SOLVING THE GRAPHICS PROBLEM ON IBM
BILL MANOS - NICOLET ZETA

Producing hard copy graphics utilizing IBM mainframe computers presents a wide variety of interfacing problems and considerations. These problems are best evidenced when attempting to directly attach pen plotters via the various IBM protocols.
Recent developments in product design provide solutions for IBM users. A variety of protocol converters are now available which provide connection of previously non-compatible devices.

One manufacturer, Nicolet Zeta Computer Graphics, formerly Nicolet Zeta Corporation, has designed a family of pen plotters that directly connect to IBM hardware via coaxial cable. In these devices protocol conversion, is handled internally.

Simply stated, the interfacing problem involves the fact that IBM equipment utilizes transmission methods and cabling not used by the vast majority of the graphics market.

Due to the demand for high quality output that can only be provided by pen plotters, methods have been developed for attachment to IBM hardware. Users can now select from a variety of connection methods including asynchronous RS232, remote job entry via 2780/3780, controller protocol converters, the IBM 3277 graphics attachment, IBM 3270 Information Display System Standard (IDSS) converters, and direct connection with Nicolet Computer Graphics. Nicolet also supplies a Software Product, ZDDM, which will convert IBM's GDDM into commands required by their plotters.

After careful consideration of system resources, communication protocols, and connection methods, the IBM user can select from a variety of solutions that were previously not available.
SOLVING THE IBM GRAPHICS PROBLEM

BILL MANOS
NICOLET COMPUTER GRAPHICS

PREPARED FOR SEUGI 1984
AMSTERDAM, HOLLAND

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PLOTTER INTERFACING TO IBM COMPUTERS

HOST

3705

ASYNCH
RS232

PLOTTER

3780/3780

PROTOCOL
CONVERTER

RS232

PLOTTER

PCI 1076

RS232

ZETA

3274/76

OR LOOK ALIKE

3270 IDSS

3270 IDSS

3270 IDSS

3270 IDSS

3277 G.A.

RS232

PLOTTER

AGILE 5287

RS232

ZETA

ZETA 887
ASYNCHRONOUS RS232 (INTERACTIVE)

HOST

3705

RS232

PLOTTER

ASYNCH TERMINAL

OPTIONAL
REMOTE JOB ENTRY

HOST

3705

2780/3780 PROTOCOL

PROTOCOL CONVERTER

PLOTTER
3270 PROTOCOL CONVERTER

HOST

3705

SNA/SDLC
BSC

3274/76
CLUSTER
CONTROLLER

3270 IDSS

PROTOCOL
 CONVERTER

ASYNCH RS232

PLOTTER
3277 DISPLAY STATION
WITH GRAPHICS ATTACHMENT

HOST

3705

3274/76 CLUSTER CONTROLLER

3277 G.A.

JOYSTICK

I/O RS232

INPUT ONLY RS232

PLOTTER
CONTROLLER PROTOCOL CONVERTER

HOST

3705

SNA/SDLC

3274/76 CONTROLLER EMULATOR

ASYNCH RS232 PORTS

PLOTTER
DIRECT CONTROLLER CONNECTION

HOST

3705

3274/76 CLUSTER CONTROLLER

ZETA 887

NOW AVAILABLE WITH ZETA 822
IBM 3270
INFORMATION DISPLAY
SYSTEMS STANDARD
(IDSS) PROTOCOL

• USED TO CONNECT DEVICES TO 3274/76
CLUSTER CONTROLLERS

• TERMINALS 3278 AND 3279

• PRINTERS 3287 AND 3268

• PLOTTERS ZETA 887 AND
P87 OPTION
NICOLET ZETA 887

• DIREクト CONNECTION TO IBM
  3274 OR 3276 CLUSTER CONTROLLER
  VIA STANDARD RG62A/u COAXIAL CABLE

• APPEARS AS AN IBM 3287-1 OR -2
  PRINTER

• PROVIDES 3270 INFORMATION DISPLAY
  SYSTEMS STANDARD (IDSS) PROTOCOL
  HANDLING AND CODE TRANSLATION
  INTERNALLY

• ADDITIONALLY PROVIDES RS232
  CONNECTION AS STANDARD
NICOLET ZETA 887

- CLUSTER CONTROLLER MAY BE CHANNEL OR REMOTE ATTACHED

- COMMUNICATION LINE MAY BE SNA/SDLC OR BSC PROTOCOL

- 3270 IDSS DOES NOT REQUIRE USER CONTROL OVER BAUD RATE, PARITY, START/STOP BITS, ETC.

- BAUD RATE IS 2.35 MEGABAUD

- 887 REQUIRES ONLY UPPERCASE PRINTABLE CHARACTERS
INTELLIGENT DIGITAL PLOTTERS

COMMAND FLOW

User-Written Software

SAS/GRAPH
or other software product

Device Driver
Subroutines

Device-Specific
Plotting Language

Intelligent
Controller

Plotting
Hardware
ZETA 887 BLOCK DIAGRAM

COAX CABLE TO 3274/76 CONTROLLER

<table>
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<th>COAX RECEIVER/TRANSMITTER</th>
<th>MICROCONTROLLER (Processes data from controller)</th>
<th>INTERFACE BOARD</th>
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</thead>
<tbody>
<tr>
<td>2K INTERFACE BUFFER</td>
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8088-BASED DATA CONTROLLER (Converts high level commands to vector information)

8088-BASED MOTOR CONTROLLER ( Controls X and Y motors, pen actuator, hardware operation)