. Set the rotary switch to ‘9’ when the printout is completed. The SYSTEM indicator will stop flashing.
6. Select the device address to resume normal print operation.

Example of ASCII hexdump:

```
AX-3 Cobra+ 3812/5219  Ver 5.3  960311
Printer Driver #70 HP LaserJet II/III

0001 1B 26 61 33 36 30 48 1B 26 61 35 32 38 56 1B 26 “-&a360H-&a528V-&”
0002 61 33 36 30 48 1B 26 61 35 32 38 56 54 45 53 54 “a360H-&a528VTEST”
```

Error messages

There are six different error conditions that will cause the AX-3 Cobra+ to print an error message on your printer:

```
61-UNPRINTABLE CHARACTER
```

This message is caused by invalid character codes or LAC buffer overflow.

```
64-RESET COMMAND RECEIVED FROM HOST
```

This message is caused by bad communication lines or colliding device addresses. The AX-3 Cobra+ will try to re-establish host communication after 10 seconds.

```
BE-BAR CODE ERROR
```

Incorrect or insufficient bar code definition. The bar code must be specified with five values. See page 48.

```
E2-PERMANENT MEMORY CHECKSUM ERROR, FACTORY DEFAULTS
SET
```

This message indicates that the non-volatile memory has been corrupted. The AX-3 Cobra+ is automatically set to factory default state (your configuration is lost). If the message does not re-appear after power-off/power-on, configure the AX-3 Cobra+ (page 20).

This message will also appear as a normal consequence of a change between laser and matrix emulation.

```
E6-MEMORY OVERFLOW: FREE STRING AREA EXHAUSTED
```

The available string area is exhausted. You must remove some strings from your configuration. The size of the available string area is printed in the Parameter List header, and is also displayed in all string programming menus.

```
F1-TWINAX TRANSCEIVER ERROR
```

Hardware error. Contact you dealer/distributor.

Appendix A The Parameter List

The Parameter List shows the complete configuration of the AX-3 Cobra+. Each parameter contains a value or string that is used to determine how the AX-3 Cobra+ should behave towards the host and towards the printer.

In this appendix you will find a selection of parameters, *i.e.* the Basic Configuration, Serial Printer Attachment and PC-Host Sharing Configuration. Please refer to the AX-3 Cobra+ Technical Reference for parameters not covered by this manual.

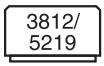
Printout Example

This printout shows the beginning of a Parameter List (the header and the first 10 parameters) for the HP LaserJet II/III Printer Driver. Your own printout may differ depending on printer driver selection, firmware revision and customized configuration.

```
AX-3 Cobra+ 3812/5219  Ver 5.23  960311

Printer Driver #70 HP LaserJet II/III
Device Address: 0
Free String Area: $1AE4

#010 System Language__________ 9

#031 Baudrate_________________ 96
#032 Wordsize_________________ 8
#033 Parity___________________ 0
#034 Stop bits________________ 2
#035 XON/XOFF_________________ No
#036 XON Char._______________ $11
#037 XOFF Char._______________ $13
#038 Inv. Busy________________ No
#039 PC-Host Time-out_________ 0
```

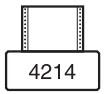
Printer Drivers

A printer driver is a device driver containing all the parameters required to drive a particular range of printers. The following printer drivers are available in IBM 3812/5219 emulation:



No	Title	No	Title
*70	HP LaserJet II/III *(default)*	73	IBM LaserPrinter
71	Kyocera	74	HP LaserJet 4
72	Canon LBP-8III		

The following printer drivers are available in IBM 4214 emulation:



No	Title	No	Title
*30	Generic Printer *(default)*	40	OKI 2350/2410
31	IBM Graphics	41	Diablo 630
32	IBM Proprinter	42	Philips GP300
33	Epson FX/EX/DFX	43	Mannesmann MT660
34	Epson LQ	44	IBM Matrix (PPDS)
35	Fujitsu DL (DPL24C)	47	Brother M-4018
36	Fujitsu DX (Epson FX)	48	HP LaserJet
37	OKI 320 (Epson FX)	50	Canon LBP-8 III
38	OKI 390 (Epson LQ)	51	IBM Laser (PPDS)
39	OKI 393 (Epson LQ)	52	Xerox 3700/4045

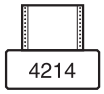
Parameter Descriptions

#10 System Language

This parameter makes the EBCDIC language specific-to-International 5 translation table match the System Language configuration of your IBM System.

Value	Description	Value	Description
1	037 US English/Canadian	*9	500 International Set 5 *(default)*
2	273 German/Austrian	10	280 Italian
3	274 Belgian	11	281 Japanese English
4	275 Brazilian	12	282 Portuguese
5	276 Canadian French	13	284 Spanish Speaking
6	277 Danish/Norwegian	14	285 UK English
7	278 Finnish/Swedish	15	871 Iceland
8	297 French		

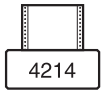
#15 ASCII Character Set



Selects the ASCII Character Set to be used in the printer. This parameter is only valid in IBM 4214 emulation.

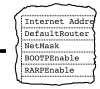
Value	Description	Value	Description
0	US ASCII	7	Spanish
1	Swedish/Finnish	8	Japanese
2	Danish/Norwegian	9	PC-8
3	German/Austrian	10	Roman-8
4	UK English	11	PC-850
5	Italian	12	Xerox 3700
6	French/Belgian		

#26 IBM Printer Emulation



Selects the IBM Printer Emulation. This parameter is valid only in IBM 4214 emulation.

Value	Description	Value	Description
*0	IBM 4214 model 2 *(default)*	2	IBM 5224 model 1
1	IBM 5256 model 1	3	IBM 5225 model 1



#31 Baudrate

Set the serial port baud rate.

Value	Description	Value	Description
1	100 baud	36	3600 baud
3	300 baud	48	4800 baud
6	600 baud	72	7200 baud
12	1200 baud	*96	9600 baud *(default)*
18	1800 baud	192	19200 baud
24	2400 baud	-	-

Note: ❑ The value 192 (19200 baud) cannot be used with PC-Host Sharing.

#32 Word Size

Set the serial port word size (number of bits).

Value	Description	Value	Description
7	7 bits	*8	8 bits *(default)*

#33 Parity

Set serial port parity.

Value	Description	Value	Description
*0	No parity *(default)*	2	Even parity
1	Odd parity	-	-

#34 Stop Bits

Set the serial port number of stop bits.

Value	Description	Value	Description
1	One stop bit	*2	Two stop bits *(default)*

#39 PC-Host Time-out

A timer value controlling the automatic switching between PC and Host input.

Value	Description	Value	Description
1-254	Delay in seconds	60	1 minute delay time
0	Host input only	255	PC serial input only
*10	10 seconds delay time *(default)*	-	-

#40 Escape Character

Select the EBCDIC character code used for Single-byte Transparency and User Definable Strings.

Value	Description	Value	Description
$40-$FF	(one character code)	*$00	(undefined by default)

#41 Transparency Lead-In Sequence

Starts Multi-byte Transparency Mode.

Value	Description	Value	Description
<any seq>	(max 8 character codes)	*<empty>	(default)

#42 Configuration Lead-In Sequence

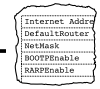
Starts Configuration Mode.

Value	Description	Value	Description
<any seq.>	(max 8 character codes)	*<empty>	(default)

#43 Transparency/Configuration Trailer Sequence

Terminates the Multi-byte and Configuration Modes.

Value	Description	Value	Description
<any seq.>	(max 8 character codes)	*<empty>	(default)



#45 Job Time-out

Timer value starting after a host job has ended. If the time-out value is reached before any new data arrives at the Cobra+, the Start of Job Sequence (#046), the Power-up Sequence (#090) and current emulator settings will be sent before next host job.

Value	Description	Value	Description
*0	off *(default)*	1-255	Value in seconds.

#46 Start of Job Sequence

Sent before next host printout if timer Job Time-out has elapsed.

Value	Description	Value	Description
<any seq.>	(length and contents free of choice)	*<empty>	(default)

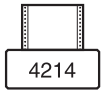
#53 Page Orientation Mode

3812/ 5219

Controls the text orientation. This parameter is only valid in IBM 3812/5219 emulation, and is fully compatible with the switch settings on such a printer.

Value	Description	Value	Description
0	Automatic Orientation, Portrait if invalid page size.	4	Always Landscape
1	Automatic Orientation, Landscape if invalid page size.	5	Always COR
*2	Automatic Orientation, COR if invalid page size. *(default)*	6	Same as 2, but inhibit COR from the system is ignored.
3	Always Portrait	-	-

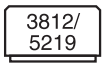
#53 Bar Code Driver



Selects the graphics driver used for bar code printing. The default value depends on the selected Printer Driver. This parameter is only valid in IBM 4214 emulation.

Value	Description	Value	Description
0	Off	2	Epson LQ/Fujitsu DPC24C
1	IBM Proprinter/Epson FX	8	HP-PCL

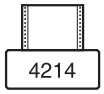
#54 ASCII Character Set



Selects the ASCII Character Set to be used in the printer. This parameter is only valid in IBM 3812/5219 emulation.

Value	Description	Value	Description
1	US ASCII	4	PC-850
2	PC-8	5	Editable Set
3	Roman-8	-	-

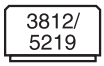
#54 Bar Code Attributes



Adjust bar code printout quality to paper and printer conditions. This parameter is only valid in IBM 4214 emulation.

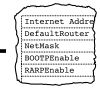
Value	Description	Value	Description
*0	Normal *(default)*	2	Bold
1	Thin	3	Thin and Bold

#55 Offset Text Left n/72 inch



Move text leftwards in units of 1/72 inch. Text moved outside paper area will be printed in first position. This parameter is only valid in IBM 3812/5219 emulation.

Value	Description	Value	Description
1-255	Valid range	*0	(default)



#56 Offset Text Up n/72 inch

3812/ 5219

Move text upwards in units of 1/72 inch. Text moved outside paper area will be printed in first position. This parameter is only valid in IBM 3812/5219 emulation.

Value	Description	Value	Description
1-255	Valid range	*0	(default)

#57 Vertical Compression

3812/ 5219

Set the percentage compression of the distance between lines. This parameter is only valid in IBM 3812/5219 emulation.

Value	Description	Value	Description
1-99	Valid range	*0	(default)

#58 PC-Host String

4214

This string precedes the first host buffer following a PC printout. This is the parameter number in IBM 4214 emulation.

Value	Description	Value	Description
<any seq.>	(length and contents free of choice)	*<empty>	(default)

#59 Host-PC Serial String

4214

This string precedes the first serial PC printout following a host buffer or a parallel PC printout. This is the parameter number in IBM 4214 emulation.

Value	Description	Value	Description
<any seq.>	(length and contents free of choice)	*<empty>	(default)

#59 Top Margin - COR n/72 inch

3812/ 5219

This string sets the top margin for COR printouts. This parameter is only valid in IBM 3812/5219 emulation.

Value	Description	Value	Description
0-255	Valid range	*36	(default)

#60 PC-Host String

3812/ 5219

This string precedes the first host buffer following a PC printout. This is the parameter number in IBM 3812/5219 emulation.#61Host-PC

Value	Description	Value	Description
<any seq.>	(length and contents free of choice)	*<empty>	(default)

Serial String

3812/ 5219

This string precedes the first serial PC printout following a host buffer or a parallel PC printout. This is the parameter number in IBM 3812/5219 emulation.

Value	Description	Value	Description
<any seq.>	(length and contents free of choice)	*<empty>	(default)

#64 Host-PC Parallel String

This string precedes the first parallel PC printout following a host buffer or a serial PC printout.

Value	Description	Value	Description
<any seq.>	(length and contents free of choice)	*<empty>	(default)

#65 PC-Host TOF String

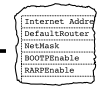
This string is sent before the PC-Host String (#60) if the PC printout did not end with a Form Feed command.

Value	Description	Value	Description
<any seq.>	(length and contents free of choice)	*0C	(default)

#120-#129User Definable Strings

Programming and use are described on page 40.

Value	Description	Value	Description
<any seq.>	(length and contents free of choice)	*<empty>	(default)

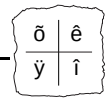


#150-#199Font Selection Strings

3812/ 5219

Define the FGIDs and ASCII printer font data. Programming and use are described on page 42. Applies only in IBM 3812/5219 emulation.

Dec	Hex	IBM Font Name
0003	0003	OCR-B 10
0005	0005	Orator 10
0011	000B	Courier 10
0012	000C	Prestige Pica 10
0018	0012	Courier Italic 10
0019	0013	OCR-A 10
0038	0026	Orator Bold 10
0039	0027	Gothic Bold 10
0040	0028	Gothic Text 10
0041	0029	Roman Text 10
0042	002A	Serif Text 10
0043	002B	Serif Text Italic 10
0046	002E	Courier Bold 10
0060	003C	Prestige Bold 10
0066	0042	Gothic Text 12
0068	0044	Gothic Italic 12
0069	0045	Gothic Bold 12
0070	0046	Serif Text 12
0071	0047	Serif Text Italic 12
0072	0048	Serif Bold 12
0085	0055	Courier 12
0086	0056	Elite 12
0087	0057	Letter Gothic 12
0108	006C	Courier Bold 12
0110	006E	Letter Gothic Bold
0111	006F	Elite Bold
0112	0070	Prestige Italic 12
0155	009B	Bold Italic 12
0159	009F	Boldface PSM
0160	00A0	Essay PSM
0162	00A2	Essay Italic PSM
0163	00A3	Essay Bold PSM
0173	00AD	Essay Light PSM
0175	00AF	Document PSM
0204	00CC	Gothic Text 13
0230	00E6	Gothic Text 15
0244	00F4	Courier 5
0245	00F5	Courier Bold 5
0252	00FC	Courier 17
0253	00FD	Courier Bold 17
0254	00FE	Courier 17ss
0281	0119	Gothic Text 20
0290	0122	Gothic Text 27
0751	02EF	Sonoran Serif 8
1051	041B	Sonoran Serif 10
1053	041D	Sonoran Serif Bold 10
1056	0420	Sonoran Serif Italic 10
1351	0547	Sonoran Serif 12
1653	0675	Sonoran Serif Bold 16
2103	0837	Sonoran Serif Bold 24



Appendix B EBCDIC Character Table

This table (EBCDIC International Set 5) shows the internal character representation in the AX-3 Cobra+.

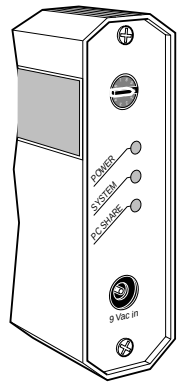
Hex Digits 1st → 2nd ↓	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0		&	-	ø	Ø	°	µ	¢	{	}	\	0
-1		é	/	É	a	j	~	£	A	J		1
-2	â	ê	Â	Ê	b	k	s	¥	B	K	S	2
-3	ä	ë	Ä	Ë	c	l	t	·	C	L	T	3
-4	à	è	À	È	d	m	u	ƒ	D	M	U	4
-5	á	í	Á	Í	e	n	v	§	E	N	V	5
-6	ã	î	Ã	Î	f	o	w	¶	F	O	W	6
-7	å	ï	Å	Ï	g	p	x	¼	G	P	X	7
-8	ç	ì	Ç	Ì	h	q	y	½	H	Q	Y	8
-9	ñ	ß	Ñ	`	i	r	z	¾	I	R	Z	9
-A	[	]	¦	:	«	ª	¡	¬	-	¹	²	³
-B	.	$	,	#	»	º	¿	¦	ô	û	Ô	Û
-C	<	*	%	@	ð	æ	Ð	¯	ö	ü	Ö	Ü
-D	(	)	_	'	ý	¸	Ý	¨	ò	ù	Ò	Ù
-E	+	;	>	=	þ	Æ	Þ	´	ó	ú	Ó	Ú
-F	!	^	?	"	±	¤	®	¯	õ	ÿ	Õ	

Appendix C The Front Panel

The front panel has three indicators (POWER, SYSTEM and PC SHARE) and a rotary switch. The switch is used for accessing certain functions. In normal print operation it should be set to the device address.

The POWER indicator

This indicator (green) is lit when the AX-3 Cobra+ is switched on.



The SYSTEM indicator

This indicator (green) is lit when the AX-3 Cobra+ is connected to your IBM system. It can also flash under the following conditions:

- Flash during three seconds at power up.
- Flash in Test Mode (see below).
- Rapid flash during test function execution.

Note: If the power up flashing continues, a hardware error has occurred. Contact your dealer/distributor.

The PC SHARE indicator

This indicator (yellow) is lit during a PC printout. Any print job from host will be put on wait during the PC printout and for a subsequent delay time set by *PC-Host Time-out* (*#39*).

The Rotary Switch

The ten-position rotary switch is used to set the device address for the AX-3 Cobra+. It is also used to set start conditions and to select and execute test functions during operation.

Start Conditions

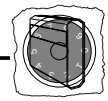
The action when the AX-3 Cobra+ is switched on will be determined by the setting of the rotary switch, as follows:

Pos.	Description
0-6	Device address in normal print operation.
7	Reserved.
8	Select IBM Printer emulation (4214)
9	Perform a test printout.

Device Address

Follow these steps to change the device address:

1. **Switch the AX-3 Cobra+ off.**
2. **Select a new device address (positions 0-6).**
3. **Switch the AX-3 Cobra+ on.**
   A warning for change of device address will be printed.
4. **Step the rotary switch one position forward and back.**
   The new device address will be confirmed by a printed message.



Test Mode

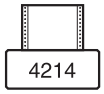
Test Mode is reached from normal print operation. It is used to access a number of internal functions. Normal print operation is inhibited.

Set the rotary switch to position '9'. When the SYSTEM indicator starts to flash, you can select one of the following Test Mode functions:

Pos.	Test Mode Function
0	**Restart** - same as power off/power on.
1	**Set Factory Defaults** - abandon the current configuration.
2	**Print Character Translation Table** - see Appendix B.
3	**ASCII Hex Dump Mode** - trap the outgoing data stream and print characters and control commands as hexadecimal values.
4	**System Hex Dump Mode** - trap the incoming data stream and print characters and control codes as hexadecimal values.
5, 6	Reserved
7	**Configuration from a Terminal** - run the Configuration Utility, see Section 3.
8	**Print Parameter List** - print the complete configuration, see Appendix A.
9	**Exit Test Mode** - resume normal print operation.

Do not forget to set the rotary switch to the device address again for normal print operation. Switch the AX-3 Cobra+ off and on.

Select IBM Printer Emulation



You can select IBM Printer Emulation by using the rotary switch. This section applies to the IBM 4214 emulation only. Proceed as follows:

1. Switch the AX-3 Cobra+ off. Note the current device address.
2. Select the position '8' on the rotary switch.
3. Switch the AX-3 Cobra+ on. A printed message indicates the current IBM Printer Emulation.
4. Press the printer's ONLINE/OFFLINE key twice to change emulation. The new emulation is confirmed by a printed message. Repeat until the required emulation mode is achieved. Refer to the list on page 9
5. Switch the AX-3 Cobra+ off to save the current emulation.
6. Set the device address and switch the AX-3 Cobra+ on for normal print operation.

Appendix D Technical Specifications

Attachments

- IBM System/34
- IBM System/36
- IBM System/38
- IBM System AS/400
- IBM 5259 Migration Data Link
- IBM 5294 Control Unit
- IBM 5394 Control Unit
- IBM 5251 Model 12 Control Unit
- IBM 5299 Terminal Multiconnector

IBM Printer Emulations

(Depending on the setting of the interface according page 15)

- IBM 3812/5219

or

- IBM 4214 model 2
- IBM 5256 model 1,2 and 3
- IBM 5224 model 1 and 2
- IBM 5225 model 1,2,3 and 4

IBM System Features

- SCS and FFT Data stream
- Page Presentation Media
- Cut Sheet Feeder Command
- PC/Support Virtual Printer
- Multiple Bin Support
- 14 National Languages

Additional IBM 3812/5219 features:

- Computer Output Reduction
- FGID Font Selection Support
- Page Rotation
- Duplex
- Fixed-Pitch, Proportional and Typographic Font Support

Additional IBM 4214 feature:

- Graphics Support Through LAC

Additional Features

- Configuration from a Terminal or from the System
- Editable Character Translation Table
- Intelligent 3-way PC-Host Sharing (parallel or serial PC)
- 10 User Definable Strings
- Programmable Transparency Function (data pass-through)
- 5 Predefined Printer Drivers, fully editable
- Bar Codes (optional)

Additional features in IBM 4214 emulation:

- 20 Predefined Printer Drivers, fully editable
- Bar Codes

Hardware Specifications

Size: 100x25x90 mm / 4.0"x1.0"x3.5"

Weight: 0.25 kg/ 0.55 lb

Power: Max 170 mA at 5V DC supplied via Centronics Printer cable, or 9V AC/12V DC (200 mA) via optional External Power Supply

Approvals

EMC: FCC Class A, CE: EN 55022/1987, EN 50082-1

Safety: EN 60950

Environments Temperature: 5-40°C/ 40-105°F

Humidity: 20-80% non-condensing

All specifications are subject to change without prior notice.

Appendix E Related Documentation

Title	Part Number
AX-3 Cobra+ Technical Reference	12938
IBM System/36 Functions Reference Guide	SA-21-9436-05
IBM AS/400 Guide to Programming for Printing:	SC21-8194-0
IBM AS/400 Printing	GG24-3452-00
IBM AS/400 Programming: Advanced Printer Function Guide	SC21-9668-0
IBM AS/400 Utilities: BGU User's Guide and Reference	SC09-1167-02
IBM 3816 Page Printer Programming Ref. for AS/400, S/36 or S/38	GA34-2084-2
IBM 3812 and 3816 Page Printers Font Reference	GA34-2111-1
IBM 5219 Printer Model D01/D02 Programmer's Reference Guide	GA23-1025-0
Document Content Architecture Final-Form-Text Reference	SC23-0757-1
IBM 4214 Printer Model 2 Product Description	GC31-2582-1

Appendix F How to contact Axis

Technical Support

If you need technical support, please contact your dealer. If they can't help you, they will forward your request to us.

Axis on-line service

Use the Axis on-line service at any time to retrieve electronically distributed items. The material available includes the AX-3 Cobra+ Technical Reference, the Adobe Acrobat Reader (required for all Axis on-line documentation), company and product presentations, etc. All items are available on Internet by a WWW browser or FTP file transfer.

Internet and World Wide Web

If you are connected to Internet, have a look at the Axis WWW Home Page at **http://www.axis.com/**. You can find information here about the company and our products. You can also down-load online manuals, tools such as the Acrobat Reader for different platforms, and the latest versions of the software utilities. You can also get files and information through anonymous FTP: log in to **ftp.axis.com** and go to the /pub/axis directory, or enter **ftp://ftp.axis.com/pub/axis** in your WWW browser.

If you want to receive regular information about new products and product updates by e-mail, send and e-mail to Majordomo@axis.com with SUBSCRIBE AXIS-NEWS in the message body.

The Axis Offices

To contact an Axis office, choose the one nearest to your region:

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Fax: (617) 938-6161
Email: info@axisinc.com
URL: http://www.axisinc.com/

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