5288 PROGRAMMABLE CONTROL UNIT

Purpose: Provides processing, control, main storage, diskette storage, communications features and device attachment capabilities for the IBM 5280 Distributed Data System. Allows attachment of multiple 5281 Data Stations and/or 5282 Dual Data Stations and 5222, 5225 and 5256 Printers.

Models: 5288 models are available depending on main storage capacity and the type and number of diskette drives. The 3-character model number is determined by combining the alphabetic main storage capacity identifier (ID) with the numeric identifier (ID) for type and number of diskette drives.

To determine model number:

1. Select main storage capacity required. Corresponding ID becomes first character of model number.

2. Select type and number of diskette drives required. Corresponding ID becomes last two characters of model number.

Main Storage		Diskette		
			Number of Drives	
ID	Capacity	ID	Diskette 1	Diskette 2D
A	32K	01	1	0
C	64K	02	2	0
D	96K	03	3	0
E	128K	04	4	0
F	160K	05	0	1
H	224K	06	1	1
J	288K	07	2	1
		08	3	1
		10	0	2
		11	1	2
		12	2	2
		15	0	3
		16	1	3
		20	0	4

Example: Main storage capacity required: 64K
Diskette drives required: Two diskette 1 and one diskette 2D

Model number: C07

Model Changes: Field Installable. All features may be field installed.

Purchase Considerations

1. The upgrade purchase prices for model changes may be greater than the purchase price differentials. The customer should carefully evaluate his future requirements when purchasing a system.

2. Replaced parts from any model change become the property of IBM.

3. Replaced parts from any Special Feature installation or removal remain the property of the customer.

Notes

1. Device Attachments: Appropriate special features are required to attach auxiliary data stations (5281, 5282) and some I/O units ... see "Special Features."

2. IBM 5280 System Control Programming (5708-SC1) should be ordered at equipment order entry time.

3. For physical planning information, see *IBM 5280 Planning and Site Preparation Guide*, GA21-9351.

Highlights:

- System flexibility allows specification of configuration to meet specific user requirements for data entry, associated processing, and communications.

- Base unit contains controller, main storage, and diskette drive capability.

- Multiple microprocessors provide processing and independent I/O control.

- Stored program function.

- Multiprogramming capability with up to eight main storage partitions.

- Powerful and extensive data editing function.

- Compact diskette drives housed within the 5288 support IBM diskette 1 or IBM diskette 1, 2, and 2D providing up to 4.8M bytes of storage capacity.

- Addition of optional diskette storage capacity within attached 5281 Data Stations and/or 5282 Dual Data Stations provide a total system capacity of eight diskette drives with 9.6M bytes of storage.

- Maximum of four keyboard/displays with attachment of 5281 and/or 5282 data stations.

- Attachment capability for up to eight printers.

- Security features for data asset protection.

- Independent data station operation through multiprogramming and system resource sharing.

- Communications adapters provide both SDLC and BSC capability.

- Communications programming support available for RJE, batch, and interactive communications via SNA/SDLC or BSC.

5288 Components

Controller: Provides processing capability, control, main storage and optional I/O attachments and communications features. Controls all functions of the 5288 and attached 5281 Data Stations, 5282 Dual Data Stations, 5222, 5225 and 5256 Printers. Multiple microprocessor architecture allows processing and I/O operations (e.g., diskette, keyboard/display, communications) to operate independently.

The 5288 provides 32K of main storage that can be expanded to a maximum of 288K. Multiprogramming capability is available through a partitioned memory. The number of partitions (up to eight) and their size (6K to 64K) are user-specified with a facility provided in 5280 System Control Programming (5708-SC1).

Special features provide for the attachment of 5281 and 5282 Data Stations (maximum: four keyboards), and 5222, 5225, and 5256 Printers (maximum: eight printers). The communications adapters (special features) each provide both SDLC and BSC communications under stored program control.

Diskette: Two types of compact diskette drives are available with the 5288: a diskette drive which can read/write IBM diskette 1 and a diskette drive which can read/write IBM diskette 1, 2, and 2D. Capacity per drive ranges from .25M bytes to 1.2M bytes. The formats for the diskettes are:

Diskette 1

Format	Bytes/Sector	Capacity
1	128	246KB*
2	256	284KB
3	512	303KB

*243KB when used for Basic Exchange

Diskette 2

Format	Bytes/Sector	Capacity
4	128	492KB
5	256	568KB
6	512	606KB

Diskette 2D

Format	Bytes/Sector	Capacity
7	256	985KB
8	512	1136KB
9	1024	1212KB

For diskette data exchange with other systems, the following exchange types are supported: Basic Exchange (Formats 1 and 4 above), H Exchange (Format 7 above), and I Exchange (all of the above formats). Diskettes can be interchanged with other IBM systems and devices which support a compatible diskette exchange type. Examples are the IBM System/3, System/32, System/34, System/38, Series/1, System/370, 303X, 4300, 3540, 3740, 3747, 3770, 3790, 5110, 5230, 5260, and 8100.

The instantaneous data transfer rate using IBM diskette 1 or 2 is 31.2K bytes/sec; for IBM diskette 2D: 62.5K bytes/sec. Rotational speed of both types of drives is 360 RPM. Diskette read or write is overlapped with seek. Diskette operations are overlapped with processing and other I/O device operations.

Auxiliary Data Stations: The 5281 Data Station and the 5282 Dual Data Station can be attached to the 5288 in any combination to provide a maximum of 4 keyboards. In Chart A below, all possible combinations are presented. Each vertical column represents a valid combination of machine type quantities. At least one 5281 or 5282 must be attached.

Chart A

Machine	Quantity							
5281	1	2	3	4	1	2	0	0
5282	0	0	0	0	1	1	1	2

For maintenance purposes, one auxiliary data station (designated as the "First Auxiliary Data Station") must be installed within sight of, and have easy access to, the 5288. This data station is attached via the First Auxiliary Data Station Attachment (special feature). All other data stations are attached via an Auxiliary Data Station Attachment, Additional (special feature). **Each data station requires a separate attachment.** Each data station is cable attached (see M5281 or M5282 "Accessories"). The maximum cable length is 61 meters (200 feet).

The display size (480, 960 or 1920 characters) of attached data stations is determined by the 5288 auxiliary data station attachment (special feature). *All data stations must have the same display size(s).* The 5280 Communications Utilities licensed program (5708-DC1) requires a display size(s) of 960 or 1920 characters.

Each attached 5281 or 5282 can have zero, one or two diskette drives. These drives are designated "remote" (from the 5288). A cable is required (see M5281 or M5282 "Accessories").

The maximum number of diskette drives on a 5288 system is eight, in any combination of diskette 1 and diskette 2D drives. If the base 5288 contains one or two drives, the maximum number of remote drives is six. If the base 5288 contains three or four drives, the maximum number of remote drives is four.

Remote diskette drives are attached via a Remote Diskette Drive Attachment (#1300, #1301, or #1302). Chart B below presents all valid diskette drive quantity and location combinations with respective special feature attachment requirements.

Chart B

These Combinations		Require These Special Features*		
Number of Drives				
Base 5288	Remote	#1300	#1301	#1302
1 or 2	0			
1 or 2	1	X		
1 or 2	2	X		
1 or 2	3	X	X	
1 or 2	4	X	X	
1 or 2	5	X	X	X
1 or 2	6	X	X	X
3 or 4	0			
3 or 4	1		X	
3 or 4	2		X	
3 or 4	3		X	X
3 or 4	4		X	X

* *Note:* If an attachment services two diskette drives, the drives may be in the same or different data stations.

Printers: The 5222, 5225, and 5256 Printers are available for attachment to the 5288. A maximum of eight printers can be attached (see "Special Features").

Security: A nondisplay input mode on attached 5281 Data Stations and 5282 Dual Data Stations allows data to be entered from the keyboard without being displayed on the screen. A Security Keylock (special feature) prevents keyboard entry or display of data on all auxiliary data stations and, on a communicating 5288, prevents initiation of communications. In addition, a communicating 5288 can exchange identification sequences with the host, which assists the user in controlling access to data. A Magnetic Stripe Reader (special feature) is available for the 5281 and 5282 which may be used to enter user identification. This assists user program routines in auditing and controlling operator access to data.

Communications: The Communications Adapter (#2500) operates under stored program control and allows for either SDLC or BSC data link control over a single communications line. This feature allows the 5288 to communicate on a switched point-to-point, non-switched point-to-point or multipoint line at speeds up to 4800 bps. On a multipoint line, the 5288 operates as a tributary station.

The 3270 Emulation Communications Adapter (#3270) provides the same function as #2500 (above) and in addition, provides support for the 5280—3270 Emulation (5708-EM1) licensed program.

Connection to the line is supported by a Line Interface feature.

Operation is half-duplex mode over switched network facilities, or half-duplex mode over non-switched (or equivalent private) communications lines which may be duplex or half-duplex facilities.
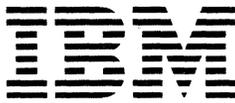
Switched network support includes manual dial and manual or auto-answer (where the attached modem supports this capability).

The 5288 at each termination (drop point) of a communications line must use the same clocking source (modem or business machine). Units must be set to operate at the same transmission rate, use the same transmission code and the same two or four-wire connection to the line. Compatible modems must be used at all terminations on a network.

The IBM 5288 using stored program control communicates using BSC protocol with:

A System/38 with appropriately configured BSC adapter and subfeatures (point-to-point only).

A System/34 equipped with #2500, #3500, or #4500.

A System/32 equipped with #2074.

A System/3 equipped with #2074, #2084, or #2094.

A System/370 via an Integrated Communications Adapter, a 4331 via a Communications Adapter, or a System/370, 303X, or 4300 via a 2701 Data Adapter Unit, or a 3704/3705 Communications Controller with the Network Control Program (ACF/NCP) or the Partitioned Emulation Program (PEP), any of which are equipped with a binary synchronous communications adapter and appropriate subfeatures.

A Series/1 equipped with #2074, #2075, #2093/#2094.

A 3741 Model 2 or 4.

A 3747 Data Converter equipped with #1660.

A 5265 communicating model (XX2).

A 5280 equipped with #2500 or #3270.

The IBM 5288 using stored program control communicates in SNA/SDLC mode with a System/370, 303X, or 4300 via a 3704 or 3705 Communications Controller equipped with appropriate features. See M3704 or M3705 in the *DPD Sales Manual*.

See the IBM 5280 programming pages for a description of the communcations program support available and any special feature requirements.

Problem Determination Procedures: Significant function has been designed into this unit to provide greater availability to the customer. This has been done through the use of the problem determination procedures and recovery routines that are easily understood and used by the operator. The procedures are described in the *IBM 5280 Machine Verification Manual*, (GA21-9357).

Customer Set-Up (CSU): The 5288 is designated Customer Set-Up, and offers customers ease of setup and relocation flexibility. The Customer Set-Up Allowance is two days. For additional information on CSU, refer to the General Information (GI) section of the sales manual. One copy of *IBM 5280 User's Setup Procedures* (GA21-9365) is included with each 5288.

Customer Responsibility: The customer is responsible for:

• Adequate site, system, and other vendor preparation.

• Obtaining a firm installation date for the start of communication facilities and services (including any required modems). The IBM Marketing Representative must assure that a firm installation date is established prior to Order Confirmation.

• Receipt, unpacking, and placement of the 5288.

• Installation and maintenance of signal cables and associated parts for attaching a 5222, a 5225, a 5256, a 5281, or a 5282 to the 5288.

• The installation and maintenance of common carrier facilities/services. For further information, see M2700 pages and "Teleprocessing" in the General Information (GI) section of the sales manual.

• Physical setup, connection of cables to communications lines/modems and IBM devices incorporating protected access areas, modem attenuation setting and checkout in accordance with instructions supplied by IBM.

• Using and following the 5280 problem determination procedures prior to calling for IBM service.

• Notifying IBM of intent to relocate and following IBM instructions for relocation of the 5288.

• Relocation of the 5288, if required, to allow IBM service access.

• When adding a 5281 or 5282 to the 5288, the customer may have to modify the system configuration specifications. See *IBM 5280 System Control Programming Reference/Operation Manual*, (GC21-7824).

• Disconnecting, packing, and removal to the customer's shipping dock at the time of discontinuance. Removal instructions and packing materials (if required) will be ordered by the Branch Office.

Publications: *IBM 5280 General Information*, GA21-9350 and *IBM 5280 Planning and Site Preparation Guide*, GA21-9351.

Supplies: For IBM diskettes, see *IRD Sales Manual*.

Minimum Configuration: Any model of the 5288 with one 5281 Data Station or one 5282 Dual Data Station.

AAS Ordering Instructions: The 5288 is a Computer System.

SIU = 5288   ID = N30

SPECIFY

1. Voltage (115 V AC, 1-Phase, 60 Hz): #9881 for a standard nonlocking plug (uses customer standard type receptacle) or #9880 for a locking plug (requires customer locking type receptacle).

2. Color: Pearl White only (no specify required).

3. Primary host system that will process the data captured by the 5288:

System/3	#9501
System/32	#9502
System/34	#9503
System/38	#9504
Series/1	#9505
Other GSD System	#9506
System/360	#9507
System/370-Model 138 and below	#9508
System/370-Model 145 and above	#9509
3031, 3032, 3033	#9510
4331, 4341	#9511
8100	#9512
Other DPD System	#9513
Non-IBM System	#9514
Host System Unknown	#9515
No Host System	#9516

4. Communications Cable Length (with #2500 or #3270): Required for attaching the 5288 to the communications facility. #9010 for a 6 meter (20 foot) cable or #9015 for a 12 meter (40 foot) cable. Specify this cable length only once per system.

SPECIAL FEATURES

First Auxiliary Data Station Attachment (#1245, #1250, #1255, #1260, or #1265): to attach the first auxiliary data station (5281 Data Station or 5282 Dual Data Station). *This feature also determines the display size of the auxiliary data station.* All data stations must have the same display size(s). Attachment is by cable (see M5281 or M5282 "Accessories"). The maximum cable length is 61 meters (200 feet). One feature must be selected.

#1245: To attach one 5281 Data Station with a display size of 480 characters. **Limitation:** Cannot be installed with Auxiliary Data Station Attachment, Additional (#1275, #1280, or #1290).

#1250: To attach one 5281 Data Station with a display size of 960 characters. **Limitation:** Cannot be installed with Auxiliary Data Station Attachment, Additional (#1270, #1280, or #1285).

#1255: To attach one 5281 Data Station with a display size of 1920 characters. **Limitation:** Cannot be installed with Auxiliary Data Station Attachment, Additional (#1270, #1275, #1285, or #1290).

#1260: To attach one 5282 Dual Data Station with display sizes of 480 characters. **Limitation:** Cannot be installed with Auxiliary Data Station Attachment, Additional (#1275, #1280, or #1290).

#1265: To attach one 5282 Dual Data Station with display sizes of 960 characters. **Limitation:** Cannot be installed with Auxiliary Data Station Attachment, Additional (#1270, #1280, or #1285).

Maximum: One of the above.

Auxiliary Data Station Attachment, Additional (#1270, #1275, #1280, #1285, #1290): To attach one 5281 Data Station or one 5282 Dual Data Station. *This feature also determines the display size of the auxiliary data station.* All data stations must have the same display size(s). The 5281 and 5282 can be attached in any combination to provide a maximum of four keyboards. See Chart A above for valid combinations of machine type quantities. Attachment is by cable. The maximum cable length is 61 meters (200 feet).

#1270: To attach one 5281 Data Station with a display size of 480 characters. **Limitation:** Cannot be installed with Auxiliary Data Station Attachment, Additional (#1275, #1280, or #1290). **Prerequisite:** First Auxiliary Data Station Attachment (#1245 or #1260).

#1275: To attach one 5281 Data Station with a display size of 960 characters. **Limitation:** Cannot be installed with Auxiliary Data Station Attachment, Additional (#1270, #1280, or #1285). **Prerequisite:** First Auxiliary Data Station Attachment (#1250 or #1265).

#1280: To attach one 5281 Data Station with a display size of 1920 characters. **Limitations:** Cannot be installed with Auxiliary Data Station Attachment, Additional (#1270, #1275, #1285, or #1290). **Prerequisite:** First Auxiliary Data Station Attachment (#1255).

#1285: To attach one 5282 Dual Data Station with display sizes of 480 characters. **Limitation:** Cannot be installed with Auxiliary Data Station Attachment, Additional (#1275, #1280, or #1290). **Prerequisite:** First Auxiliary Data Station Attachment (#1245 or #1260).

#1290: To attach one 5282 Dual Data Station with display sizes of 960 characters. **Limitation:** Cannot be installed with Auxiliary Data Station Attachment, Additional (#1270, #1280, or #1285). **Prerequisite:** First Auxiliary Data Station Attachment (#1250 or #1265).

Maximum: Three of the above.

Auxiliary Data Station Diskette Drives

Diskette drives housed within a 5281 Data Station or 5282 Dual Data Station are designated as "remote" (from the 5288). Remote diskette drives require the following 5288 attachment special features. If an attachment services two diskette drives, the drives may be in the same or different data stations.

Consult Chart B above for valid diskette drive quantities and location combinations with respective special feature requirements. A cable is required. See M5281 or M5282 "Accessories."

Remote Diskette Drive Attachment, First (#1300): Required to attach diskette 1 or diskette 2D drives housed within a 5281 or 5282. When the base 5288 contains one or two diskette drives, this feature is required to attach the first and second remote diskette drives. **Maximum:** One.

Remote Diskette Drive Attachment, Second (#1301): Required to attach diskette 1 or diskette 2D drives housed within a 5281 or 5282. When the base 5288 contains one or two diskette drives, this feature is required to attach the third and fourth remote diskette drives. When the base 5288 contains three or four diskette drives, this feature is required to attach the first and second remote diskette drives. **Maximum:** One.

Remote Diskette Drive Attachment, Third (#1302): Required to attach diskette 1 or diskette 2D drives housed within a 5281 or 5282. When the base 5288 contains one or two diskette drives, this feature is required to attach the fifth and sixth remote diskette drives. When the base 5288 contains three or four diskette drives, this feature is required to attach the third and fourth remote diskette drives. **Prerequisite:** Remote Diskette Drive Attachment, Second (#1301). **Maximum:** One.

Printers

Attachment of the 5222, 5225, and 5256 Printers is provided by one of four special features. Up to eight printers, in any combination, may be attached consistent with special feature limitations. Printer speeds may be affected by the customer's program, application load, forms design and/or the number of printers attached to the system.

Single Twinax Printer Attachment (#1155): Provides a single port for the attachment of 5225 (Model 1, 2, 3, or 4) and/or 5256 (Model 1, 2, or 3) printers to a single twinax port. A maximum of seven printers can be attached. The maximum cable length is 1525 meters (5000 feet). **Prerequisite:** If multiple printers are attached, each printer on the cable, except the last, requires a Cable Thru feature (#2680). **Limitation:** Cannot be installed with the Multiple Twinax Printer Attachment (#1160), the Single 5222 Printer Attachment (#1157), or the Multiple 5222/Twinax Printer Attachment (#1162). **Maximum:** One.

Multiple Twinax Printer Attachment (#1160): Provides four ports for attaching, via twinax cable, 5225 (Model 1, 2, 3, or 4) and/or 5256 (Model 1, 2, or 3) printers. A maximum of eight printers can be attached. The maximum cable length is 1525 meters (5000 feet). **Prerequisite:** If multiple printers are attached to one port, each printer on the cable, except the last, requires a Cable Thru feature (#2680). **Limitation:** Cannot be installed with the Single Twinax Printer Attachment (#1155), the Single 5222 Printer Attachment (#1157), or the Multiple 5222/Twinax Printer Attachment (#1162). A maximum of seven printers can be attached to a single port (using Cable Thru feature). **Maximum:** One.

Single 5222 Printer Attachment (#1157): Provides a single port for the attachment of one 5222 Printer. Attachment is by a double twisted pair cable. A 6 meter (20 foot) cable is provided with the printer. An extension cable accessory is available to provide a total cable length of up to 61 meters (200 feet) (see M5222 "Accessories"). **Limitation:** Cannot be installed with the Multiple 5222/Twinax Printer Attachment (#1162), the Single Twinax Printer Attachment (#1155), or the Multiple Twinax Printer Attachment (#1160). **Maximum:** One.

Multiple 5222/Twinax Printer Attachment (#1162): Attaches up to eight printers. Provides four 5222 Printer ports and one twinax printer (5225/5256) port. A single 5222 Printer can be attached to each 5222 port. Each 5222 printer is attached by a double twisted pair cable. A 6 meter (20 foot) cable is provided with each printer. An extension cable accessory is available to provide a maximum cable length of up to 61 meters (200 feet) (see M5222 "Accessories"). From one to seven twinax printers (5225 Model 1, 2, 3, or 4 and/or 5256 Model 1, 2, or 3) can be attached to the twinax port, using a single twinax cable. The maximum cable length is 1525 meters (5000 feet). **Prerequisite:** If multiple printers are attached to the twinax printer port, each printer on the cable, except the last, requires a Cable Thru feature (#2680). **Limitation:** Cannot be installed with the Single 5222 Printer Attachment (#1157), the Single Twinax Printer Attachment (#1155), or the Multiple Twinax Printer Attachment (#1160). A maximum of seven printers can be attached to the twinax port (using Cable Thru feature). **Maximum:** One.

Magnetic Stripe Reader Adapter/Elapsed Time Counter (#4955): Provides the following:

The Magnetic Stripe Reader Adapter provides control for up to four Magnetic Stripe Readers (#4950) on attached 5281 Data Stations and/or 5282 Dual Data Stations.

The Elapsed Time Counter is used to measure elapsed real time. It is required for SNA operations under the 5280 Communications Utilities (5708-DC1) and 5280—3270 Emulation (5708-EM1) Licensed Programs. It is required by DE/RPG (5708-DE1) and the Key Entry Utilities (part of 5280 Utilities—5708-UT1) if the user desires to maintain the elapsed time production statistic. **Limitation:** Cannot be installed with the Elapsed Time Counter feature (#3610). **Maximum:** One.

Elapsed Time Counter (3610): Used to measure elapsed real time. It is required for SNA operations under the 5280 Communications Utilities (5708-DC1) and 5280—3270 Emulation (5708-EM1) Licensed Programs. It is required by DE/RPG (5708-DE1) and the Key Entry Utility (part of 5280 Utilities—5708-UT1) if the user desires to maintain the elapsed time production statistic. **Limitation:** Cannot be installed with the Magnetic Stripe Reader Adapter/Elapsed Time Counter (#4955). **Maximum:** One.

Security Keylock (#6340): Provides a single, key operated switch with three positions for controlling operations on all attached 5281 Data Stations and 5282 Dual Data Stations:

"Lock" position prevents operator entry and display of data and prevents initiation of communications.

"Local" position allows operator entry and display of data.

"Normal" position allows initiation of communications in addition to operator entry and display of data.

Two unique keys are provided: one allows selection of "Lock"/"Local"; the other allows selection of "Lock"/"Normal". On a noncommunicating 5288, both operating positions ("Local" and "Normal") provide "Local" position operation. **Maximum:** One.

Second Application Microprocessor (#6800): A microprocessor which performs identical function and operates concurrently with the first (base) application microprocessor. This feature provides more processing power and is designed as an aid to performance improvement in a multiprogramming environment which has heavy processor utilization. **Maximum:** One.

Communications Adapter (#2500): Required to attach a communications line via appropriate interface or modem. In conjunction with stored program control, this feature permits the 5288 to function on a switched or non-switched public, or private communications line. The adapter provides both BSC and SDLC. The proper line protocol is enabled at program execution time. The adapter also provides a 1200 bps clocking capability for use with the 1200 bps Integrated Modem (#5500, #5501, #5502, #5507, #5508) or an external modem. A Communications Utilities (5708-DC1) parameter activates this capability. **Prerequisites:** [1] A line interface special feature consisting of one of the 1200 bps Integrated Modems (#5500, #5501, #5502, #5507, or #5508), EIA Interface (#3701) or DDS Adapter (#5650 or #5651) must be ordered; [2] See the Programming section of the sales manual for 5280 Communications Utilities Licensed Program (5708-DC1) minimum system and feature requirements. **Limitations:** Cannot be installed with the 3270 Emulation Communications Adapter (#3270).

See "Specify" for required communications cable length. See "Additional Communications Information" for Mandatory Specify Codes. **Maximum:** One.

3270 Emulation Communications Adapter (#3270): Supports the 5280—3270 Emulation (5708-EM1) licensed program, and in conjunction with stored program control, permits the 5288 to function on a switched or nonswitched public or private communications line. This adapter is required to attach to a communications line via the appropriate interface or modem and provides both BSC and SDLC. The proper line protocol is enabled at program execution time. The adapter also provides a 1200 bps clocking capability for use with the 1200 bps Integrated Modem (#5500, #5501, #5502, #5507, #5508) or an external modem. A Communications Utilities (5708-DC1) parameter activates this capability. Keyboard interpretation functions are provided in support of the 5280—3270 Emulation licensed program. **Limitation:** Cannot be installed with Communications Adapter (#2500). **Prerequisites:** [1] A line interface special feature consisting of one of the 1200 bps Integrated Modems (#5500, #5501, #5502, #5507, or #5508), EIA Interface (#3701), or DDS Adapter (#5650 or #5651) must be ordered; [2] Attached 5281 Data Station(s) with a display size of 1920 characters (5288
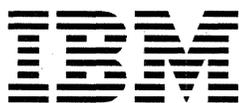
feature #1255, #1280); [3] See the programming section of the sales manual for 5280 Communications Utilities (5708-DC1) and 5280-3270 Emulation (5708-EM1) minimum system and feature requirements. See "Specify" for required communications cable length. See Additional Communications Information for Mandatory Specify Codes. **Maximum:** One.

Line Interfaces

One of the following line interface features must be ordered for the type of communication facility and modem to be used.

EIA Interface (#3701): Provides the appropriate cable and interface logic necessary to attach an external modem (either an IBM or non-IBM modem meeting RS-232-C characteristics). Non-IBM modems may be attached subject to the Multiple Suppliers System Policy. **Limitation:** Cannot be installed with Digital Data Service (DDS) Adapter feature (#5650 or #5651) or 1200 bps Integrated Modem (#5500, #5501, #5502, #5507, or #5508). **Prerequisite:** Communications Adapter (#2500) or 3270 Emulation Communications Adapter (#3270). **Maximum:** One.

Digital Data Service (DDS) Adapter (#5650 for Point-to-Point Operation...#5651 for Multipoint Operation). An adapter for SDLC or BSC data transmission at speeds of 2400 or 4800 bps over AT&T non-switched Data-Phone† digital data service. The DDS Adapter provides the appropriate cable and interface to the DDS channel service unit, the customer site termination of the DDS network.

The DDS Adapter may also be used to locally connect a 5288 to another supported device which has a compatible DDS Adapter. This connection requires a special DDS Adapter Connector (see "Accessories") and supports point-to-point connections only. The maximum length of the connection is the sum of the modem cable lengths supported by the two devices. No modem or channel service unit is required. **Limitation:** Cannot be installed with EIA Interface (#3701) or 1200 bps Integrated Modem (#5500, #5501, #5502, #5507, or #5508). **Prerequisite:** Communications Adapter (#2500) or 3270 Emulation Communications Adapter (#3270). **Maximum:** One.

1200 bps Integrated Modem (#5500, #5501, #5502, #5507, #5508). A modem for SDLC or BSC data transmission at 600/1200 bps over non-switched or switched facilities. Half-speed operation at 600 bps is indicated via a 5280 Communications Utilities (5708-DC1) parameter. Available in five different versions: #5500—non-switched, #5501—switched with auto-answer, #5502—switched without auto-answer, #5507—non-switched with Switched Network Backup manual answer capability, #5508—non-switched with Switched Network Backup Auto answer capability. The non-switched versions (#5500, #5507, and #5508) provide a cable for attachment directly to a non-switched (2 or 4-wire) line, Type 3002. The switched with auto-answer versions (#5501 and #5508) provide a cable for attachment to the switched network via an FCC registered protective circuitry of the CBS type (or equivalent) provided by the user. The switched with manual answer versions (#5502 and #5507) provide a cable for attachment to the switched network via an FCC registered protective circuitry of the CDT type (or equivalent) provided by the user. The devices communicating with the 5288 must also be equipped with a compatible 1200 bps modem. **Limitation:** Cannot be installed with EIA Interface (#3701) or Digital Data Service (DDS) Adapter (#5650 or #5651). **Prerequisite:** Communications Adapter

(#2500) or 3270 Emulation Communications Adapter (#3270). **Maximum:** One.

Additional Communications Information

Mandatory Specify Codes for Communications: One selection must be specified from each of the following tables. Entries selected from Tables E and F will be used to preset hardware functions during manufacture. Selection from each of the other tables should be based on prime usage.

Table A — Line Control

BSC	#9400
SDLC	#9401

Table B — Transmission Code

EBCDIC	#9060
ASCII	#9061

Table C — Prime Usage

System/360	#9570
3031 or S/370	
Mdl 138 & Below	#9277
3032, 3033, or S/370	
Mdl 145 & Up	#9278
4300	#9596
Series/1	#9599
S/3	#9580
S/32	#9591
S/34	#9593
S/38	#9594
3740/3747	#9579
5260	#9600
5280	#9598
Other IBM	#9275
Non-IBM	#9276

Table D — Transmission Rate

600 bps	#9750
1200 bps	#9751
2000 bps	#9752
2400 bps	#9753
4800 bps	#9754

Table E — Network Attachment

Point-to-Point (non-switched)	#9481
Point-to-Point (switched)	#9483
Multipoint Tributary	#9482
Local Attach	#9485

Table F — Line Facility Attachment

Duplex (4-wire only)	#9391
Half Duplex	#9392

Table G — Host Application

RJE, MRJE, SRJE	#9440
CICS/VS	#9441
IMS/VS	#9442
Other	#9443

IBM Modems: One IBM modem can be attached to the Communications Adapter (#2500) or the 3270 Emulation Communications Adapter (#3270). **Prerequisite:** EIA Interface (#3701).

†Trademark of American Telephone and Telegraph Co. (AT&T)
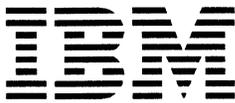
Modem	Speed (bps)
3863	2400
3864	4800
3872	2400/1200
3874	4800/2400

Note: The 5288 does not support Automatic Call Originate (#1091) on the 3872 or 3874. For communication capabilities, product utilization and special features see M2700, M3863, M3864, M3872, and M3874 pages.

Customer Responsibilities: The customer must be advised, in writing, of certain responsibilities related to the installation and maintenance of common carrier facilities/services as well as the IBM equipment. For further information, see M2700 pages and "Teleprocessing" in the General Information section of the sales manual.

IBM Data Encryption Devices: An IBM 3845 or 3846 Data Encryption Device may be attached between the 5288 Communications Adapter and the external modem. **Prerequisite:** EIA Interface (#3701).

Note: Refer to M2700, M3845, and M3846 pages for information on 3845 or 3846 configuration and communication capability. The IBM 3845 or 3846 device operating with SDLC will not operate with NRZI transmission mode.
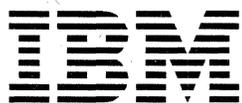
Communications References:

- See the System Programming pages of the *DP Sales Manual* for possible restrictions with DP products.

- See M2700 pages for additional information concerning modems, communications facility, machine attachment requirements, terminal intermix, operating capabilities and customer responsibilities.

- Refer to the *IBM Data Communications Handbook* ZZ20-1939 for information concerning external modems attachable to the IBM 5288 Communications Adapter. This handbook also contains information related to common carrier facilities and tariffs.

- Refer to the *IBM 5280 Planning and Site Preparation Guide*, GA21-9351 for physical planning information.

Communications Cable: A communications cable length is required. See "Specify."

ACCESSORIES

Keylock, Keys: The 5288 with Security Keylock #6340 is shipped with two unique keys. Additional keys may be purchased from IBM. (Vendor will supply additional keys only to original purchaser.) With each order of quantity of one, customer receives two keys (one key of each kind). Order via MSORDER (Category = Accessories/Supplies) (Group Code = DP Supply Order) on AAS. Key identification numbers must accompany each order. Specify P/N 4177799. Allow 6 to 8 weeks for delivery.

DDS Adapter Connector: A specially designed connector allows the cable from a 5288 DDS Adapter to be connected to the cable of another supported device which has a compatible DDS adapter. This provides for the local connection of two devices without the use of any modems or channel service units. Only one DDS Adapter Connector is required per connection. The maximum length of the connection is the sum of the modem cable lengths of the two devices. *This is a "purchase only" item.* Order via MSORDER (Category = Accessories/Supplies) (Group Code = DP Supply Order) on AAS. Specify P/N 4236967. Allow 6 to 8 weeks for delivery. **Maximum:** One per Digital Data Service (DDS) Adapter. **Field Installable:** Yes.

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