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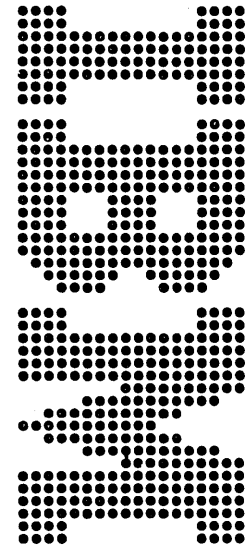
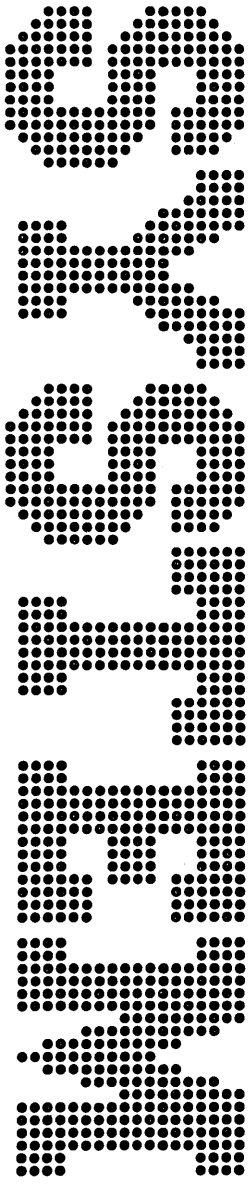
IBM System/3
Model 10
Configurator

GA21-9135-1





IBM System/3
Model 10
Configurator

Second Edition (June 1972)

This is a major revision of, and obsoletes, the prior edition, GA21-9135-0. Information about the following has been added to the configurator:

- IBM 1442 Card Read Punch (Models 6 and 7) as announced features
- IBM 3411 Magnetic Tape Unit and Control
  IBM 3410 Magnetic Tape Unit
- The second BSCA feature
- EIA Local Attachment Feature
- System/3 as a control station on a multipoint, non-switched communications network.

Other areas of the manual have been changed slightly to update and correct the manual.

Changes are continually made to the specifications herein; before using this publication in connection with the operation of IBM Systems, consult the latest IBM System/3 Newsletter, GN20-2228 for the editions that are applicable and current.

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Blank areas on the left side of pages may be used for notes.

ABOUT THIS MANUAL

This IBM System/3 Model 10 Configurator contains charts and figures that show:

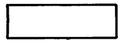
- System functions
- CPU capability
- Announced input and output (I/O) devices for the system
- Some RPQ devices available for the system
- Required features and specify codes
- Available special features (for expanded functions)

Audience

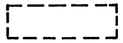
- IBM sales representatives
- IBM systems engineers
- Customer DP managers
- Customer system analysts

Symbols Used in this Manual

Indicates an I/O device.



Indicates a required feature.



Indicates an additional feature.

Indicates data transmission facility.

Note:
All features that are shown within the IBM 5410 Processing Unit on the figures are installed in the 5410.

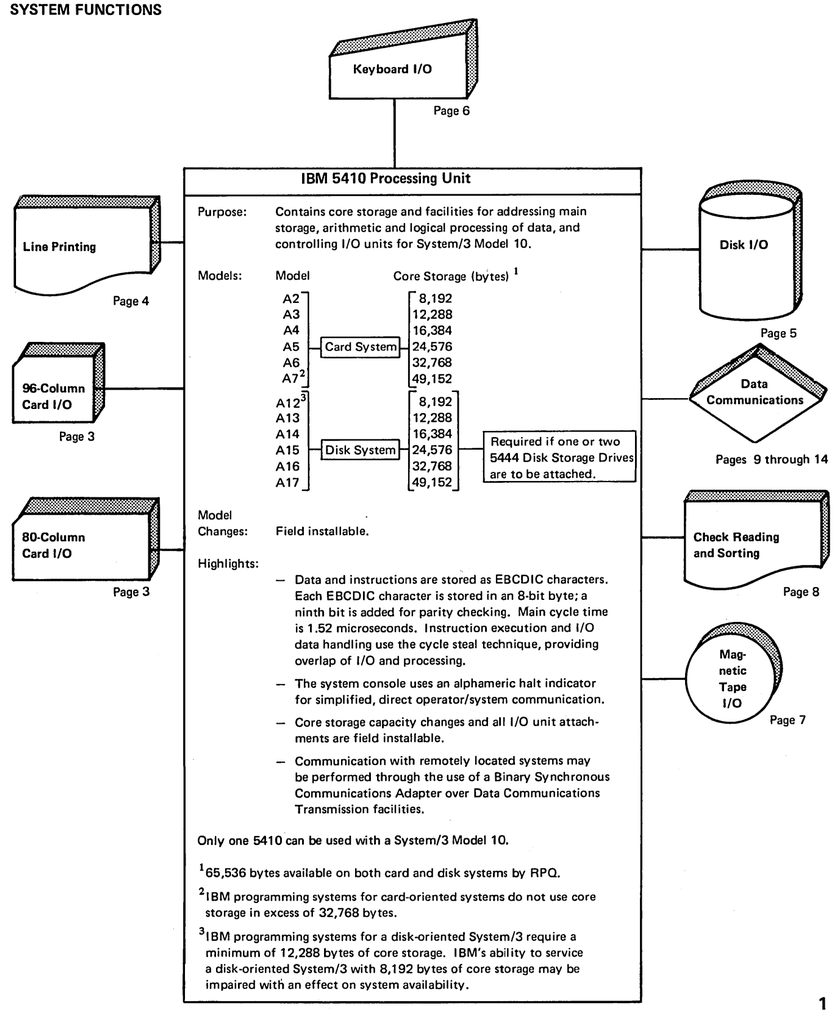
Assumptions
This manual assumes that IBM programming support is being used for the system.

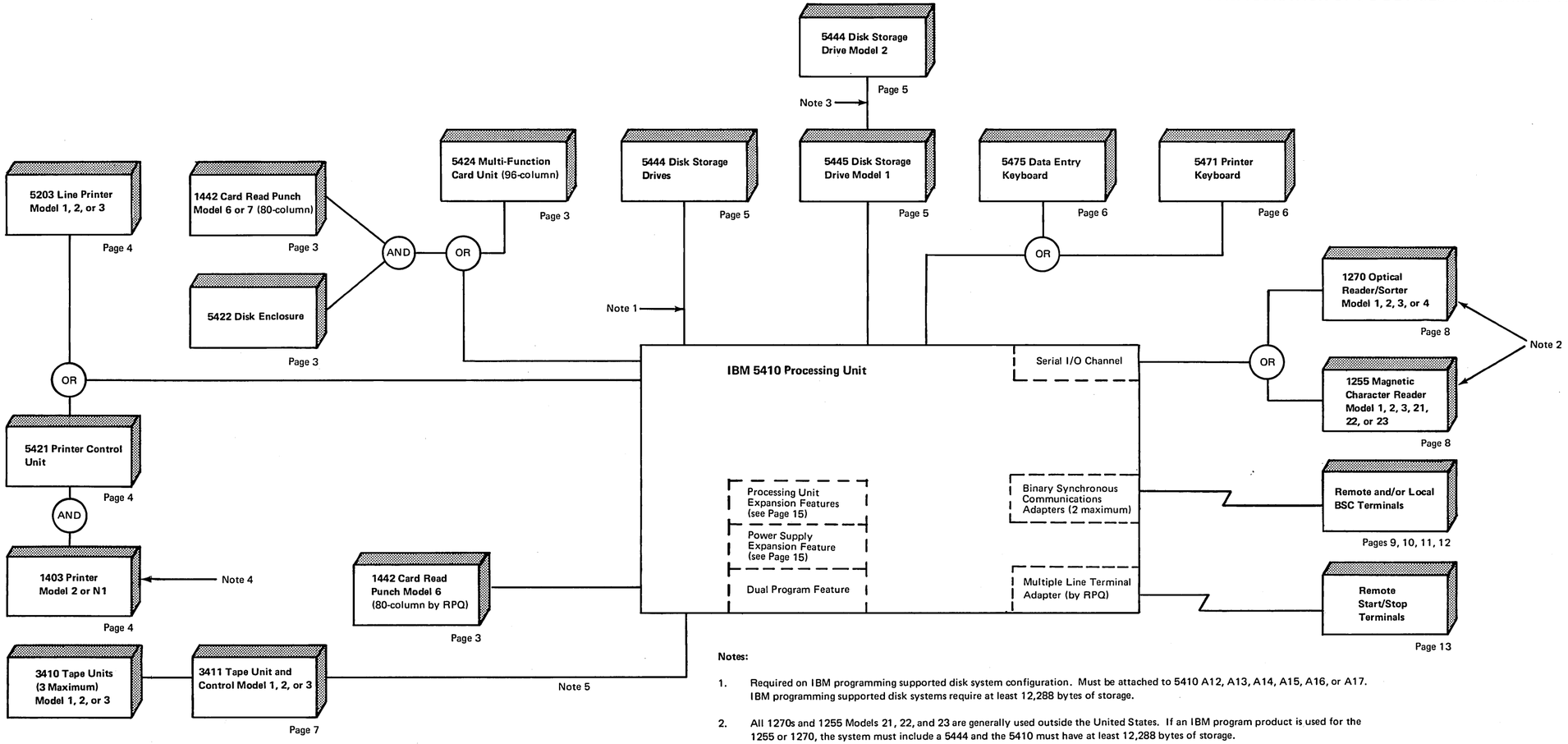
HOW TO USE THIS MANUAL

This manual consists of four main topics that are presented in such a manner that the reader can configurate his system by the functions he needs for his applications. To use the manual effectively, start on the page labeled *System Functions.* From this page determine your required functions, then turn to the next page, *Configuration of I/O Devices by Machine Type,* and study the overall configuration of devices by machine type. As you study these pages, notice that there is a page number under each block or symbol representing an I/O device or function. This page number specifies the page on which functions are described in detail by machine type and model. These detail pages show functional capacity, required I/O device (by model), and all available and required features for the function.

After determining the configuration of I/O devices that you will need, turn to the last figure in the manual, the processing unit expansion feature configuration chart. This chart specifies which power features must be installed for the configuration of devices you selected.

SYSTEM FUNCTIONS





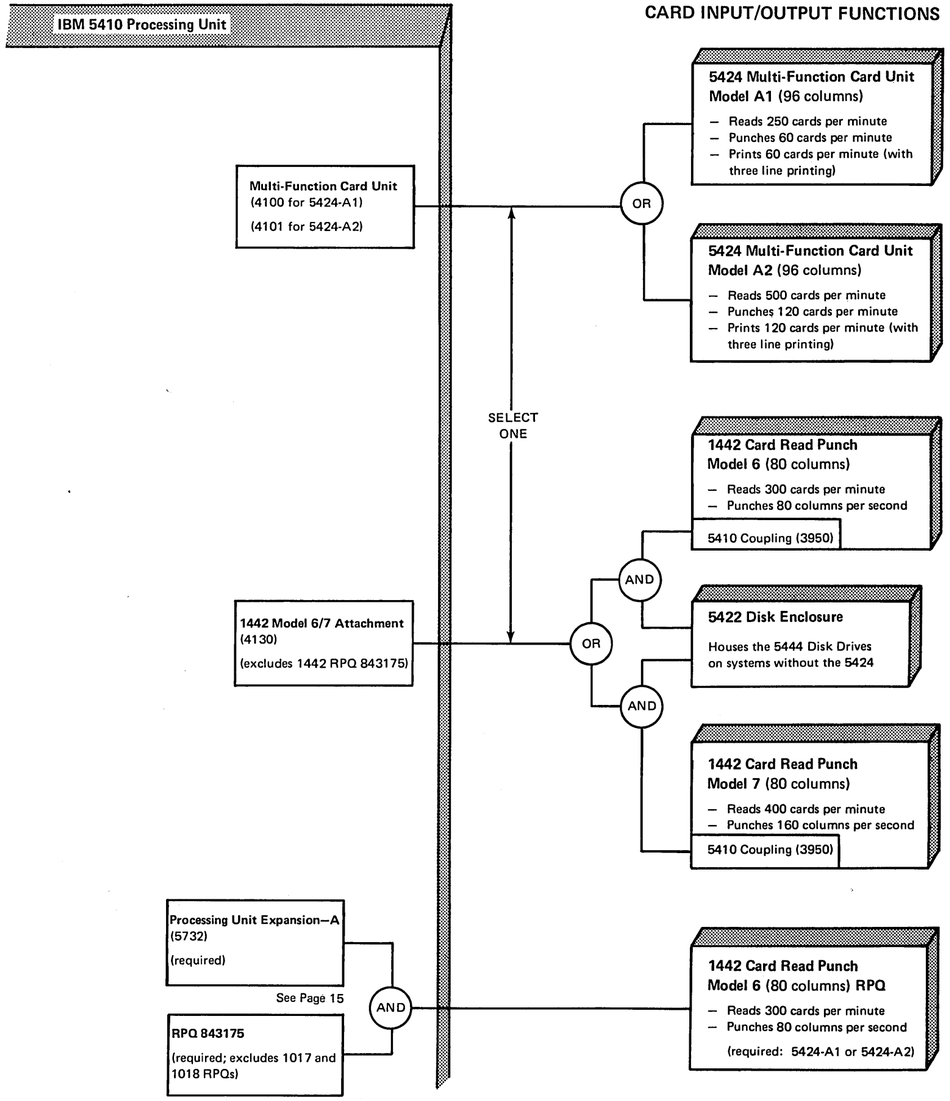
Notes:

1. Required on IBM programming supported disk system configuration. Must be attached to 5410 A12, A13, A14, A15, A16, or A17. IBM programming supported disk systems require at least 12,288 bytes of storage.
2. All 1270s and 1255 Models 21, 22, and 23 are generally used outside the United States. If an IBM program product is used for the 1255 or 1270, the system must include a 5444 and the 5410 must have at least 12,288 bytes of storage.
3. Model 1 is required for attaching a Model 2.
4. 1416 Interchangeable Train Cartridge is required on 1403 Model N1.
5. All 3410s must be the same model as the 3411 to which they attach.

Card Functions					Configurations Allowed			
96 Columns			80 Columns					
Reading (cards per minute)	Punching (cards per minute)	Printing (cards per minute) [1]	Reading (cards per minute)	Punching (columns per second)	5424 Model A1	5424 Model A2	1442 Model 6	1442 Model 7
250	60	60			X			
500	120	120				X		
250	60	60	300	80	X		X	
500	120	120	300	80		X	X	
			300	80			X	
			400	160				X

[1] Print rate is at the maximum rate of 60 or 120 cards per minute when printing on any or all of the first three print lines. Printing on the fourth (lower) print line causes some reduction in throughput even if printing does not occur on any of the first three lines. Throughput when printing on the fourth line is 48 cards per minute for the Model A1, and 96 cards per minute for the Model A2.

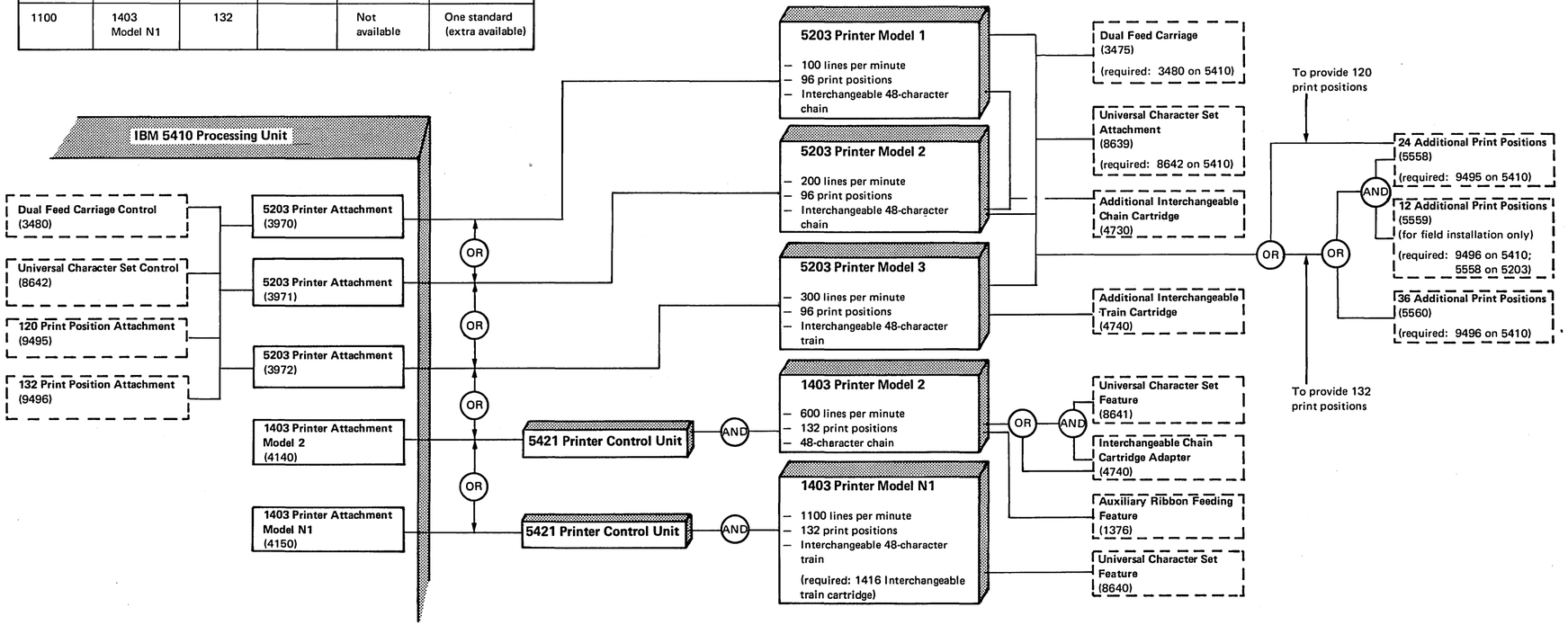
CARD INPUT/OUTPUT FUNCTIONS



The chart below indicates the device required for the necessary printed output. The figure on the right lists the device and feature configurations available.

Note: A universal character set (not listed) is available for all printers.

Lines per Minute	Device and Model	Print Positions		Dual Feed Carriage	Replaceable Chain or Train
		Standard	Available		
100	5203 Model 1	96	120/132	Available	One standard (extra available)
200	5203 Model 2	96	120/132	Available	One standard (extra available)
300	5203 Model 3	96	120/132	Available	One standard (extra available)
600	1403 Model 2	132		Not available	Available
1100	1403 Model N1	132		Not available	One standard (extra available)



Average Access Times (in microseconds):

5444 Model 1 – 153
Model 2 – 269
Model 3 – 269
Model A1 – 86
Model A2 – 126
Model A3 – 126

5445 Model 1 – 60
Model 2 – 60

File Capacity (in megabytes)		Disk Drive Configurations Allowed									IBM Program Supported	
		5444 Models							5445 Models			
Total	Removable	1	2		3	A1	A2		A3	1	2	Yes	No
			One	Two			One	Two					
2.45	1.225	X										X	
4.90	2.45		X									X	
9.80	4.90			X								X	
7.35	4.90		X		X							X	
2.45	1.225					X						X	
4.90	2.45						X					X	
9.80	4.90							X				X	
7.35	4.90						X		X			X	
20.48	20.48									X			X
40.96	40.96									X	X		X
22.93	21.705	X								X		X	
25.38	22.93		X							X		X	
30.24	25.38			X						X		X	
27.83	25.38		X		X					X		X	
22.93	21.705					X				X		X	
25.38	22.93						X			X		X	
30.28	25.38							X		X		X	
27.83	25.38						X		X	X		X	
43.41	42.185	X								X	X	X	
45.86	43.11		X							X	X	X	
50.76	45.86			X						X	X	X	
48.31	45.86		X		X					X	X	X	
43.41	42.185					X				X	X	X	
45.86	43.11						X			X	X	X	
50.76	45.86							X		X	X	X	
48.31	45.86						X		X	X	X	X	

Note: All models of the 5444 must attach to a disk-oriented 5410 (that is, a Model A12 or higher).

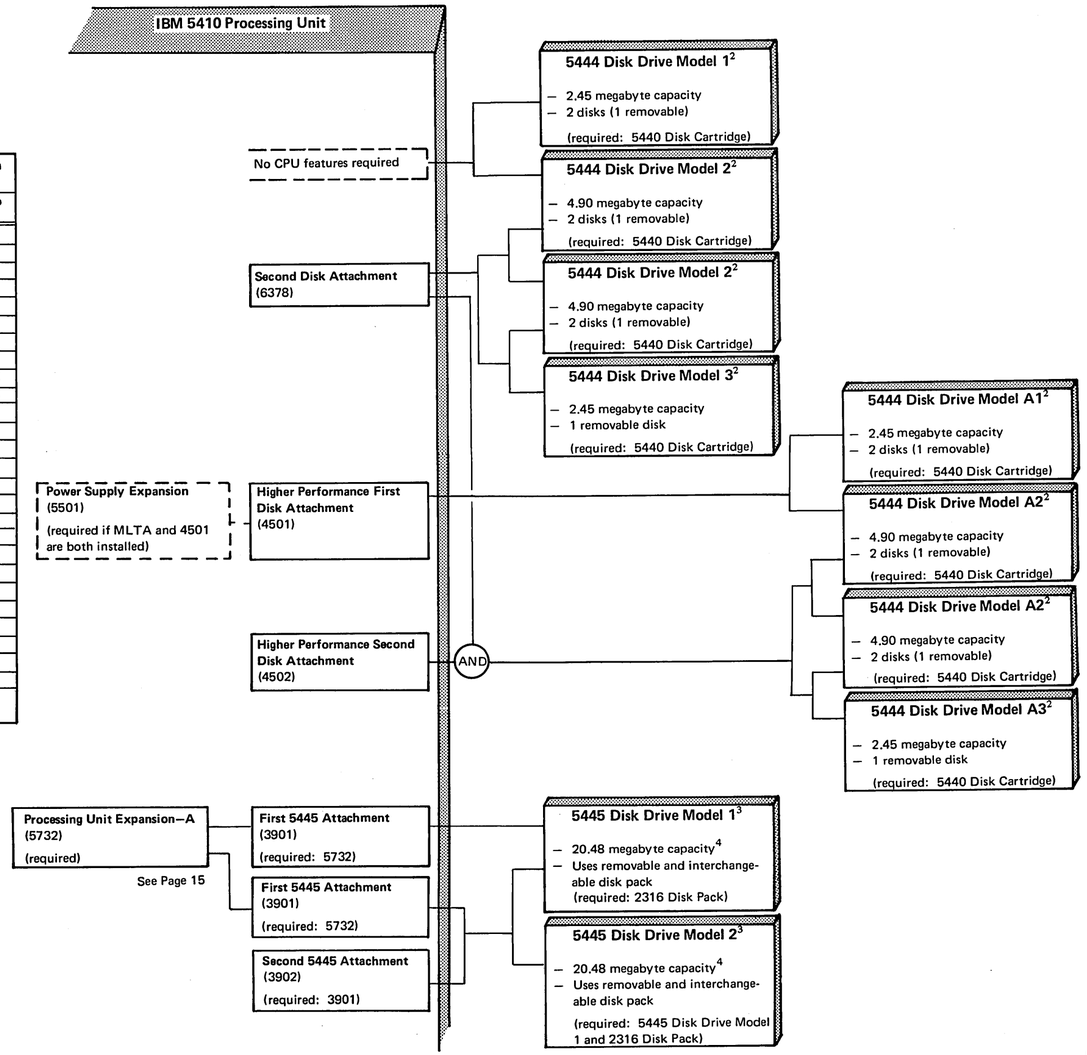
Notes:

1 Programming support, as mentioned here, includes resident disk control programs and IBM program products.

2 No 5444 can be attached to the IBM 5410 Model 2, 3, 4, 5, 6, or 7. IBM programming systems for a disk-oriented System/3 Model 10 require a minimum of 12,288 bytes of core storage (5410 Model A13 or higher).

3 No configuration of 5445 disk drives is IBM system control supported or IBM program products supported unless at least one 5444 is attached to the system.

4 Assumes that IBM system control program support is being used.

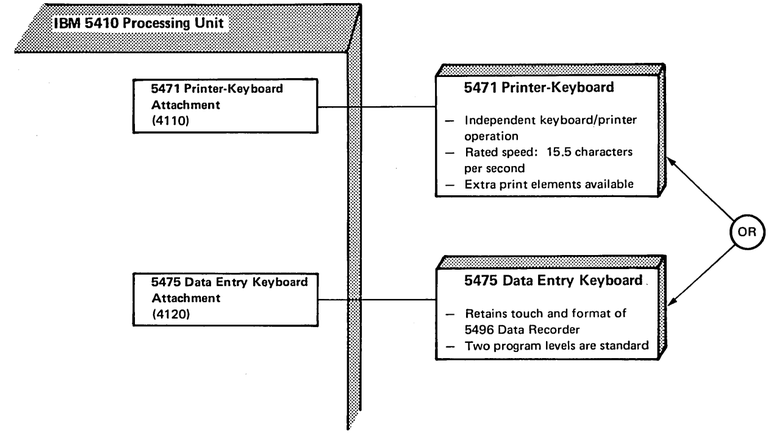


Function Available	Where Available	
	5471[1]	5475
Inquiry	X	
Key entry of data	X	X
Operator/system communication	X	
Secondary printing	X	
Online data recording (card punching)[2]	X	X
Online data verification (punch verification)[2]	X	X

[1] IBM programming systems for the 5471 require a disk-oriented System/3 with 12,288 (or more) bytes of storage. Therefore, the 5410 should be a Model A13, A14, A15, A16, or A17. Also, the system should be equipped with at least one 5444.

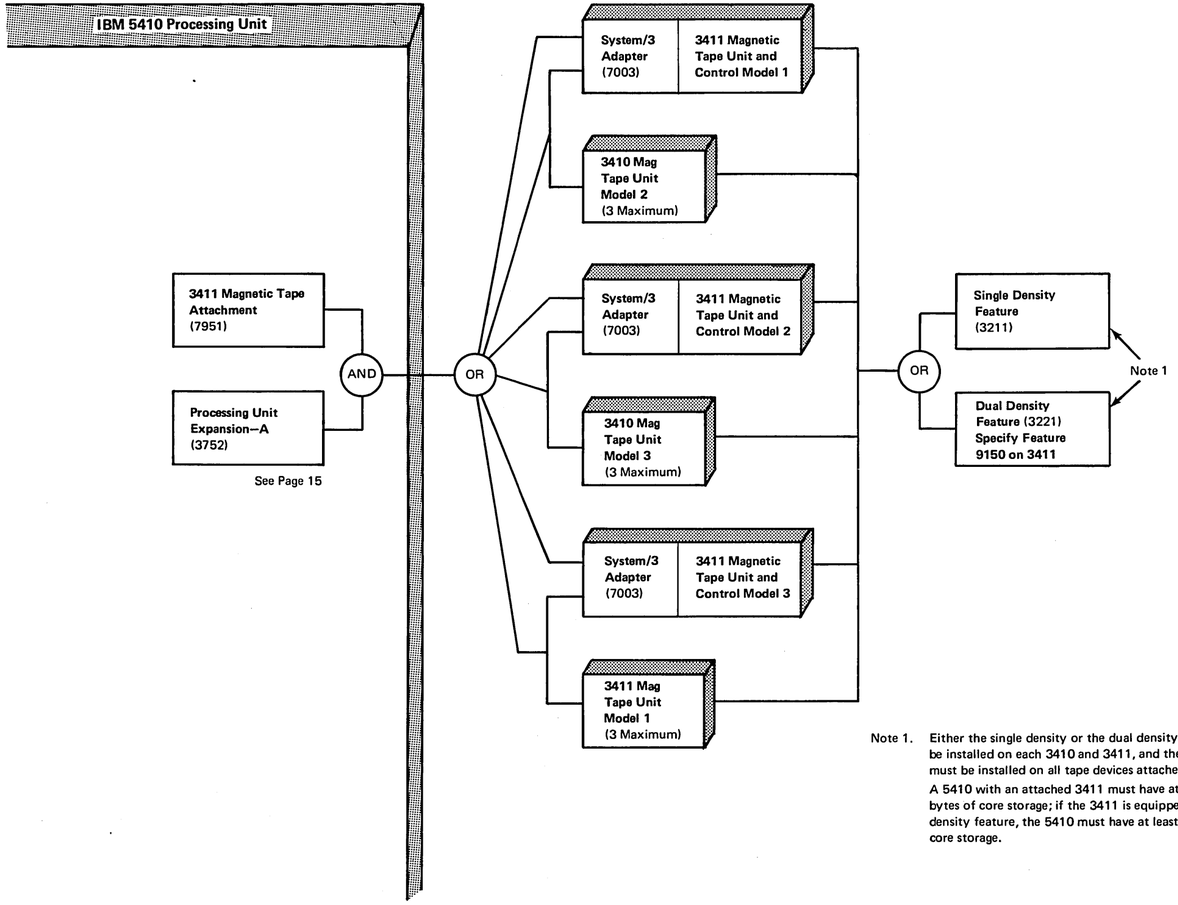
IBM's ability to service a card-oriented System/3 equipped with a 5471 may be impaired with an effect on system availability.

[2] In conjunction with 5424 using available IBM utility programs.



3410/3411 Tape Unit Functional Characteristics

Function	3410 or 3411 Model		
	Model 1	Model 2	Model 3
Tape Rate (in/sec)	12.5	25	50
Write Access Time (in ms)	15	12	6
Read Access Time (in ms)	15	12	6
Data Rate			
1600 bytes/inch (PE)	20,000 bytes/sec	40,000 bytes/sec	80,000 bytes/sec
800 bytes/inch (NRZI)	10,000 bytes/sec	20,000 bytes/sec	40,000 bytes/sec
Inter-Record (Inter-Block) Gap			
Length (inch)	0.6	0.6	0.6
Time (ms)	48	24	12
Rewind Time for 2400 Feet (±10%) in min.	3	3	2
Data Format	Nine tracks (8 bits plus parity bit) in either ASCII or EBCDIC		



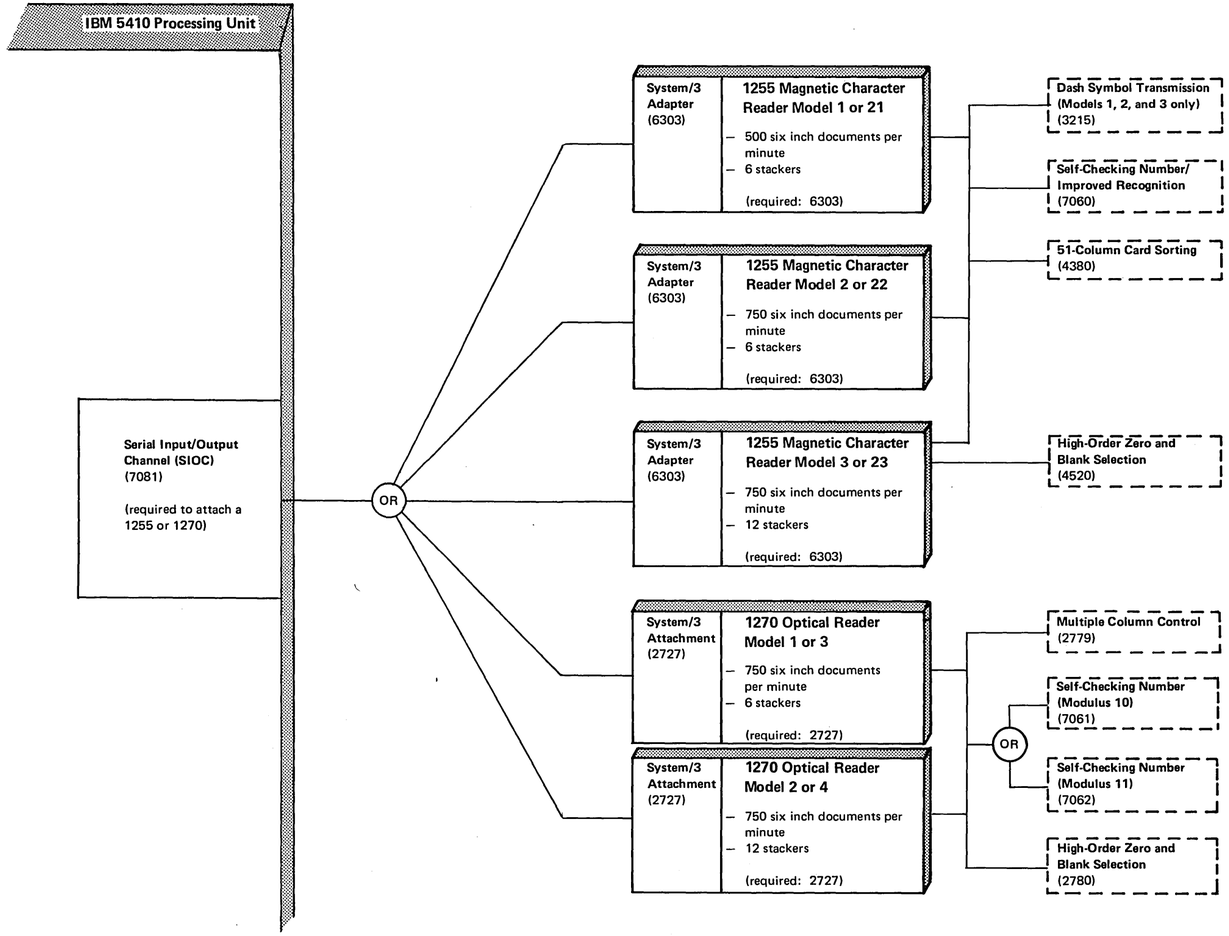
Note 1. Either the single density or the dual density feature must be installed on each 3410 and 3411, and the same density must be installed on all tape devices attached to the 5410.

A 5410 with an attached 3411 must have at least 12,288 bytes of core storage; if the 3411 is equipped with the dual density feature, the 5410 must have at least 16,384 bytes of core storage.

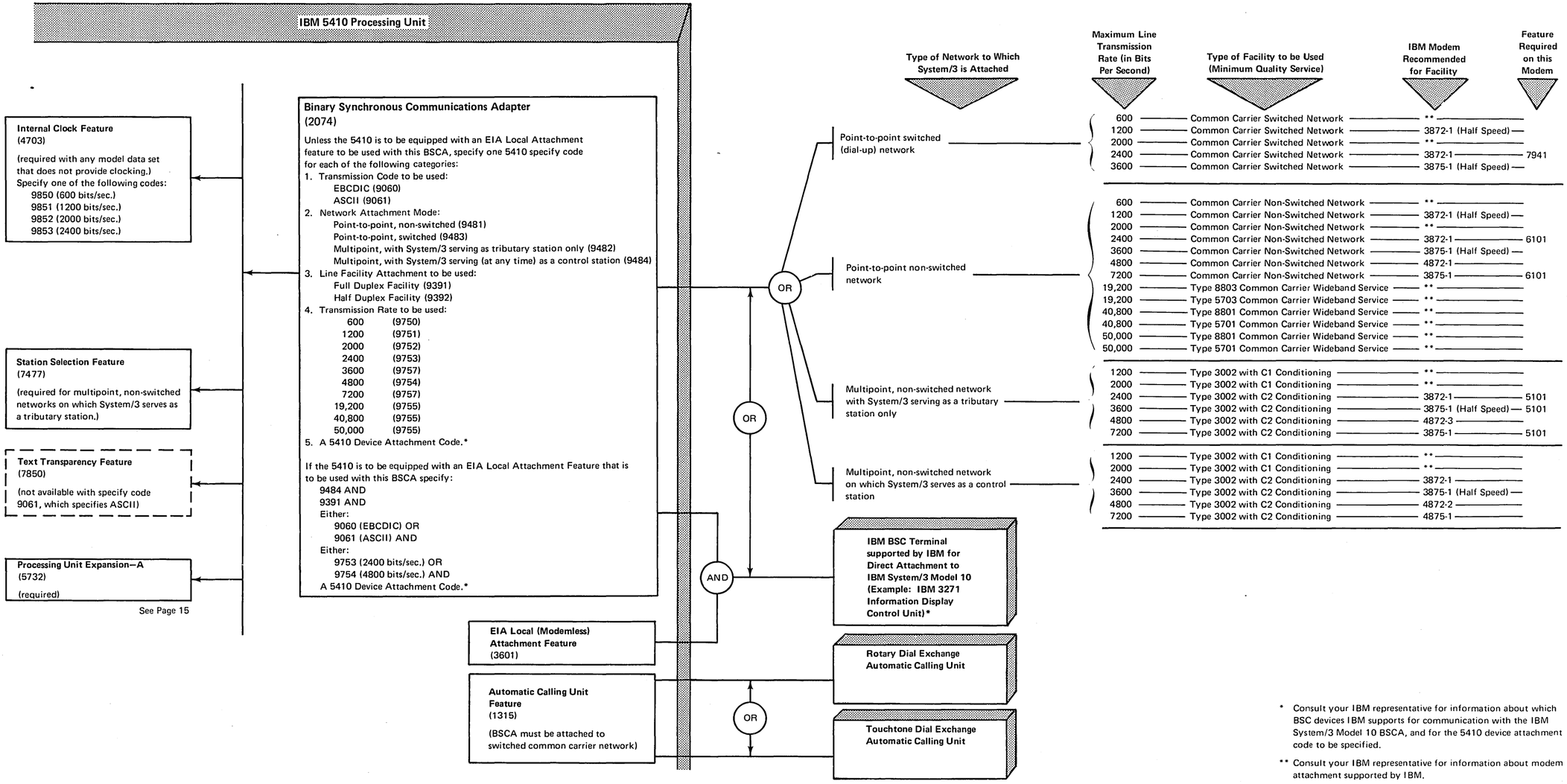
Either a 1255 Magnetic Character Reader or a 1270 Optical Reader can be attached to the serial input/output channel of the IBM System/3 to (1) read or (2) read and sort checks under system control. (Both devices are also capable of reading and sorting checks in an offline mode of operation.) The chart below specifies which device must be ordered to fulfill the reading and sorting requirements of the application.

Font to be Read	Type of Reading	Number of Stackers	Document Rate (six inch documents)	Device	Model
E-13B	Magnetic	6	500	1255	1
		6	750	1255	2
		12	750	1255	3
CMC7[1]	Magnetic	6	500	1255	21
		6	750	1255	22
		12	750	1255	23
ISOCRAF-A Size 1[1]	Optical	6	750	1270	1
		12	750	1270	2
ISOCRAF-B Size 1[1]	Optical	6	750	1270	3
		12	750	1270	4

[1] Character font used outside the United States.



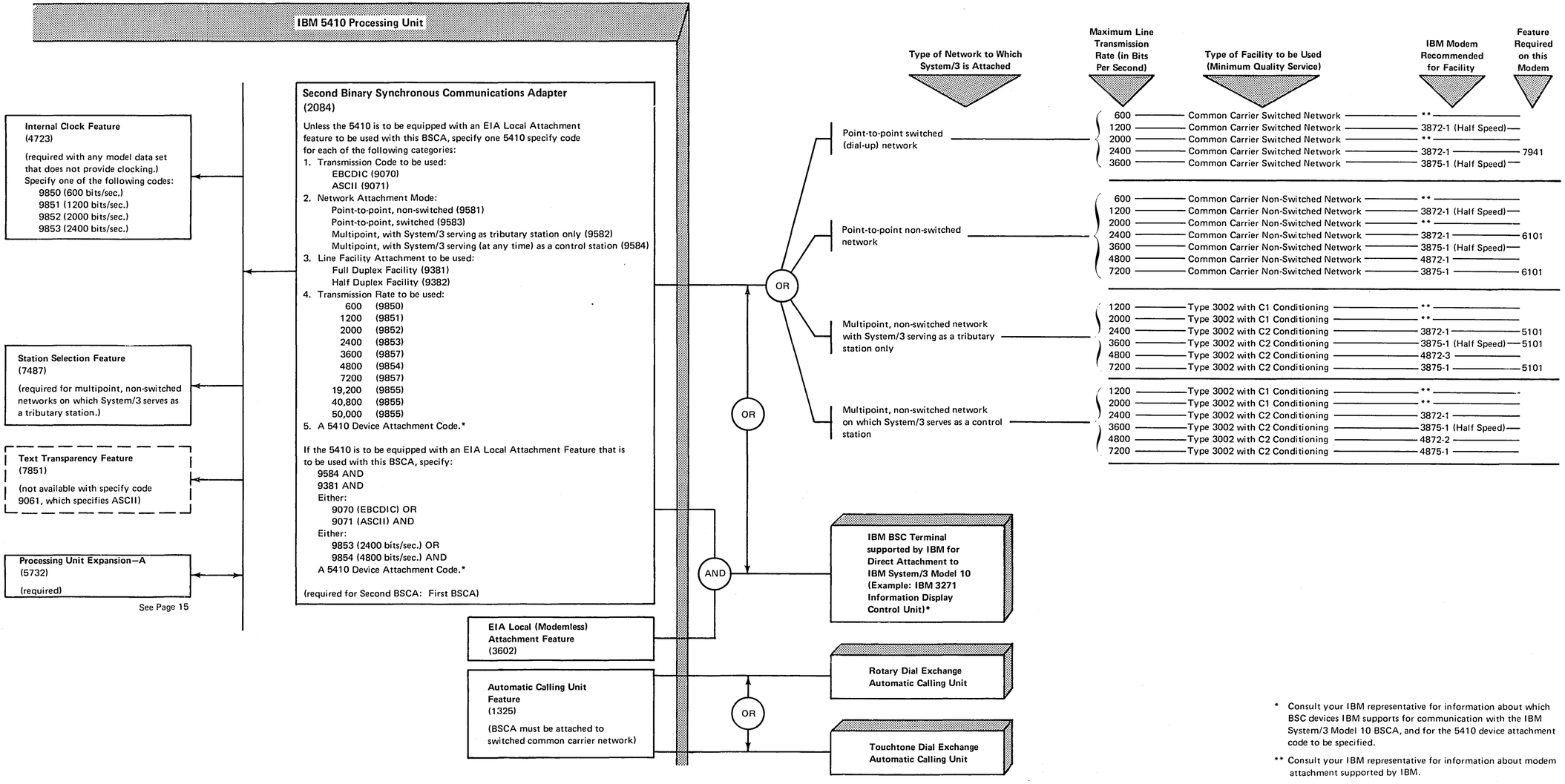
BSCA (BINARY SYNCHRONOUS COMMUNICATIONS ADAPTER FUNCTIONS FOR USA INSTALLATIONS



* Consult your IBM representative for information about which BSC devices IBM supports for communication with the IBM System/3 Model 10 BSCA, and for the 5410 device attachment code to be specified.

** Consult your IBM representative for information about modem attachment supported by IBM.

SECOND BSCA (BINARY SYNCHRONOUS COMMUNICATIONS ADAPTER) FUNCTIONS FOR USA INSTALLATIONS



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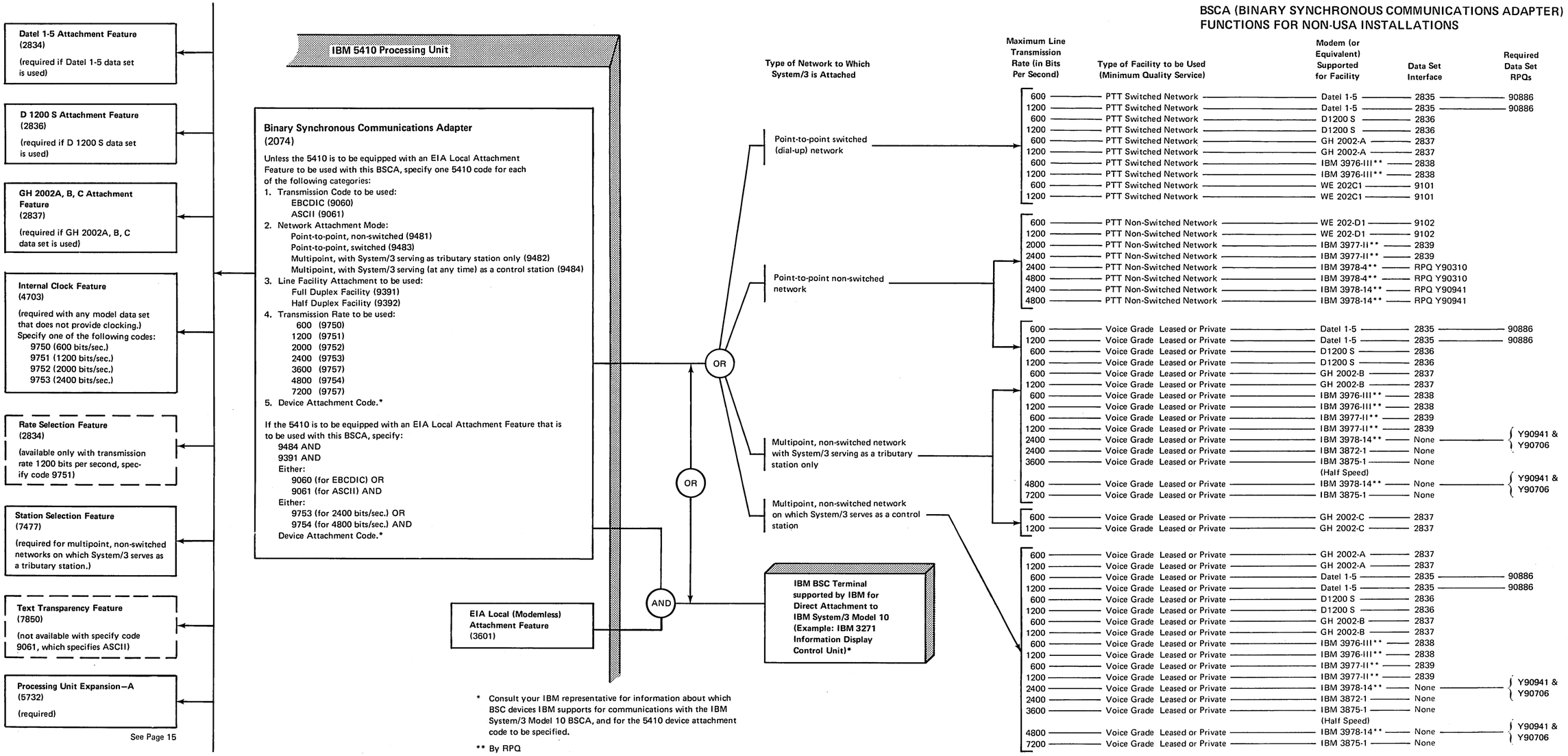
BSCA (BINARY SYNCHRONOUS COMMUNICATIONS ADAPTER) FUNCTIONS FOR NON-USA INSTALLATIONS



* Consult your IBM representative for information about which BSC devices IBM supports for communications with the IBM System/3 Model 10 BSCA, and for the 5410 device attachment code to be specified.

** By RPQ

SECOND BSCA (BINARY SYNCHRONOUS COMMUNICATIONS ADAPTER) FUNCTIONS FOR NON-USA INSTALLATIONS

Datel 1-5 Attachment Feature
(2854)

(required if Datel 1-5 data set is used)

D 1200 S Attachment Feature
(2856)

(required if D 1200 S data set is used)

GH 2002A, B, C Attachment Feature
(2857)

(required if GH 2002A, B, C data set is used)

Internal Clock Feature
(4723)

(required with any model data set that does not provide clocking.)
Specify one of the following codes:
- 9850 (600 bits/sec.)
- 9851 (1200 bits/sec.)
- 9852 (2000 bits/sec.)
- 9853 (2400 bits/sec.)

Rate Selection Feature
(2854)

(available only with transmission rate 1200 bits per second, specify code 9851)

Station Selection Feature
(7487)

(required for multipoint, non-switched networks on which System/3 serves as a tributary station.)

Text Transparency Feature
(7851)

(not available with specify code 9071, which specifies ASCII)

Processing Unit Expansion—A
(5732)

(required)

See Page 15

IBM 5410 Processing Unit

Second Binary Synchronous Communications Adapter
(2084)

Unless the 5410 is to be equipped with an EIA Local Attachment Feature to be used with this BSCA, specify one 5410 code for each of the following categories:

1. Transmission Code to be used:
   - EBCDIC (9070)
   - ASCII (9071)
2. Network Attachment Mode:
   - Point-to-point, non-switched (9581)
   - Point-to-point, switched (9583)
   - Multipoint, with System/3 serving as tributary station only (9582)
   - Multipoint, with System/3 serving (at any time) as a control station (9584)
3. Line Facility Attachment to be used:
   - Full Duplex Facility (9381)
   - Half Duplex Facility (9382)
4. Transmission Rate to be used:
   - 600 (9850)
   - 1200 (9851)
   - 2000 (9852)
   - 2400 (9853)
   - 3600 (9857)
   - 4800 (9854)
   - 7200 (9857)
5. Device Attachment Code.*

If the 5410 is to be equipped with an EIA Local Attachment Feature that is to be used with this BSCA, specify:
- 9584 AND
- 9381 AND
- Either:
  - 9070 (for EBCDIC) OR
  - 9071 (for ASCII) AND
- Either:
  - 9853 (for 2400 bits/sec.) OR
  - 9854 (for 4800 bits/sec.) AND
- Device Attachment Code.*

(required for Second BSCA: First BSCA)

OR

OR

AND

EIA Local (Modemless) Attachment Feature
(3602)

IBM BSC Terminal supported by IBM for Direct Attachment to IBM System/3 Model 10 (Example: IBM 3271 Information Display Control Unit)*

* Consult your IBM representative for information about which BSC devices IBM supports for communication with the IBM System/3 Model 10 BSCA, and for the 5410 device attachment code to be specified.

** By RPQ

Type of Network to Which System/3 is Attached	Maximum Line Transmission Rate (in Bits Per Second)	Type of Facility to be Used (Minimum Quality Service)	Modem (or Equivalent) Supported for Facility	Data Set Interface	Required Data Set RPQs
Point-to-point switched (dial-up) network	600	PTT Switched Network	Datel 1-5	2835	90886
	1200	PTT Switched Network	Datel 1-5	2835	90886
	600	PTT Switched Network	D1200 S	2836	
	1200	PTT Switched Network	D1200 S	2836	
	600	PTT Switched Network	GH 2002-A	2837	
	1200	PTT Switched Network	GH 2002-A	2837	
	600	PTT Switched Network	IBM 3976-III**	2838	
	1200	PTT Switched Network	IBM 3976-III**	2838	
	600	PTT Switched Network	WE 202C1	9101	
	1200	PTT Switched Network	WE 202C1	9101	
Point-to-point non-switched network	600	PTT Non-Switched Network	WE 202-D1	9102	
	1200	PTT Non-Switched Network	WE 202-D1	9102	
	2000	PTT Non-Switched Network	IBM 3977-II**	2839	
	2400	PTT Non-Switched Network	IBM 3977-II**	2839	
	2400	PTT Non-Switched Network	IBM 3978-4**	RPQ Y90310	
	4800	PTT Non-Switched Network	IBM 3978-4**	RPQ Y90310	
	2400	PTT Non-Switched Network	IBM 3978-14**	RPQ Y90941	
	4800	PTT Non-Switched Network	IBM 3978-14**	RPQ Y90941	
Multipoint, non-switched network with System/3 serving as a tributary station only.	600	Voice Grade Leased or Private	Datel 1-5	2835	90886
	1200	Voice Grade Leased or Private	Datel 1-5	2835	90886
	600	Voice Grade Leased or Private	D1200 S	2836	
	1200	Voice Grade Leased or Private	D1200 S	2836	
	600	Voice Grade Leased or Private	GH 2002-B	2837	
	1200	Voice Grade Leased or Private	GH 2002-B	2837	
	600	Voice Grade Leased or Private	IBM 3976-III**	2838	
	1200	Voice Grade Leased or Private	IBM 3976-III**	2838	
	600	Voice Grade Leased or Private	IBM 3977-II**	2839	
	1200	Voice Grade Leased or Private	IBM 3977-II**	2839	
	2400	Voice Grade Leased or Private	IBM 3978-14**	None	Y90941 & Y90796
	2400	Voice Grade Leased or Private	IBM 3872-1		
	3600	Voice Grade Leased or Private	IBM 3875-1		
	4800	Voice Grade Leased or Private	IBM 3978-14** (Half Speed)	None	Y90941 & Y90706
	7200	Voice Grade Leased or Private	IBM 3875-1	None	
Multipoint, non-switched network on which System/3 serves as a control station.	600	Voice Grade Leased or Private	GH 2002-C	2837	
	1200	Voice Grade Leased or Private	GH 2002-C	2837	
	600	Voice Grade Leased or Private	GH 2002-A	2837	
	1200	Voice Grade Leased or Private	GH 2002-A	2837	
	600	Voice Grade Leased or Private	Datel 1-5	2835	
	1200	Voice Grade Leased or Private	Datel 1-5	2835	
	600	Voice Grade Leased or Private	D1200 S	2836	
	1200	Voice Grade Leased or Private	D1200 S	2836	
	600	Voice Grade Leased or Private	GH 2002-B	2837	
	1200	Voice Grade Leased or Private	GH 2002-B	2837	
	600	Voice Grade Leased or Private	IBM 3976-III**	2838	
	1200	Voice Grade Leased or Private	IBM 3976-III**	2838	
	600	Voice Grade Leased or Private	IBM 3977-II**	2839	
	1200	Voice Grade Leased or Private	IBM 3977-II**	2839	
	2400	Voice Grade Leased or Private	IBM 3978-14**	None	Y90941 & Y90706
	2400	Voice Grade Leased or Private	IBM 3872-1	None	
	3600	Voice Grade Leased or Private	IBM 3875-1	None	
	4800	Voice Grade Leased or Private	IBM 3978-14** (Half Speed)	None	Y90941 & Y90706
	7200	Voice Grade Leased or Private	IBM 3875-1	None	

LINE ASSIGNMENT CHARTS

Line positions are functionally related by pairs, which are called Line Pairs.

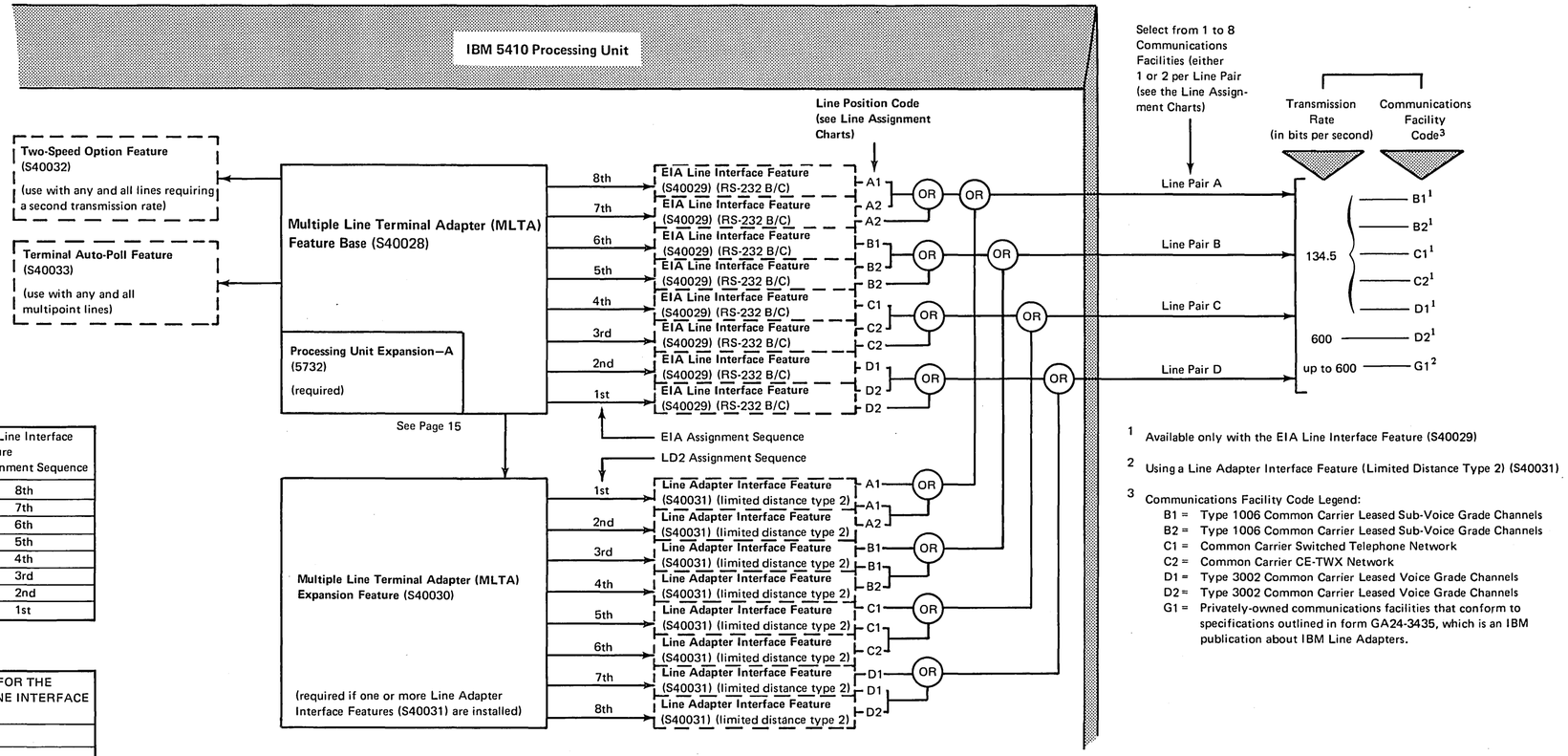
Line Pair A consists of Line Positions A1 and A2
Line Pair B consists of Line Positions B1 and B2
Line Pair C consists of Line Positions C1 and C2
Line Pair D consists of Line Positions D1 and D2.

Either one or two line positions in a line pair may be used. If the EIA Line Interface Feature is required for one line position in a line pair, the other line position in that pair must also use an EIA Line Interface Feature. If the Line Adapter Interface Feature is used for one line position in a line pair, then the other line position in that pair must also use the Line Adapter Interface Feature. In other words, interface feature types cannot be intermixed for any one line pair.

Communications facilities are assigned line positions sequentially, as shown in the following chart. Notice that lines requiring the EIA Line Interface feature are assigned to line positions in reverse sequence (from D2 to A1), while lines requiring the Line Adapter Interface feature fill line positions in normal sequence (from A1 to D2).

Line Pair Used	Line Position Used	MLTA Line Number	Line Adapter Interface Feature Assignment Sequence	EIA Line Interface Feature Assignment Sequence
A	A1	1	1st	8th
	A2	2	2nd	7th
B	B1	3	3rd	6th
	B2	4	4th	5th
C	C1	5	5th	4th
	C2	6	6th	3rd
D	D1	7	7th	2nd
	D2	8	8th	1st

LINES USED WITH ONE TYPE OF LINE INTERFACE FEATURE	LINES AVAILABLE FOR THE OTHER TYPE OF LINE INTERFACE FEATURE
None	Up to 8
1	Up to 6
2	Up to 6
3	Up to 4
4	Up to 4
5	1 or 2
6	1 or 2
7	None
8	None



1 Available only with the EIA Line Interface Feature (S40029)

2 Using a Line Adapter Interface Feature (Limited Distance Type 2) (S40031)

3 Communications Facility Code Legend:
- B1 = Type 1006 Common Carrier Leased Sub-Voice Grade Channels
- B2 = Type 1006 Common Carrier Leased Sub-Voice Grade Channels
- C1 = Common Carrier Switched Telephone Network
- C2 = Common Carrier CE-TWX Network
- D1 = Type 3002 Common Carrier Leased Voice Grade Channels
- D2 = Type 3002 Common Carrier Leased Voice Grade Channels
- G1 = Privately-owned communications facilities that conform to specifications outlined in form GA24-3435, which is an IBM publication about IBM Line Adapters.

LINE ASSIGNMENT CHARTS

Line positions are functionally related by pairs, which are called Line Pairs.

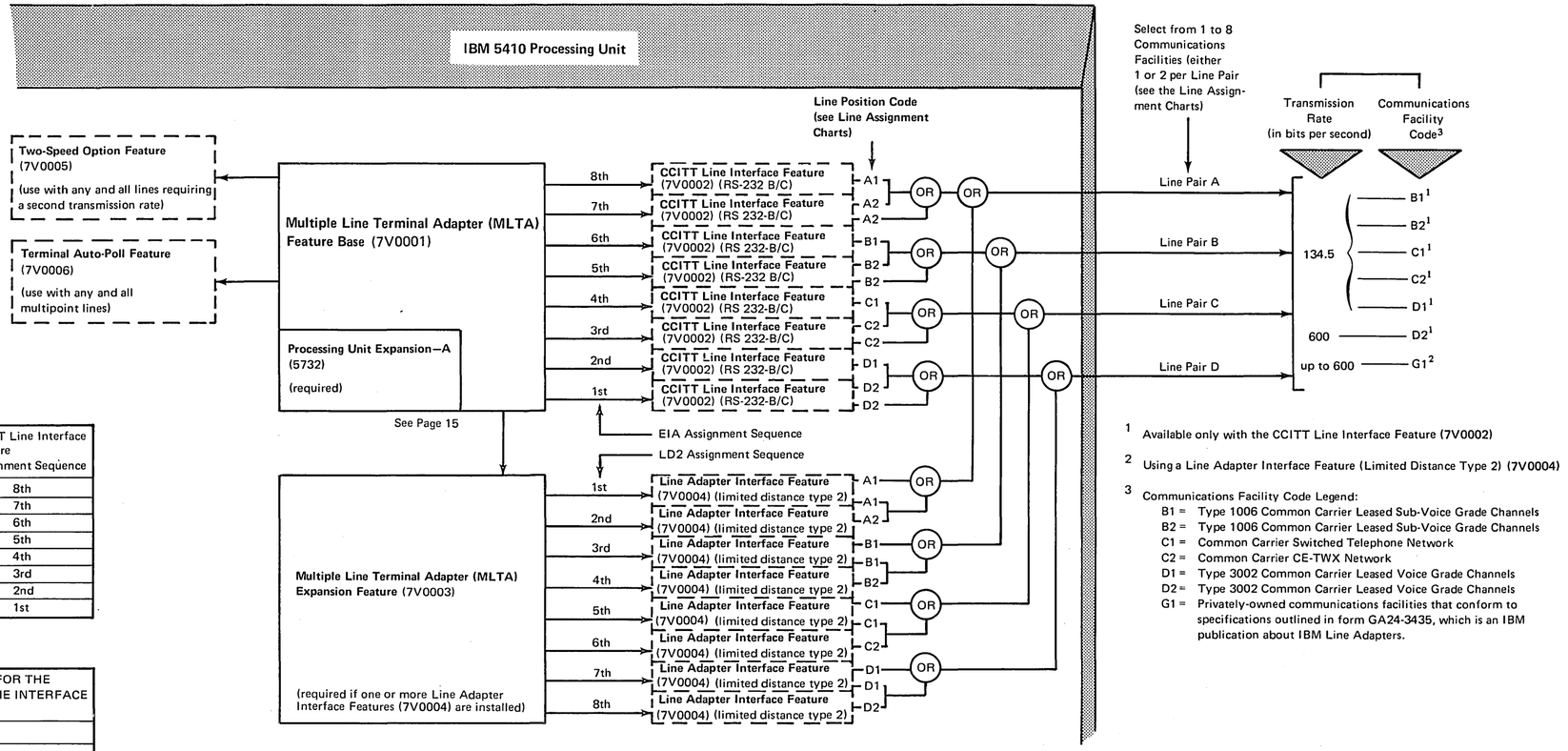
Line Pair A consists of Line Positions A1 and A2
Line Pair B consists of Line Positions B1 and B2
Line Pair C consists of Line Positions C1 and C2
Line Pair D consists of Line Positions D1 and D2.

Either one or two line positions in a line pair may be used. If the CCITT Line Interface Feature is required for one line position in a line pair, the other line position in that pair must also use a CCITT Line Interface Feature. If the Line Adapter Interface Feature is used for one line position in a line pair, then the other line position in that pair must also use the Line Adapter Interface Feature. In other words, interface feature types cannot be intermixed for any one line pair.

Communications facilities are assigned line positions sequentially, as shown in the following chart. Notice that lines requiring the CCITT Line Interface feature are assigned to line positions in reverse sequence (from D2 to A1), while lines using the Line Adapter Interface Feature fill line positions in normal sequence (from A1 to D2).

Line Pair Used	Line Position Used	MLTA Line Number	Line Adapter Interface Feature Assignment Sequence	CCITT Line Interface Feature Assignment Sequence
A	A1	1	1st	8th
	A2	2	2nd	7th
B	B1	3	3rd	6th
	B2	4	4th	5th
C	C1	5	5th	4th
	C2	6	6th	3rd
D	D1	7	7th	2nd
	D2	8	8th	1st

LINES USED WITH ONE TYPE OF LINE INTERFACE FEATURE	LINES AVAILABLE FOR THE OTHER TYPE OF LINE INTERFACE FEATURE
None	Up to 8
1	Up to 6
2	Up to 6
3	Up to 4
4	Up to 4
5	1 or 2
6	1 or 2
7	None
8	None



1 Available only with the CCITT Line Interface Feature (7V0002)

2 Using a Line Adapter Interface Feature (Limited Distance Type 2) (7V0004)

3 Communications Facility Code Legend:
- B1 = Type 1006 Common Carrier Leased Sub-Voice Grade Channels
- B2 = Type 1006 Common Carrier Leased Sub-Voice Grade Channels
- C1 = Common Carrier Switched Telephone Network
- C2 = Common Carrier CE-TWX Network
- D1 = Type 3002 Common Carrier Leased Voice Grade Channels
- D2 = Type 3002 Common Carrier Leased Voice Grade Channels
- G1 = Privately-owned communications facilities that conform to specifications outlined in form GA24-3435, which is an IBM publication about IBM Line Adapters.

Use this chart, after you have selected the I/O devices, special features, and RPQ items that will configurate your system, to determine what power expansion features, if any, your system requires. The power expansion features are:

5732 – Processing Unit Expansion A
5733 – Processing Unit Expansion B
5734 – Processing Unit Expansion C
5735 – Processing Unit Expansion D
5501 – Power Supply Expansion

System Configuration Includes:						Processing Unit Expansion Feature Required on 5410			
1017 or 1442 RPQ	5445	3411	BSCA	Second BSCA	MLTA RPQ	A (5732)	B (5733)	C (5734)	D (5735)
X						X			
X	X					X			
X	X	X				X			
	X					X			
	X	X				X			
X		X				X			
		X				X			
			X			X			
X			X			X			
	X		X			X	X		
		X	X			X			
X	X		X			X	X		
		X	X			X			
X		X	X			X	X		
	X	X	X			X	X		
X	X	X	X			X	X		
X					X	X			
					X	X	X		
	X				X	X	X		
		X			X	X	X		
X	X				X	X	X		
X		X			X	X	X		
	X	X			X	X	X		
X		X			X	X	X		
	X				X	X	X		
		X			X	X	X		
X			X		X	X	X		
	X		X		X	X	X		
		X	X		X	X	X		
X	X		X		X	X	X	X	
X		X	X		X	X	X	X	
	X	X	X		X	X	X	X	
X	X	X	X			X			
			X	X		X	X		
	X		X	X		X			
X	X	X	X	X		X	X		
X		X	X	X		X	X		
	X	X	X	X		X	X		
X			X	X	X	X	X	X	
	X		X	X	X	X	X	X	X
		X	X	X	X	X	X		
X	X		X	X	X	X	X	X	X
X		X	X	X	X	X	X	X	
	X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X	X

If your configuration of devices and features includes an MLTA RPQ and either a 5444 Model A-1 or a 5444 Model A2, the 5410 must also be equipped with the power supply expansion feature (5501). If RPQs other than the MLTA, 1442, and 1017 are included in the configuration, your IBM sales representative can contact the Regional Special Product Marketing Department for special power configuration requirements.

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