



HP 16800A/16801A Bar Code Reader Configuration Guide for a MICOM Micro280 Message Concentrator

INTRODUCTION

The HP 16800A and 16801A Bar Code Readers can help data entry become faster, more accurate, and more efficient than conventional keyboard data entry.

In some applications, multiple readers may be required to input data to a logging terminal or a central processing unit (CPU). However, connecting each unit to a CPU may utilize more input/output (I/O) ports than desired. A port concentrator will allow several devices to be connected using only one port of the CPU.

The following information is to aid in configuring the HP 16800A and 16801A with a MICOM Micro280 Message Concentrator.

Use of this guide should be in conjunction with technical data sheets and operating manuals of the HP 16800A/16801A and the respective connected equipment.

Diagrams will illustrate the cables and equipment to use for interconnection. A BASIC software routine is also included to establish data communications between the readers and a computer.

THE Micro280 MESSAGE CONCENTRATOR

This section briefly describes the basic functions and features of the Micro280 Concentrator. For more specific information contact MICOM SYSTEMS as listed at the end of this bulletin.

The Micro280 Message Concentrator is an intelligent, buffered communications controller which can be used in data logging, port selection, port expansion, and network control applications. Two models are available, the M284 and the M288. Both function as a terminal-sharing or port-sharing controller. The M284 allows up to four, and the M288 allows up to eight devices or ports to output messages to a single CPU or logging terminal, or, conversely, to permit one CPU or logging terminal to output to as many as eight devices or ports.

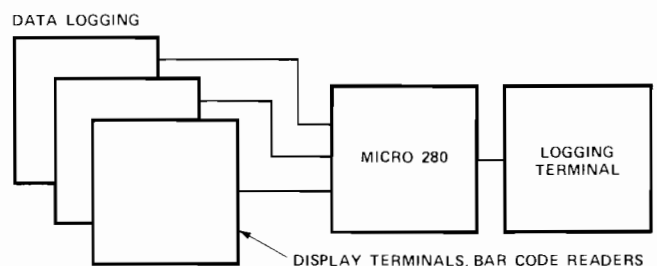
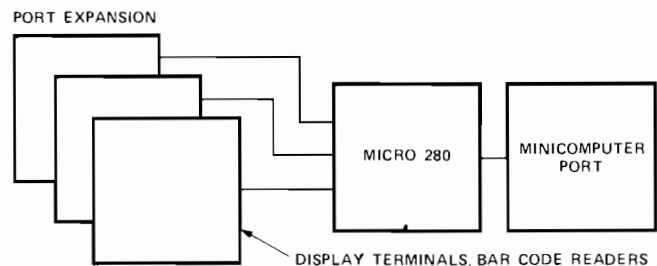
The primary function of the device is to interface several serial asynchronous I/O channels to a single asynchronous resource, providing message buffering and 'traffic control' to prevent interference between the channels.

In principle, its operation is somewhat like that of a conventional data concentrator. However, unlike that device, which relies on a mirror-image counterpart to assemble and dis-assemble its end of the shared data stream, the Message Concentrator does not assume the presence of a specific receiving device or a specific protocol. Instead, it labels each message it transmits with a two-character identifier, and handles those messages intact as discrete blocks of up to 132 characters.

The latter feature is especially helpful in applications where the Micro280 serves as a 'logging' function, such as when it is used to record data from several pieces of laboratory or test equipment on a single printer terminal. Each entry recorded is automatically prefaced by its channel identifier. In applications such as port sharing, the two-character identifier must be interpreted by software in the host.

Although the Micro280 is usually configured for communications which are heavily biased in one direction, such as data collection, the device is fully capable of interrupting its normal operation to support two-way communications.

TYPICAL CONFIGURATIONS



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Micro280 MESSAGE CONCENTRATOR SPECIFICATIONS

Channels

Model M284, up to 4, asynchronous (may be cascaded for additional channels)

Model M288, up to 8, asynchronous (may be cascaded for additional channels)

110, 150, 300, 600, or 1200 bps

ASCII code, 1 or 2 stop bits per character

EIA RS-232-C, serial asynchronous, 25-pin female connector, configured as DCE

CTS flow control

Local attachment or modem connection

Port

One, asynchronous

110, 300, 1200, or 2400 bps, switch-selectable

ASCII code, 1 or 2 stop bits per character

EIA RS-232-C serial asynchronous, 25-pin male connector, configured as DTE

Capacities

Aggregate input rates to 9600 bps

Buffer size 16 KB

Line lengths of 64, 72, 120, or 132 characters, switch-selectable

Operating Environment

32° -114° F (0° -45° C)

Up to 95% relative humidity

Power

115/230 vac ±10%, 45-65 Hz

50 watts

Physical Dimensions

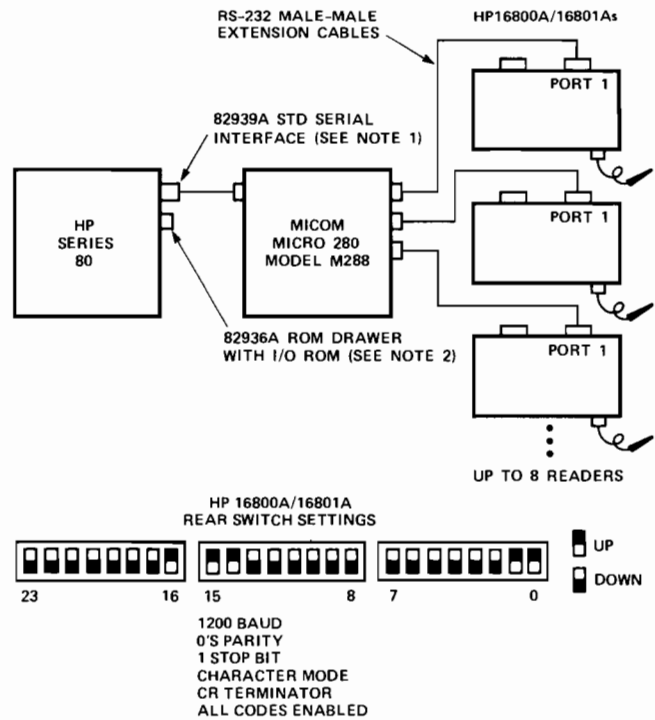
Standalone	Rack-Mount
Height: 2 1/4" (6.4 cm)	Height: 3 1/2" (8.9 cm)
Width: 12" (30.5 cm)	Width: 19" (48.3 cm)
Depth: 11" (27.9 cm)	Depth: 11" (27.9 cm)

PORT EXPANSION USING AN HP SERIES 80 PERSONAL COMPUTER

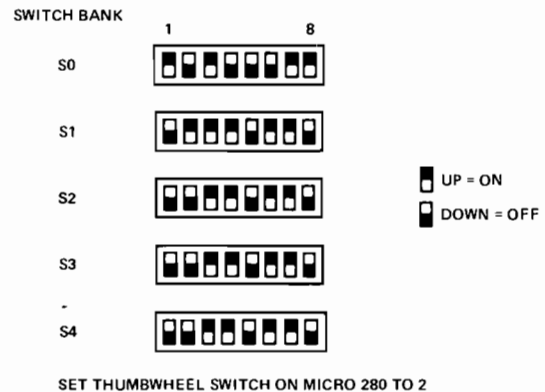
The following section will describe and illustrate how to use the Micro280 with HP 16800A/16801A Bar Code Readers in a port expansion configuration. In the configuration, the controlling computer is an HP Series 80.

The configuration of the Micro280 enables baud rate of 1200 between the 16800A/16801A and the Micro280, and 300 baud between the Micro280 and the Series 80. A line feed is added to each message by the Micro280 as it is sent from the Micro280 to the Series 80. Each message is also labeled with a two-character identifier to distinguish which channel the data is input from.

CONFIGURATION DIAGRAM



MICRO280 MODEL M288 SWITCH CONFIGURATION



Notes:

- Use the 82939A Interface with its factory preset switch configuration.
- For an HP 85, use I/O ROM number 00085-15003. For an HP 86 or HP 87, use I/O ROM number 00087-15003.

RS-232 Male-Male Extension Cables are available from:

Supplier	Part No.
Hewlett-Packard Computer Supplies Sunnyvale, CA (408) 738-4133	8120-3258
Data Set Cable Las Vegas, NV (702) 382-6777	EIA07 M-M (Pins 1, 2, 3, 7, 20 wired)
MISCO Los Angeles, CA (213) 852-0868	AB0410 M-M

SOFTWARE

The configuration does require some software to establish data communications. The following BASIC program listing, when used with the configuration shown, will fully exercise the use of the Micro280.

In the program, the computer initially puts channel 2 of the Micro280 in the CONNECT MODE (line 220). In this mode the bar code reader connected to channel 2 of the Micro280 is enabled to input data five times. After each scan the red and green LEDs on the 16800A are flashed and the data is displayed on the computer monitor. While in the CONNECT MODE, all other readers connected to the Micro280 are enabled to enter data with each message being buffered by the Micro280. Buffering capability is approximately 500 scans, total, with each scan being approximately ten characters in length. After five scans have been made by the reader connected to channel 2 of the Micro280, the Micro280 is put in the NORMAL MODE (line 470) and all buffered data from the Micro280 is sent to the computer, consecutively from channel 1 to channel 8, and displayed. Each message is labeled with its two-character identifier by the Micro280, and the HP Series 80 numbers each message consecutively as it is displayed.

```

10 ! HP SERIES 80 I/O ROUTINE
20 ! FOR THE MICRO280
30 ! PORT CONCENTRATOR
40 ! AND HP 16800A/16801A
50 ! BAR CODE READERS
60 !
70 ! DIMENSION INPUT CHARACTER
80 ! STRINGS
90 !
100 DIM A$(1)
110 DIM B$(40)
120 DIM E$(20)
130 !
140 ! CONFIGURE I/O CARD READY
150 ! FOR DATA TRANSMISSION
160 !
170 RESET 10
180 CLEAR
190 CONTROL 10,2 ; 7,6,58,48
200 CONTROL 10,11 ; 128
210 !
220 ! PUT MICRO280 IN CONNECT
230 ! MODE
240 !
250 OUTPUT 10 ; "C2";CHR$(13)
260 N=3
270 GOSUB 630
280 DISP B$
290 DISP
300 !
310 ! DISPLAY INPUT DATA ON
320 ! MONITOR AND FLASH LEDs
330 ! ON THE 16800A
340 !

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350 FOR X=1 TO 5
360 OUTPUT 10 ;CHR$(27);"-y1g0r1w1T"
370 ENTER 10 ; F$
380 OUTPUT 10 ;CHR$(27);"-y0g1r0w10T"
390 DISP F$
400 WAIT 3000
410 NEXT X
420 OUTPUT 10 ;CHR$(27);"-y0r1w16T"
430 DISP
440 DISP "PRESS CONT TO DISCONNECT"
450 PAUSE
460 !
470 ! PUT MICRO280 IN NORMAL MODE
480 !
490 OUTPUT 10 USING "#,K" ; "NNNN"
500 ENTER 10 USING "#,K" ; C$
510 DISP C$
520 N=1
530 ENTER 10 ; D$
540 DISP D$
550 ENTER 10 ; D$
560 ON KEY# 1 GOTO 770
570 DISP D$;N
580 N=N+1
590 GOTO 550
600 !
610 ! DATA ENTER SUBROUTINE
620 !
630 B$=" "
640 FOR X=1 TO N
650 L=1
660 ENTER 10 USING "#,K" ; A$
670 IF A$=CHR$(13) THEN GOTO 710
680 B$(L,L)=A$
690 L=L+1
700 GOTO 660
710 ENTER 10 USING "#,K" ; A$
720 NEXT X
730 RETURN
740 !
750 ! PROGRAM EXIT
760 !
770 BEEP
780 DISP "PROGRAM TERMINATED"
790 END

```

Notes:

3. Programmable commands in lines 360, 380, and 420 will be ignored by the HP 16801A.
4. The configuration with listed software is only an example.

For advanced programming and operation of the system, consult the respective operating manuals of each piece of equipment. The corporate headquarters for MICOM is:
MICOM SYSTEMS, INC.
 20151 Nordhoff Street
 Chatsworth, CA 91311
 (213) 998-8844



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For more information call your local HP Sales Office or East (301) 948-6370 — Midwest (312) 255-9800 — South (404) 955-1500 — West (213) 970-7500. Or write: Hewlett-Packard Components, 640 Page Mill Road, Palo Alto, California 94304. In Europe, Hewlett-Packard GmbH, P.O. Box 250, Herrenberger Str. 110, D-7030 Boeblingen, West Germany. In Japan, YHP, 3-29-21, Takaido-Higashi, Suginami-Ku, Tokyo, 168.



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