IBM System/370 Integrated Communications Adapters (ICA) for Models 115, 125, 135, 135-3, and 138

MANAGEMENT SUMMARY

For those System 370 installations where data communications requirements are very limited, the Integrated Communication Adapter (ICA) is an economical alternative to the IBM 3704 or 3705 Communications Controllers.

The maximum number of communications lines which can be connected is 12 for the Model 115, 16 for the Model 125, and eight for the Models 135 and 138. The ICA, and all its optional features is housed within the cabinetry of the System/370, except that in the case of the Models 135 and 138, the modems are located externally.

The cost and space saving advantages of the ICA are somewhat offset in the case of the Models 115 and 125 by rigid throughput restrictions and configuration limitations. The number of lines that can be connected is also dependent upon feature selection such as Autocall, and Autopoll, in the case of those models.

The ICA for Models 135 and 138 are not so restricted. The eight lines may operate simultaneously in any combination of speeds, limited only by the type of line adapter selected by the user.

Models 115 and 125 permit maximum transmission speeds of 1200 bps asynchronously and 7200 bps synchronously. They will also accommodate one high speed synchronous line transmitting at 50,000 bps.

Models 135 and 138 permit maximum transmission speeds of 2400 bps asynchronously and 7200 bps synchronously. There is no provision for a higher speed line.□

Optional internal features for providing System/370 processors with communications capability. A different number of lines can be accommodated by each processor, with a maximum of 16 for the Model 125, 8 for the Model 115 and 8 for the 135 and 138, thus restricting usage to relatively small networks.

Transmission speeds can vary from 45.5 to 600 bps asynchronously, and up to 7200 bps synchronously depending upon the model and configuration.

Pricing on the ICA and related features varies depending upon which processor is the host.

CHARACTERISTICS

VENDOR: International Business Machines Corporation, Data Processing Division, 1133 Westchester Avenue, White Plains, New York 10604. Telephone (914) 696-1900.

DATE OF ANNOUNCEMENT: System/370 Model 115-0—March 1973; Model 115-2—November 1975; System/370 Model 125-0—October 1972; Model 125-2—November 1975; System/370 Model 135—March 1971; Model 135-3—June 1976; Model 138—June 1976.

DATE OF FIRST DELIVERY: System/370 Model 115-0—1st quarter 1974; Model 115-2—August 1976; System/370 Model 125-0—October 1972; Model 125-2—February 1976; System/370 Model 135—May 1972; Model 135-3—February 1977; Model 138—November 1976.

NUMBER DELIVERED TO DATE: Information not available.

SERVICED BY: IBM.

CONFIGURATION

S/370 Models 115 and 125

The ICA can provide for the physical connection of up to 12 communications lines in various combinations of asynchronous and synchronous (BSC only) modes to interface to an IBM System/370 Model 115-0 or Model 115-2. (Up to 16 lines for the Model 125.) The ICA can be equipped with attachments for automatic call origination and/or answering. Internal modems or Line Adapters can be incorporated to service lines running at up to 1200 bps, asynchronous or synchronous. Synchronous lines running above 1200 bps must use external modems that provide clocking. "Telegraph" loops operating at 45.5, 56.9, 74.2 or 75 bps can also be connected.

The ICA provides the basic control storage and common circuits for the connection of an Asynchronous Line Group (ALG), a Synchronous Line Group (SLG), and a special Synchronous Line High Speed (SLHS) attachment, which permits the connection of one point-to-point 50,000 bps line. (See the accompanying diagram for feature availability and restrictions.) The ALG and SLG can be used together, but this requires an expansion base (feature #3860). The ALG and SLHS are mutually exclusive. The SLHS and SLG can be commonly housed, but when the 50,000 bps line is operating, no line in the SLG can be active.

The ALG can be configured to allow the connection of *one* of the following communications disciplines:

- **Up to four (for the Model 115) or eight (for the Model 125) current loop telegraph circuits (83B, WU 115, or equal) operating at 45.5, 56.9, 74.2, or 75 bps (TLP feature #7881); or**

REFERENCE EDITION. This is a mature product line, and no significant further developments are anticipated. Because of its importance, coverage is being continued, but no future update is planned.

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- Up to four asynchronous 600 bps private lines. (For use with IBM 3767 teleprinters *only*, these four lines can operate at 300 bps over the public telephone network, or at 300, 600, or 1200 bps over private lines.) (AL feature #1231); or

- Up to four (for the Model 115) or eight (for the Model 125) lines operating at 110 or 134.5 bps over either the public telephone network or private lines (ALP feature #1241).

Within the selected ALG option, all lines must be operated at the same speed and under the same type of line control.

The SLG can be configured to allow the operation of four of the following BSC transmission facilities in any combination:

- 600 or 1200 bps over the public network or private lines (SLC feature #714X);

- Up to 4800 bps over the dial network or private lines (SL feature #715X);

- Up to 7200 bps over private lines with fallback to 3600 bps over the dial network for backup (SL feature #715X).

Internal modems or Line Adapters (LA's) can be provided for all EIA lines operating at up to 1200 bps. See the accompanying configuration diagram for available Line Adapters. When internal IBM Line Adapters are used, a Line Adapter Base (LAB) is required. An LAB2 must be used when automatic calling/answering functions are provided for the Line Adapters. The LAB2 can house up to four asynchronous LA's and two synchronous LA's. For all other applications, the LAB3 may be used, which accommodates up to eight asynchronous and four (for Model 115), or twelve (for Model 125) synchronous Line Adapters.

The Automatic Call Adapter (ACA) can be used with either asynchronous lines in an ALG or synchronous lines in the SLG. Up to two ACA's are allowed in each group for an ICA maximum of four (for Model 115), or six (for Model 125). When used, the ACA replaces one line group position. All Line Adapters must be installed in sequence. In the ALG, the slot numbers are A1 through A4 (ALG1) or A5 through A8 (ALG2); in the SLG, the slot numbers are S1 through S4. When an ACA is installed in either group, the highest numbered slot in that group cannot be used. The ACA using slot 4 provides the automatic calling function for the Line Adapter in slot 1. (In ALG2, slot 8 provides the function for the LA in slot 5.) If two ACA's are installed in the same group, slot 3 is precluded from use and the calling function utilizing slot 3 supports the Line Adapter in slot 2. (In ALG2, slot A7 precluded and supports slot A6). The ACA's and LA's must be assigned in order; slot combination 4/1 then 3/2 (i.e., the LA in slot 2 cannot have autocall unless the LA in slot 1 is similarly configured). (In ALG2, slot combination 8/5 then 7/6.) When the ACA is used in conjunction with the ALP feature, each ACA takes the place of one line pair (two lines). In all other cases, the trade-off is one ACA per line.

S/370 Models 135, 135-3 and 138

A maximum of eight communications lines, in various speed and protocol combinations, can be serviced by the ICA. Four different types of adapters are available for this purpose, three asynchronous types and one synchronous (BSC) type. The adapters differ in the transmission mode used, the kind of terminal they serve, and the speed at which they operate; however, the ICA permits any combination of adapters to operate simultaneously. The adapter types available are shown in the accompanying configuration diagram. Additional features may be required to implement the various combinations and methods of operation desired. With the exception of the autocall feature, all hardware is supplied with the Additional Line features.

A portion of control storage is required for each feature to be implemented. One block of storage per feature is required regardless of the number of lines utilizing the feature. The control storage requirements per feature are:

ICA base unit	2100 bytes
Adapter Base Type I:	
Terminal Adapter Type I, Model 11	1700
Telegraph Adapter Type II	1400
Both Adapters	1900
Terminal Adapter Type III	2100
Synchronous Data Adapter	3700
Autocall feature	440

TRANSMISSION SPECIFICATIONS

Through the appropriate features, the ICA can interface switched lines, including Western Union TWX and the public telephone network (DDD), leased subvoice-grade lines (ATT/WU 1002, 1005, 1006, or equivalent), leased voice-grade lines (ATT/WU 3002 or equivalent), and leased wide band lines (ATT/WU 5000 series, 8000 series, or equivalent). All leased line facilities, except a wide band facility, can be operated point-to-point or multipoint; or wide band facility can be operated point-to-point only.

In the case of the 115 and 125 not all physical combinations permitted can operate simultaneously. In the case of the 135 and 138, they can.

SOFTWARE

All programming support for the System/370 Model 115 and Model 125 ICA units are under the virtual storage operating system, DOS/VS, which supports QTAM and BTAM telecommunications access methods. VTAM is not supported for the Model 115 and Model 125 ICA. In addition, remote job entry is supported by the RJE feature of POWER/VS, a standard part of DOS/VS.

The Model 135/138 ICA is supported under the virtual storage operating systems DOS/VS or OS/VS1. Under DOS/VS, QTAM and BTAM telecommunications access methods are supported. Under OS/VS1, TCAM and BTAM are supported. In addition, remote job entry is supported under both operating systems. For DOS/VS, it is supported under the RJE feature of POWER/VS, a spooling facility. For OS/VS1, RJE is supported through the Remote Entry Services (RES) feature of the Job Entry Subsystem (JES) spooling facility.

In general, BSC terminals are supported for remote job entry. CICS, an IBM communications monitor program product is available for operation under either operating system; see Report C15-491-101 behind the Software tab in this volume. BTAM and TCAM both support essentially all IBM asynchronous and synchronous terminals. (SDLC is not supported for the ICA.)

PRICING

The ICA and related features are available as options for the basic System/370 Models 115, 125, 135, 135-3, and 138 processors. They can be acquired by purchase, month-to-month rental, or under a four-year lease contract. A lease can be extended indefinitely in increments of one year, or one time for less than a year. IBM's present pricing policy on the ICA allows for lease extensions at a maximum increase of five percent of the monthly charges (non-compounded, five percent upper limit) for equipment in place. Penalty charges for early termination of a lease (including

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feature downgrades or removals) are assessed as the lower of either 6 months charges or 25 percent of the remaining value of the lease.

The ICA monthly rental plan covers equipment and maintenance and entitles the customer to 176 hours of usage per month. Time used in excess of that amount is charged at a rate of 10 percent of the basic hourly charge per hour of overtime usage. This plan can be cancelled on 30-days' notice.

The lease plan provides for unlimited usage and allows purchase credits for basic payments made to be accrued up to a maximum of 55 percent, depending on the model. The lease and rental plans include prime shift maintenance; a separate agreement can be arranged for purchased equipment. The ICA is covered under Category A maintenance, which includes coverage for any consecutive nine-hour period between 7 AM and 6 PM, Monday through Friday (prime-shift maintenance). Extended maintenance coverage is available for up to 24 hours a day, 7 days a week. The monthly maintenance charge shown in the accompanying price list covers prime-shift maintenance for purchased equipment and serves as a basis for calculating extended charges for rented or leased equipment. The premiums for extended maintenance are expressed as percentages of the basic maintenance charge given in the price list and are as follows:

Consecutive Hours	9*	12	16	20	24
Monday-Friday	10%	14%	18%	22%	26%
Saturday	4%	5%	7%	8%	9%
Sunday	5%	7%	9%	11%	12%

*Outside prime shift.

			Monthly Charges*			
			Rental	4-Yr. Lease	Purchase	Monthly Maint.
For 370 Model 115						
#4640	ICA	Integrated Communications Adapter	$251	$228	$8,460	$25.50
#4641	ICAE	Integrated Communications Adapter Extension	92	84	3,105	1.50
#1201	ALG	Asynchronous Line Group	47	43	1,660	3.00
#1231	AL	Asynchronous Line, Medium Speed	47	43	1,660	2.50
#1241	ALP	Asynchronous Line Pair, Low Speed	66	60	2,255	3.50
#7881	TLP	Telegraph Line Pair	66	60	2,255	9.00
#7100	SLG	Synchronous Line Group	47	43	1,660	3.00
#714X	SLC	Synchronous Line, Medium Speed with clock	66	60	2,255	3.50
#715X	SL	Synchronous Line, Medium Speed	54	49	1,870	3.00
#7121	SLHS	Synchronous Line, High Speed	121	110	4,125	8.50
#129X	ACA	Auto Call Adapter, per line	23	21	808	1.50
#4792	LAB2	Line Adapter Base 2	30	27	1,020	2.00
#4793	LAB3	Line Adapter Base 3	30	27	1,020	2.00
#3860	EXP	Expansion Base	50	45	1,710	1.00
#4743	LA	IBM Leased Line Adapter, per line	15	14	417	2.50
#4781	LA	1200 bps Line Adapter, non-switched	17	15	525	2.50
#4782	LA	1200 bps Line Adapter, switched, autoanswer	23	21	700	3.00
#4791	LA	1200 bps Line Adapter, switched, autoanswer, and auto-call (requires #129X)	78	71	1,935	11.50
For 370 Model 125						
#4640	ICA	Integrated Communications Adapter	257	234	8,585	27.50
#4641	ICAE	Integrated Communications Adapter Extension	94	85	3,160	1.50
#1201/2	ALG	Asynchronous Line Group	47	43	1,685	3.50
#1231/2	AL	Asynchronous Line, Medium Speed	47	43	1,685	3.00
#1241/2	ALP	Asynchronous Line Pair, Low Speed	68	62	2,295	4.00
#7881/2	TLP	Telegraph Line Pair	68	62	2,295	9.50
#7100	SLG	Synchronous Line Group	47	43	1,685	3.50
#714X	SLC	Synchronous Line, Medium Speed with clock	—	—	2,295	4.00
#715X	SL	Synchronous Line, Medium Speed	—	—	1,905	3.50
#7121	SLHS	Synchronous Line, High Speed	124	113	4,200	9.00
#7131/2	SLLL	Synchronous Line, Low Load	124	113	4,200	9.00
#129X	ACA	Auto Call Adapter, per line	23	21	824	1.50
#4792	LAB2	Line Adapter Base 2	30	27	1,035	2.00
#4793	LAB3	Line Adapter Base 3	30	27	1,035	2.00
	LA	IBM Leased Line Adapter, per line	15	14	424	3.00
#4781	LA	1200 bps Line Adapter, non-switched	17	15	535	3.00
#4782	LA	1200 bps Line Adapter, switched, autoanswer	23	21	714	3.50
#4791	LA	1200 bps Line Adapter, switched, autoanswer and auto-call (requires 129X)	79	72	1,970	12.00

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		Monthly Charges*			
		Rental	4-Yr. Lease	Purchase	Monthly Maint.
For 370 Models 135, 135-3, and 138					
#4640	Integrated Communications Adapter	271	246	9,470	22.50
	Additional Line:				
#4722	Second	51	46	1,900	4.50
#4723	Third	105	95	3,815	9.00
#4724	Fourth	51	46	1,900	4.50
#4725	Fifth	161	146	5,690	14.50
#4726	Sixth	51	46	1,900	4.50
#4727	Seventh	51	46	1,900	4.50
#4728	Eighth	51	46	1,900	4.50
#1290	Autocall, per line	62	56	2,180	1.00

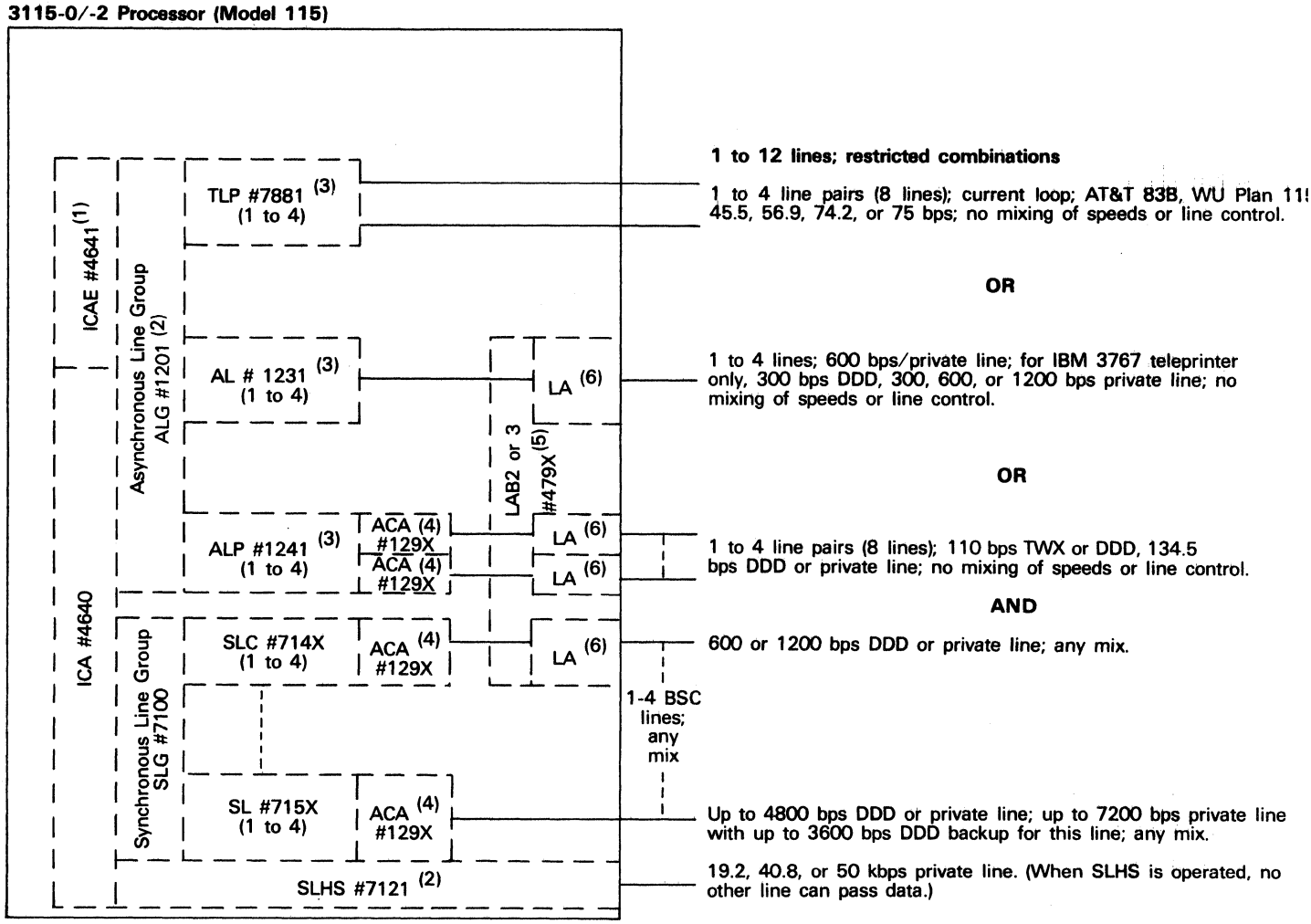
*Includes maintenance.■

IBM System/370 Model 115
Integrated Communications Adapter (ICA)

Update

Configuration

3115-0/-2 Processor (Model 115)



Maximum configurations are:
- 1 ALG equipped with 4 TLP, or 4 AL, or 4 ALP (no mixing) plus 1 SLG; or
- 1 SLG equipped with 4 SLC or 4 SL (any mix) plus 1 SLHS.

(1) ICAE #4641 required only if there is a mix of asynchronous and synchronous lines.

(2) ALG #1201 and SLHS # 7121 are mutually exclusive. SLHS cannot be operated concurrently with any other ICA communications line.
(3) TLP #7881, AL #1231, and ALP #1241 are mutually exclusive.
(4) Each ACA (Automatic Call Adapter) replaces one ALP, SL or SLC; an ACA is required for each line; maximum 2 ACA's per ALG or SLG, 4 total per ICA.
(5) Line Adapter Bases (LAB's) are required only when using IBM Line Adapters (LA's). LAB2, #4792, is used with Line Adapters operating with automatic calling/answering features and accommodates up to 4 LA's in the ALG plus up to 2 LA's in the SLG. LAB3, #4793, accommodates up to 8 LA's in the ALG plus up to 4 LA's in the SLG. On CPU Model 115-2, either LAB requires Expansion Base #3860 unless RPQ's 7B0141 and 7B0132 are installed.
(6) External unclocked modems can be used in place of internal LA's. Available LA's include:
- #4743 Leased Line Adapter; for 134.5 or 600 bps private line with AL #1231 or ALP #1241.
- #4781 1200 bps Line Adapter; for private line with AL #1231 or SLC #714X.
- #4782 1200 bps Line Adapter; for DDD with AL #1231 or SLC #714X; includes autoanswer.
- #4791 same as #4782, but equipped to operate with ACA and incorporates AT&T 801 equivalent function.

IBM System/370 Model 115
Integrated Communications Adapter (ICA)

The lease plan provides for unlimited usage and allows purchase credits for basic payments made to be accrued to a maximum of 55 percent of the total purchase price.

The lease and rental plans include prime-shift maintenance; a separate agreement can be arranged for purchased equipment. Prime-shift maintenance provides for coverage for any consecutive nine-hour period between 7 AM and 6 PM, Monday through Friday. Extended maintenance coverage is available up to 24 hours a day, 7 days a week under IBM Category A. The Monthly Maintenance Charge shown in the accompanying price list covers prime-shift maintenance for purchased equipment and serves as a basis for calculating extended charges for rented or leased equipment. The premiums for extended maintenance are expressed in the following table as percentages of the basic maintenance charge given in the price list.

Consecutive Hours	9*	12	16	20	24
Monday-Friday	10%	14%	18%	22%	26%
Saturday	4%	5%	7%	8%	9%
Sunday	5%	7%	9%	11%	12%

***Outside prime shift.**

			Monthly Charges*			
			Rental	4-Yr Lease	Purchase	Monthly Maint.
#4640	ICA	Integrated Communications Adapter	$235	$214	$8,460	$25.50
#4641	ICAE	Integrated Communications Adapter Extension	87	79	3,105	1.50
#1201	ALG	Asynchronous Line Group	45	41	1,660	3.00
#1231	AL	Asynchronous Line, Medium Speed	45	41	1,660	2.50
#1241	ALP	Asynchronous Line Pair, Low Speed	63	57	2,255	3.50
#7881	TLP	Telegraph Line Pair	63	57	2,255	9.00
#7100	SLG	Synchronous Line Group	45	41	1,660	3.00
#714X	SLC	Synchronous Line, Medium Speed with clock	63	57	2,255	3.50
#715X	SL	Synchronous Line, Medium Speed	51	46	1,870	3.00
#7121	SLHS	Synchronous Line, High Speed	114	104	4,125	8.50
#129X	ACA	Auto Call Adapter, per line	22	20	808	1.50
#4792	LAB2	Line Adapter Base 2	29	26	1,020	2.00
#4793	LAB3	Line Adapter Base 3	29	26	1,020	2.00
#3860	EXP	Expansion Base	47	43	1,710	1.00
#4743	LA	IBM Leased Line Adapter, per line	15	14	417	2.50
#4781	LA	1200 bps Line Adapter, non-switched	16	15	525	2.50
#4782	LA	1200 bps Line Adapter, switched, autoanswer	22	20	700	3.00
#4791	LA	1200 bps Line Adapter, switched, autoanswer, and autocall (requires #129X)	74	67	1,935	11.50

*Includes monthly maintenance.■

IBM System/370 Model 115 Integrated Communications Adapter (ICA)

MANAGEMENT SUMMARY

For IBM System/370 Models 115-0 and 115-2, the Integrated Communications Adapter (ICA) provides a low-cost method of connecting a modest communications network. A maximum of 12 lines can be connected: 8 asynchronous and 4 synchronous (BSC only). The ICA can also be equipped with internal modems to support asynchronous or synchronous transmission at up to 1200 bps and automatic calling/answering features.

An additional advantage of the ICA is space conservation; the complete ICA, including all optional features and Line Adapters, is installed directly into the processor cabinet.

The cost and space-saving advantages are offset somewhat by a lack of flexibility in accommodating various terminal types and line speeds. All asynchronous lines must operate at the same speed and with the same line control. The synchronous lines, however, can operate with a mixture of terminal types and line speeds. The ICA can also support one 50,000 bps point-to-point synchronous line, but this is at the expense of all asynchronous communications because the two features are mutually exclusive. Also, although four medium speed synchronous lines (from 600 to 7200 bps) can be physically connected to the ICA along with the 50,000 bps line, simultaneous operation of all lines is not possible.

The ICA can accommodate asynchronous transmission at up to 1200 bps and synchronous transmission at up to 7200 bps (or the single 50,000 bps line). Although it is physically possible to connect up to 12 lines, it may not be possible to operate all 12 simultaneously because of line speeds and protocols. Some examples of concurrent operation that are allowed are:

- 8 asynchronous lines at 134.5 bps, plus 4 synchronous lines at 2400 bps; or
- 8 asynchronous lines at 110 bps, plus 2 synchronous lines at 7200 bps; or
- 4 asynchronous lines at 1200 bps, plus 3 synchronous lines at 4800 bps; or
- 1 line at 50,000 bps.

The number of lines that can be connected is also dependent upon feature selection, such as Autocall. Details concerning permissible configurations are contained in the Characteristics section of this report.□

Optional internal feature for connecting up to 12 asynchronous and synchronous communications lines to a System/370 Model 115.

Maximum operating speeds of 1200 bps asynchronous and 7200 bps synchronous can be achieved; one high speed line at 50,000 bps can also be accommodated. External or integrated modems can be used, and automatic calling and/or answering features can be implemented.

An ICA equipped to handle four asynchronous lines and four synchronous lines rents for about $750 per month, including maintenance. An ICA equipped to handle eight asynchronous and four synchronous lines, all equipped with internal modems, rents for approximately $1,050 per month, including maintenance.

CHARACTERISTICS

VENDOR: International Business Machines Corporation, Data Processing Division, 1133 Westchester Avenue, White Plains, New York 10604. Telephone (914) 696-1900.

DATE OF ANNOUNCEMENT: System/370 Model 115-0—March 1973; Model 115-2—November 1975.

DATE OF FIRST DELIVERY: System/370 Model 115-0—1st quarter 1974; Model 115-2—August 1976.

NUMBER DELIVERED TO DATE: Information not available.

SERVICED BY: IBM.

CONFIGURATION

The ICA can provide for the physical connection of up to 12 communications lines in various combinations of asynchronous and synchronous (BSC only) modes to interface to an IBM System/370 Model 115-0 or Model 115-2. The ICA can be equipped with attachments for automatic call origination and/or answering. Internal modems or Line Adapters can be incorporated to service lines running at up to 1200 bps, asynchronous or synchronous. Synchronous lines running above 1200 bps must use external modems that provide clocking. "Telegraph" loops operating at 45.5, 56.9, 74.2 or 75 bps can also be connected.

The ICA provides the basic control storage and common circuits for the connection of an Asynchronous Line Group (ALG), a Synchronous Line Group (SLG), and a special Synchronous Line High Speed (SLHS) attachment, which permits the connection of one point-to-point 50,000 bps line. (See the accompanying diagram for feature availability and restrictions.) The ALG and SLG can be used together, but this requires an expansion base (feature #3860). The ALG and SLHS are mutually exclusive. The SLHS and SLG can be commonly housed, but when the 50,000 bps line is operating, no line in the SLG can be active. ➤

IBM System/370 Model 115
Integrated Communications Adapter (ICA)

The ALG can be configured to allow the connection of *one* of the following communications disciplines:

- Up to eight current loop telegraph circuits (83B, WU 115, or equal) operating at 45.5, 56.9, 74.2, or 75 bps (TLP feature #7881); or
- Up to four asynchronous 600 bps private lines. (For use with IBM 3767 teleprinters *only,* these four lines can operate at 300 bps over the public telephone network, or at 300, 600, or 1200 bps over private lines.) (AL feature #1231); or
- Up to eight lines operating at 110 or 134.5 bps over either the public telephone network or private lines (ALP feature #1241).

Within the selected ALG option, all lines must be operated at the same speed and under the same type of line control.

The SLG can be configured to allow the operation of four of the following BSC transmission facilities in any combination:

- 600 or 1200 bps over the public network or private lines (SLC feature #714X);
- Up to 4800 bps over the dial network or private lines (SL feature #715X);
- Up to 7200 bps over private lines with fallback to 3600 bps over the dial network for backup (SL feature #715X).

Internal modems or Line Adapters (LA's) can be provided for all EIA lines operating at up to 1200 bps. See the accompanying configuration diagram for available Line Adapters. When internal IBM Line Adapters are used, a Line Adapter Base (LAB) is required. An LAB2 must be used when automatic calling/answering functions are provided for the Line Adapters. The LAB2 can house up to four asynchronous LA's and two synchronous LA's. For all other applications, the LAB3 may be used, which accommodates up to eight asynchronous and four synchronous Line Adapters.

The Automatic Call Adapter (ACA) can be used with either asynchronous lines in the ALG or synchronous lines in the SLG. Up to two ACA's are allowed in each group for an ICA total of four. When used, the ACA replaces one line group position. All Line Adapters must be installed in sequence. In the ALG, the slot numbers are A1 through A4; in the SLG, the slot numbers are S1 through S4. When an ACA is installed in either group, the number 4 slot in that group cannot be used. The ACA using slot 4 provides the automatic calling function for the Line Adapter in slot 1. If two ACA's are installed in the same group, slot 3 is precluded from use for a Line Adapter and the calling function utilizing slot 3 supports the Line Adapter in slot 2. The ACA's and LA's must be assigned in order; slot combination 4/1 then 3/2 (i.e., the LA in slot 2 cannot have Autocall unless the LA in slot 1 is similarly configured). When the ACA is used in conjunction with the ALP feature, each ACA takes the place of one line pair (two lines). In all other cases, the trade-off is one ACA per line.

TRANSMISSION SPECIFICATIONS

Through the appropriate features, the ICA can interface switched lines, including Western Union TWX and the public telephone network (DDD), leased subvoice-grade lines (ATT/WU 1002, 1005, 1006, or equivalent), leased voice-grade lines (ATT 3002 or equivalent), and leased wide band lines (ATT 5000 series, 8000 series, or equivalent). All leased line facilities, except the wide band facility, can be operated point-to-point or multipoint; a wide band facility can be operated point-to-point only. The configuration diagram shows the operating parameters of each feature and any restrictions pertaining to types of terminals that can be used.

Not all of the lines that can be physically connected to the ICA are necessarily operable at the same time. The following loading chart gives guidelines for the planning of a network. In the SLG entries, the percentage must be multiplied by 1.25 if Autopoll is used. The maximum load factor permitted is 100 percent and the percentages apply to line groups regardless of the number of lines operated. For example, if only 5 ALP 110 bps asynchronous lines were operating, the load factor must still be computed for the total group of 8, or 40 percent.

	Load Factor			
	1 Line	2 Lines	3-4 Lines	5-8 Lines
Asynchronous (bps)—				
TLP at 45.5 or 56.9	20%	20%	20%	20%
TLP at 74.2 or 75	20	20	20	40
AL at 300/600/1200	20	20	20	—
ALP at 110 or 134.5	20	20	20	40
Synchronous (bps)—				
SLG max. 1200	20	20	20	—
SLG max. 2400	20	20	40	—
SLG max. 4800	40	40	80	—
SLG max. 7200	60	60	—	—
SLHS max. 50,000*	100	—	—	—

*One point-to-point line without Autopoll; no other line can operate simultaneously.

SOFTWARE

All programming support for the System/370 Model 115 ICA is under the virtual storage operating system, DOS/VS, which supports QTAM and BTAM telecommunications access methods. VTAM is not supported for the Model 115 ICA. In addition, remote job entry is supported by the RJE feature of POWER/VS, a standard part of DOS/VS. The IBM communications monitor program product, CICS, is available for operation under DOS/VS using BTAM. (See report C15-491-101.) BTAM supports essentially all IBM terminals, asynchronous and synchronous; however, SDLC terminals are not supported by the ICA. QTAM supports essentially all asynchronous IBM terminals, but does not support synchronous terminals.

PRICING

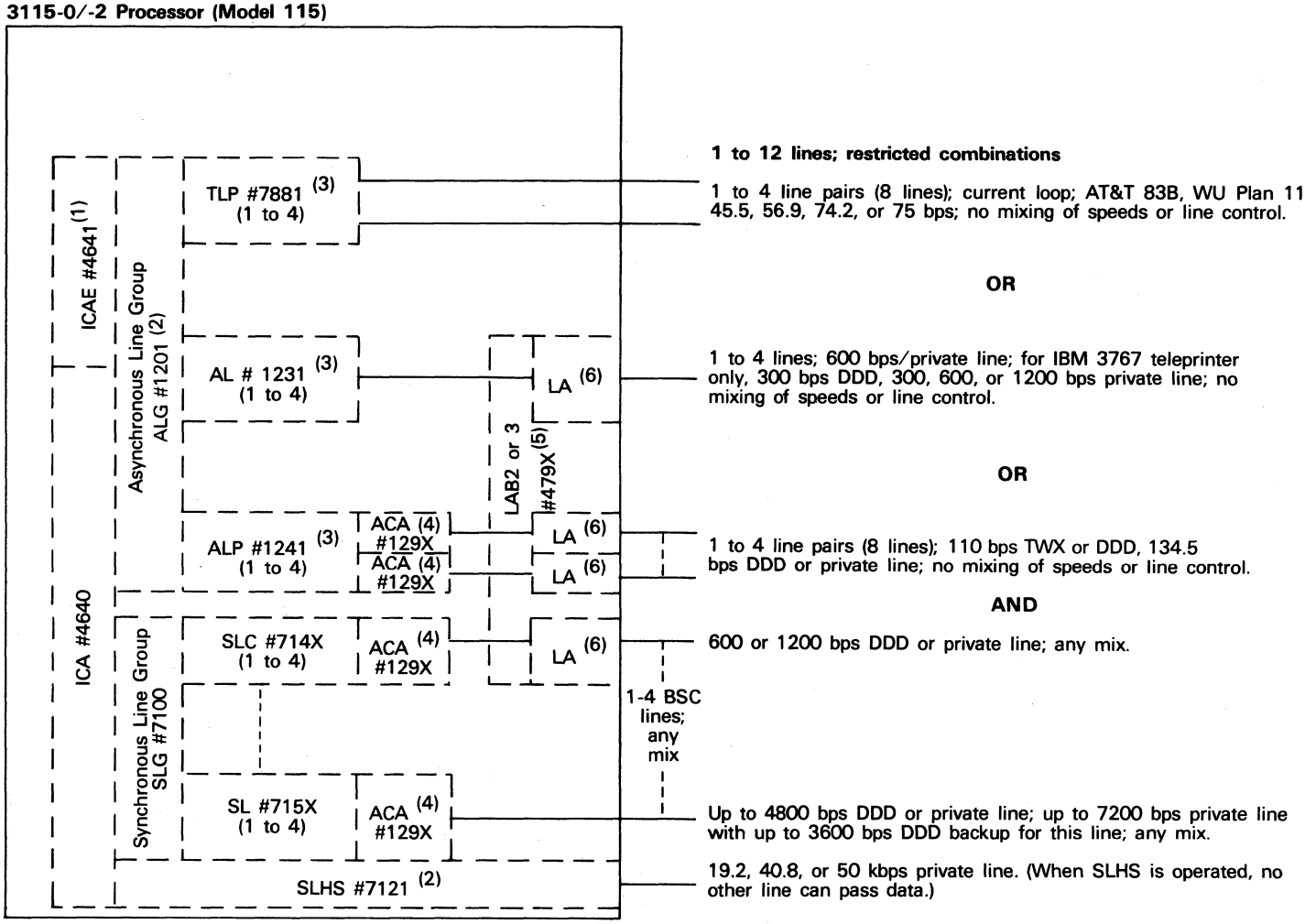
The ICA and related features are available as options for the basic System/370 Model 115-0 and 115-2 processors. They can be acquired by purchase, month-to-month rental, or under a four-year lease contract. A lease can be extended indefinitely in increments of one year, or, one time for less than a year.

IBM's present pricing policy on the 115 ICA allows for lease extensions at a maximum increase of five percent of the monthly lease charge (five percent upper limit) for equipment in place. Penalty charges for early termination of a lease (including feature downgrades or removals) are assessed as the lower of either six-months charges or 25 percent of the remaining value of the lease.

The ICA monthly rental plan covers equipment and maintenance and entitles the customer to 176 hours of usage per month. Time used in excess of that amount is charged at a rate of 10 percent of the basic hourly charge per hour of overtime usage. This plan can be cancelled on 30-day notice.

IBM System/370 Model 115
Integrated Communications Adapter (ICA)

Configuration



Maximum configurations are:
- 1 ALG equipped with 4 TLP, or 4 AL, or 4 ALP (no mixing) plus 1 SLG; or
- 1 SLG equipped with 4 SLC or 4 SL (any mix) plus 1 SLHS.

(1) ICAE #4641 required only if there is a mix of asynchronous and synchronous lines.

(2) ALG #1201 and SLHS # 7121 are mutually exclusive. SLHS cannot be operated concurrently with any other ICA communications line.
(3) TLP #7881, AL #1231, and ALP #1241 are mutually exclusive.
(4) Each ACA (Automatic Call Adapter) replaces one ALP, SL or SLC; an ACA is required for each line; maximum 2 ACA's per ALG or SLG, 4 total per ICA.
(5) Line Adapter Bases (LAB's) are required only when using IBM Line Adapters (LA's). LAB2, #4792, is used with Line Adapters operating with automatic calling/answering features and accommodates up to 4 LA's in the ALG plus up to 2 LA's in the SLG. LAB3, #4793, accommodates up to 8 LA's in the ALG plus up to 4 LA's in the SLG. On CPU Model 115-2, either LAB requires Expansion Base #3860 unless RPQ's 7B0141 and 7B0132 are installed.
(6) External unclocked modems can be used in place of internal LA's. Available LA's include:
- #4743 Leased Line Adapter; for 134.5 or 600 bps private line with AL #1231 or ALP #1241.
- #4781 1200 bps Line Adapter; for private line with AL #1231 or SLC #714X.
- #4782 1200 bps Line Adapter; for DDD with AL #1231 or SLC #714X; includes autoanswer.
- #4791 same as #4782, but equipped to operate with ACA and incorporates AT&T 801 equivalent function.

IBM System/370 Model 115
Integrated Communications Adapter (ICA)

The lease plan provides for unlimited usage and allows purchase credits for basic payments made to be accrued to a maximum of 55 percent of the total purchase price.

The lease and rental plans include prime-shift maintenance; a separate agreement can be arranged for purchased equipment. Prime-shift maintenance provides for coverage for any consecutive nine-hour period between 7 AM and 6 PM, Monday through Friday. Extended maintenance coverage is available up to 24 hours a day, 7 days a week under IBM Category A. The Monthly Maintenance Charge shown in the accompanying price list covers prime-shift maintenance for purchased equipment and serves as a basis for calculating extended charges for rented or leased equipment. The premiums for extended maintenance are expressed in the following table as percentages of the basic maintenance charge given in the price list.

Consecutive Hours	9*	12	16	20	24
Monday-Friday	10%	14%	18%	22%	26%
Saturday	4%	5%	7%	8%	9%
Sunday	5%	7%	9%	11%	12%

*Outside prime shift.

			Monthly Charges*			
			Rental	4-Yr Lease	Purchase	Monthly Maint.
#4640	ICA	Integrated Communications Adapter	$225	$205	$8,460	$25.50
#4641	ICAE	Integrated Communications Adapter Extension	83	76	3,105	1.50
#1201	ALG	Asynchronous Line Group	43	40	1,660	3.00
#1231	AL	Asynchronous Line, Medium Speed	43	40	1,660	2.50
#1241	ALP	Asynchronous Line Pair, Low Speed	60	55	2,255	3.50
#7881	TLP	Telegraph Line Pair	60	55	2,255	9.00
#7100	SLG	Synchronous Line Group	43	40	1,660	3.00
#714X	SLC	Synchronous Line, Medium Speed with clock	60	55	2,255	3.50
#715X	SL	Synchronous Line, Medium Speed	49	45	1,870	3.00
#7121	SLHS	Synchronous Line, High Speed	110	100	4,125	8.50
#129X	ACA	Auto Call Adapter, per line	21	20	808	1.50
#4792	LAB2	Line Adapter Base 2	28	26	1,020	2.00
#4793	LAB3	Line Adapter Base 3	28	26	1,020	2.00
#3860	EXP	Expansion Base	45	41	1,710	1.00
#4743	LA	IBM Leased Line Adapter, per line	15	14	417	2.50
#4781	LA	1200 bps Line Adapter, non-switched	16	15	525	2.50
#4782	LA	1200 bps Line Adapter, switched, autoanswer	21	20	700	3.00
#4791	LA	1200 bps Line Adapter, switched, autoanswer, and autocall (requires #129X)	71	65	1,935	11.50

*Includes monthly maintenance.■

IBM System/370 Model 115
Integrated Communications Adapter (ICA)

MANAGEMENT SUMMARY

The Integrated Communications Adapter (ICA) offers a way of connecting a modest communications network to an IBM System/370 Model 115 processor for minimum cost and with physical space. Beginning at $311 per month for one line and extending up to about $1,100 per month (including modems) for 12 lines, the ICA, all required features, and modems (Line Adapters) can be installed in the processor cabinet.

On the Model 115, the ICA will accommodate up to eight asynchronous lines operating at up to 1200 bps plus up to four synchronous (BSC only) lines operating at up to 7200 bps. Internal modems (Line Adapters) are available for speeds up to 1200 bps. Alternatively, the asynchronous line group can be replaced with a single high speed synchronous line operating at up to 50 kbps.

Offsetting the advantages of low cost and convenient physical arrangement are the lack of flexibility in combining different terminal types and operating speeds. All asynchronous lines must operate at the same speed and with the same type of terminal control. (This is not quite as limiting as it sounds because many IBM terminals share the same type of control arrangement; e.g., many terminals look like the 2740 typewriter terminal.) Different types of terminals and operating speeds can be mixed in the synchronous group, however.

In addition, not all configurations permitted physically can be operated with complete simultaneity. There are many combinations that do permit operating up to 12 lines concurrently, but there are also some that do not. The high speed synchronous line (up to 50 kbps) operates alone. Complete details concerning simultaneous operations are contained in the Characteristics section under Transmission Specifications.

The ICA feature for the Model 115 includes its own control storage and does not impact other features requiring control storage.□

An internal set of processor features for implementing up to 12 asynchronous and synchronous communications lines.

Asynchronous operating speeds up to 1200 bps and synchronous speeds up to 7200 bps can be accommodated; one high speed synchronous line operating at up to 50 kbps can be accommodated.

The minimum rental for one line is $311 per month, including maintenance.

A modest arrangement of four asynchronous lines and two synchronous lines rents for about $710 per month, including modems and maintenance.

A fully expanded arrangement serving eight asynchronous lines and four synchronous lines costs about $1110 per month, including modems and maintenance.

CHARACTERISTICS

VENDOR: International Business Machines Corporation, Data Processing Division, 1133 Westchester Avenue, White Plains, New York 10604. Telephone (914) 696-1900.

DATE OF ANNOUNCEMENT: System/370 Model 115-0–March 1973; Model 115-2–November 1975.

DATE OF FIRST DELIVERY: System/370 Model 115-0–1st quarter 1974; Model 115-2–August 1976.

NUMBER DELIVERED TO DATE: Information not available.

SERVICED BY: IBM.

CONFIGURATION

Up to 12 communications lines in various combinations can be interfaced to an IBM System/370 Model 115-0 or Model 115-2 processor. In general, up to eight asynchronous lines operating up to 1200 bps plus up to four synchronous lines operating at up to 7200 bps can be physically accommodated within the processor cabinetry. Alternatively, one high speed synchronous line operating at up to 50 kbps can replace the asynchronous group. Not all lines that can be physically accommodated can be operated simultaneously. Speed, line type, and use of autopoll on synchronous lines affect the capability for simultaneous operation. For many of the line types, IBM Line Adapters (modems) can be included internally.

The available features are explained in the accompanying configuration diagram and notes.

TRANSMISSION SPECIFICATIONS

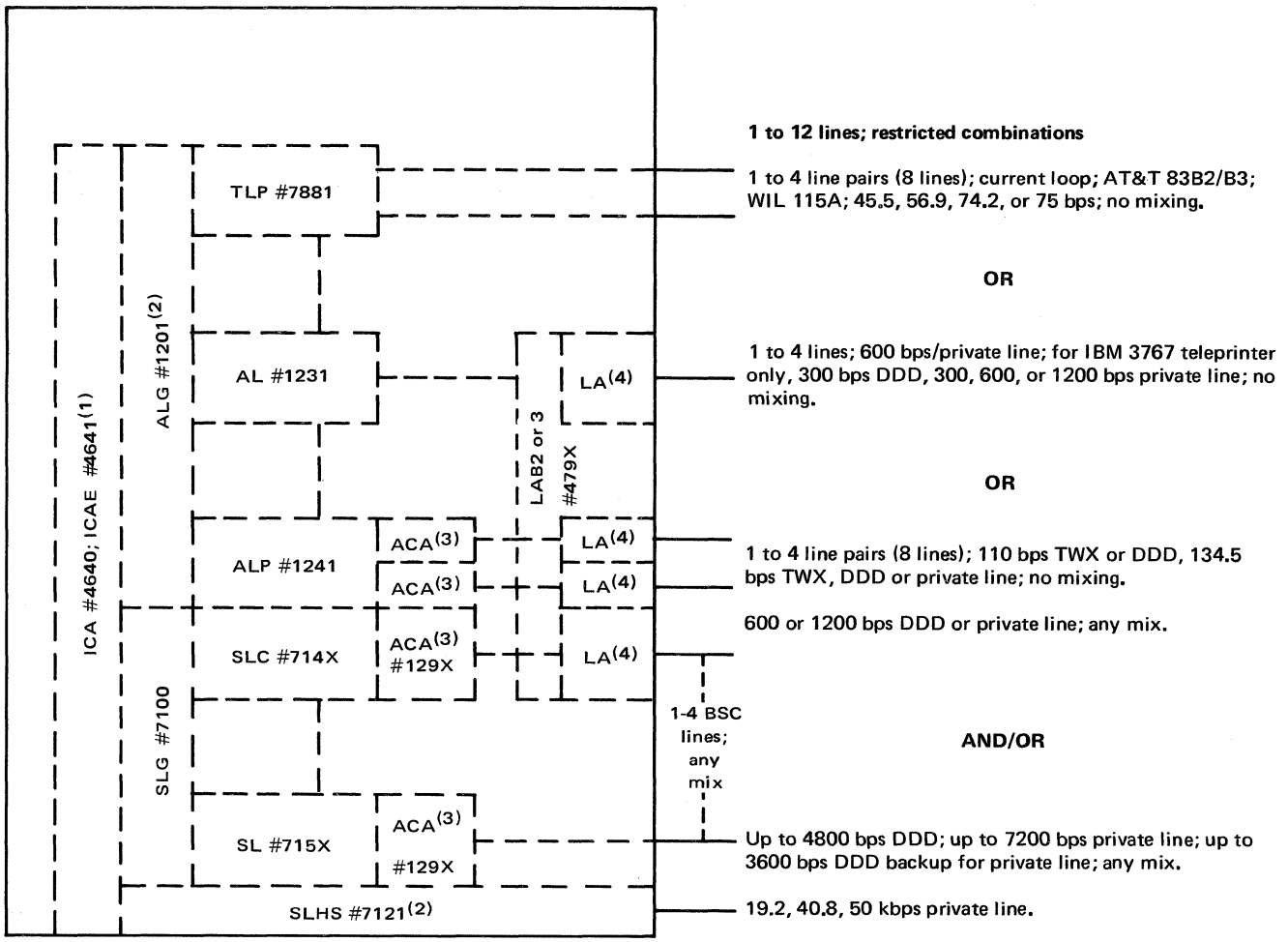
Through the appropriate features, the ICA can interface switched lines, including Western Union TWX and the public telephone network (DDD), leased subvoice-grade lines (ATT/WU 1002, 1005, 1006, or equivalent), leased voice-grade lines (ATT/WU 3002 or equivalent), and leased wide band lines (ATT/WU 5000 series, 8000 series, or equivalent). All leased line facilities, except the wide band facility, can be operated point-to-point or multipoint; a wide band facility can be operated point-to-point only. The configuration diagram shows the operating parameters of each feature and any restrictions pertaining to types of terminals that can be used.

Not all physical combinations permitted can operate simultaneously. Permitted operating combinations can be determined from the following table of load factors. The ►

IBM System/370 Model 115
Integrated Communications Adapter (ICA)

Configuration

3115-0/-2 Processor (Model 115)



Maximum configuration is:
- 4 TPL, AL, or ALP (no mixing) plus 4 SLC or
- 4 SLC plus SLHS.

(1) ICAE #4641 required only if there is a mix of asynchronous and synchronous lines.

(2) ALG #1201 and SLHS #7121 are mutually exclusive. SLHS cannot be operated with any other ICA communications lines.

(3) Each ACA (Automatic Call Adapter) replaces one ALP or SLC; an ACA is required for each *line;* maximum 2 ACA per ALG or SLG, 4 total.

(4) External modems can be used in place of internal LA's. Available LA's include:
- #4743 Leased Line Adapter; for 134.5 or 600 bps private line with AL #1231 or ALP #1241.
- #4781 1200 bps Line Adapter; for private line with AL #1231 or SLC #714X.
- #4782 1200 bps Line Adapter; for DDD with AL #1231 or SLC #714X; includes autoanswer
- #4791 same as #4782, but equipped to operate with ACA.

Line Adapter Base 2 # 4792 (LAB2) accommodates up to 4 LA's for the ALG plus up to 2 for the SLG; LAB3 accommodates up to 8 ALG LA's plus up to 4 SLG LA's.

IBM System/370 Model 115
Integrated Communications Adapter (ICA)

➤ maximum load factor permitted for concurrent operation is 100 percent. The load factors given apply to the whole group stated, regardless of the number of lines actually operating within that group. Refer to the configuration diagram for the permitted physical combinations.

	Lines	For Each Group of	Load Factor
Asynchronous–			
45.5/56.9 bps	TLP	8 lines	20%
74.2-1200 bps	TLP ALP AL	4 lines	20
Synchronous*–			
1200 bps max.	SL SLC	4 lines	20
2400 bps max.	SL	2 lines	20
4800 bps max.	SL	2 lines	40
7200 bps max.	SL	2 lines	80
19.2-50 kbps	SLHS	1 line	100

*Maximum line speed implemented in the SLG determines load factor. For operation with autopoll, multiply the load factors for SL and SLC lines by 1.25.

SOFTWARE

All programming support for the System/370 Model 115 ICA is under the virtual storage operating system, DOS/VS, which supports QTAM and BTAM telecommunications access methods. VTAM is not supported for the Model 115 ICA. In addition, remote job entry is supported by the RJE feature of POWER/VS, a standard part of DOS/VS. CICS, an IBM communications monitor program product is available for operation under DOS/VS using BTAM; see report C15-491-101 behind the Software tab in this volume. BTAM supports essentially all IBM terminals, asynchronous and synchronous; however, SDLC terminals are not supported under the ICA. QTAM supports essentially all asynchronous IBM terminals, but no synchronous terminals.

PRICING

The ICA and related features are available as options for the basic System/370 Model 115-0 and 115-2 processors. As such, they are available on short term (MAC) and long term (Term Lease) rental arrangements and for purchase. A separate maintenance arrangement is provided for purchased equipment; rented equipment includes maintenance.

The short term plan (Monthly Availability Charge or MAC) is a month to month arrangement that includes equipment and maintenance and entitles the customer to 176 hours of billable time per month. Time used in excess of that amount is charged for at a rate of 10 percent of the basic hourly rate (i.e., 10 percent of 1/176 of the monthly rental for each hour of extra use). This plan can be cancelled on one month's notice.

The Term Lease Plan is a long term arrangement, which carries the same basic monthly charges as MAC, but offers unlimited usage (with no additional charges) and a measure of protection against price increases. It is a 48-month arrangement with a penalty for early termination of a machine or feature, which is the lesser of: (1) 25 percent of the Term Lease Plan monthly charges multiplied by the remaining months of its base term or (2) 12.5 percent of the Term Lease Plan monthly charges multiplied by the total number of months in its base term. The early termination charge is then six months' rental for the first 24 months of the Term Lease Plan and declines by 25 percent of one month's charges per month thereafter.

Under the Term Lease Plan, IBM may increase the monthly charges by no more than five percent (non-compounded) per year after the first year of the contract.

The Term Lease Plan can be renewed for an unlimited number of one year increments following the expiration of the original contract and for one extension of less than one year. Purchase option accruals of up to 50 percent of the purchase price are permitted.

			Monthly Rental*	Purchase	Monthly Maint.
#4640	ICA	Integrated Communications Adapter	$225	$8,460	$25.50
#4641	ICAE	Integrated Communications Adapter Extension	83	3,105	1.50
#1201	ALG	Asynchronous Line Group	43	1,660	3.00
#1231	AL	Asynchronous Line, Medium Speed	43	1,660	2.50
#1241	ALP	Asynchronous Line Pair, Low Speed	60	2,255	3.50
#7881	TLP	Telegraph Line Pair	60	2,255	9.00
#7100	SLG	Synchronous Line Group	43	1,660	3.00
#714X	SLC	Synchronous Line, Medium Speed with Clock	60	2,255	3.50
#715X	SL	Synchronous Line, Medium Speed	49	1,870	3.00
#7121	SLHS	Synchronous Line, High Speed	110	4,125	8.50
#129X	ACA	Auto Call Adapter, per line	21	808	1.50
#4743	LA	IBM Leased Line Adapter, per line	15	417	2.50
#4781	LA	1200 bps Line Adapter, non-switched, per line	16	525	2.50
#4782	LA	1200 bps Line Adapter, switched with autoanswer	21	700	3.00
#4791	LA	1200 bps Line Adapter, switched with autoanswer and autocall (requires #129X)	71	1,935	11.50
#4792	LAB2	Line Adapter Base 2	28	1,020	2.00
#4793	LAB3	Line Adapter Base 3	28	1,020	2.00

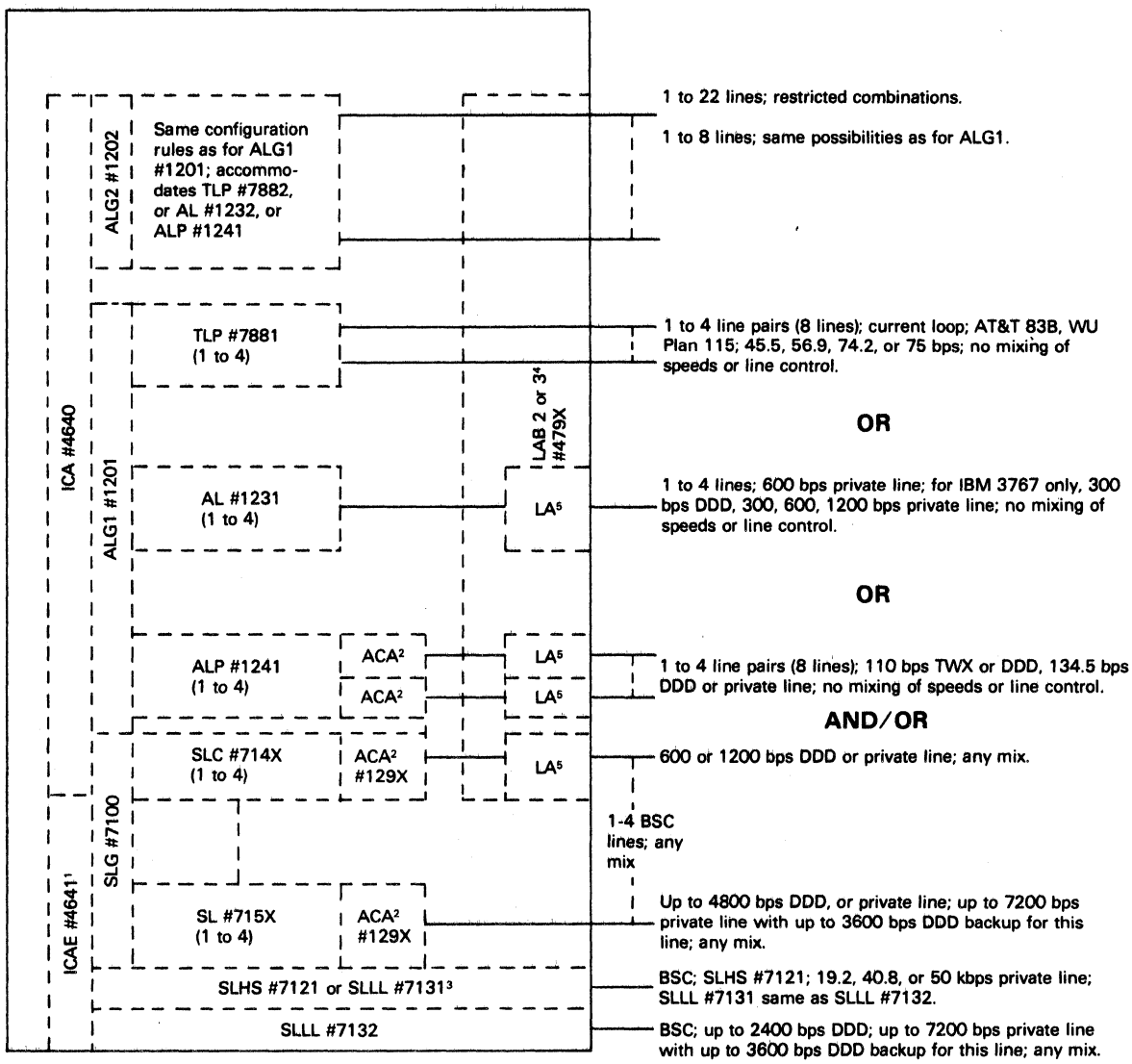
*Includes monthly maintenance. Short-Term and Long-Term rental plans available; see Pricing paragraphs. ■

IBM System/370 Model 125
Integrated Communications Adapter (ICA)

Update

Configuration

3125-0/-2 Processor (Model 125)



Maximum configurations are:
- 1 ALG1, 1 ALG2, 1 SLG, 1 SLHS, and 1 SLLL; or
- 1 ALG1, 1 ALG2, 1 SLG, and 2 SLLL.

ALG1 or ALG2 can each include:
- 4 TLP, or 4 AL, or 4 ALP (no mixing within ALG).

(1) ICAE #4641 required only if there is a mix of asynchronous and synchronous lines.

(2) Each ACA (Automatic Call Adapter) replaces one ALP, SL, or SLC; an ACA is required for each *line*; maximum 2 per ALG1, ALG2, or SLG, 6 total.

(3) SLHS #7121 and SLLL #7131 are mutually exclusive. SLHS cannot be operated concurrently with any other ICA communications line.

(4) Line Adapter Bases (LAB's) are required only when using internal IBM Line Adapters (LA's). LAB2, #4792, is used with LA's operating with automatic calling/answering features and accommodates up to four asynchronous LA's and two synchronous LA's. LAB3, #4793, may be used in all other applications and accommodates up to eight asynchronous LA's plus four synchronous LA's, or 12 asynchronous LA's.

(5) External unclocked modems can be used in place of internal LA's. One LA is required for each *line*. Available LA's include:
- #4743 Leased Line Adapter; for 134.5 or 600 bps private line with AL #1231/1232 or ALP #1241/1242.
- #4781 1200 bps Line Adapter; for private line with AL #1231/1232 or SLC #714X.
- #4782 1200 bps Line Adapter; for DDD with AL #1231/1232 or SLC #714X; includes autoanswer.
- #4791 same as #4782, but equipped to operate with ACA and incorporates AT&T 801 equivalent functions.

IBM System/370 Model 125
Integrated Communications Adapter (ICA)

PRICING

The ICA and related features are available as options for the basic System/370 Model 125-0 and 125-2 processors. They can be acquired by purchase, month-to-month rental, or under a four-year lease contract. A lease can be extended indefinitely in increments of one year, or, one time for less than a year. IBM's present pricing policy on the 125 ICA allows for lease extensions at a maximum increase of five percent of the monthly lease charge (five percent upper limit) for equipment in place. Penalty charges for early termination of a lease (including feature downgrades or removals) are assessed as the lower of either 6 months charges or 25 percent of the remaining value of the lease.

The ICA monthly rental plan covers equipment and maintenance and entitles the customer to 176 hours of usage per month. Time used in excess of that amount is charged at a rate of 10 percent of the basic hourly charge per hour of overtime usage. This plan can be cancelled on 30-day notice.

The lease plan provides for unlimited usage and allows purchase credits for basic payments made to be accrued to a maximum of 55 percent of the total purchase price.

The lease and rental plans include prime-shift maintenance; a separate agreement can be arranged for purchased equipment. The ICA is covered under Category A maintenance, which includes coverage for any consecutive nine-hour period between 7 AM and 6 PM, Monday through Friday (prime-shift maintenance). Extended maintenance coverage is available for up to 24 hours a day, 7 days a week. The Monthly Maintenance Charge shown in the accompanying price list covers prime-shift maintenance for purchased equipment and serves as a basis for calculating extended charges for rented or leased equipment. The premiums for extended maintenance are expressed in the following table as percentages of the basic maintenance charge given in the price list.

	Consecutive Hours				
	9*	12	16	20	24
Monday-Friday	10%	14%	18%	22%	26%
Saturday	4%	5%	7%	8%	9%
Sunday	5%	7%	9%	11%	12%

*Outside prime shift.

			Monthly Charges*			
			Rental	4-Yr. Lease	Purchase	Monthly Maint.
#4640	ICA	Integrated Communications Adapter	$241	$219	$8,585	$27.50
#4641	ICAE	Integrated Communications Adapter Extension	88	80	3,160	1.50
#1201/2	ALG	Asynchronous Line Group	45	41	1,685	3.50
#1231/2	AL	Asynchronous Line, Medium Speed	45	41	1,685	3.00
#1241/2	ALP	Asynchronous Line Pair, Low Speed	64	58	2,295	4.00
#7881/2	TLP	Telegraph Line Pair	64	58	2,295	9.50
#7100	SLG	Synchronous Line Group	45	41	1,685	3.50
#714X	SLC	Synchronous Line, Medium Speed with clock	64	58	2,295	4.00
#715X	SL	Synchronous Line, Medium Speed	51	46	1,905	3.50
#7121	SLHS	Synchronous Line, High Speed	117	106	4,200	9.00
#7131/2	SLLL	Synchronous Line, Low Load	117	106	4,200	9.00
#129X	ACA	Auto Call Adapter, per line	22	20	824	1.50
#4792	LAB2	Line Adapter Base 2	29	26	1,035	2.00
#4793	LAB3	Line Adapter Base 3	29	26	1,035	2.00
	LA	IBM Leased Line Adapter, per line	15	14	424	3.00
#4781	LA	1200 bps Line Adapter, non-switched	16	15	535	3.00
#4782	LA	1200 bps Line Adapter, switched, auto-answer	22	20	714	3.50
#4791	LA	1200 bps Line Adapter, switched, auto-answer and autocall (requires 129X)	75	68	1,970	12.00

*Includes monthly maintenance.■

IBM System/370 Model 125
Integrated Communications Adapter (ICA)

MANAGEMENT SUMMARY

The Integrated Communications Adapter (ICA) offers an economical alternative to the IBM 3704 for connecting a modest communications network to an IBM System/370 Model 125. The ICA also occupies less physical space because it is mounted entirely within the cabinetry of the processor. The ICA with related features begins at $316 per month for one line and extends up to about $1,720 per month (including modems) for 22 lines.

On the Model 125, the ICA will accommodate two groups of up to eight asynchronous lines each operating at up to 1200 bps (16 lines total) plus up to six synchronous (BSC only) lines operating at up to 7200 bps. One only synchronous line can operate at up to 50 kbps. Internal modems (Line Adapters) are available for speeds up to 1200 bps.

Offsetting the advantages of low cost and convenient physical arrangement are the lack of flexibility in combining different terminal types and operating speeds. Each group of up to eight asynchronous lines must operate at the same speed and with the same type of terminal control. Thus to implement two operating speeds or terminal types, a cost penalty is incurred and additionally, capabilities for concurrent line operation are reduced. (This is not quite as limiting as it sounds because many IBM terminals share the same type of control arrangements; e.g., many terminals look like the 2740 typewriter terminal.) Different terminal types and operating speeds can be mixed in the synchronous group, however.

In addition, not all configurations permitted physically can be operated with complete simultaneity. There are few combinations that permit operating the full complement of 22 lines concurrently. The high speed synchronous line (up to 50 kbps) operates alone. Special types of synchronous line features are available to reduce the load on the control program and permit added asynchronous lines to operate concurrently.

The ICA feature for the Model 125 includes its own control storage and does not impact other features requiring control storage.□

An internal set of processor features for implementing up to 22 asynchronous and synchronous communications lines.

Asynchronous operating speeds up to 1200 bps and synchronous speeds up to 7200 bps can be accommodated; one high speed synchronous line operating at up to 50 kbps can be accommodated.

The minimum rental for one line is $316 per month, including maintenance.

A modest arrangement of eight asynchronous lines and two synchronous lines rents for $940 per month, including modems and maintenance.

A fully expanded arrangement serving 16 asynchronous lines and 6 synchronous lines costs about $1,720 per month, including modems and maintenance.

CHARACTERISTICS

VENDOR: International Business Machines Corporation, Data Processing Division, 1133 Westchester Avenue, White Plains, NY 10604. Telephone (914) 696-1900.

DATE OF ANNOUNCEMENT: System/370 Model 125-0–October 1972; Model 125-2–November 1975.

DATE OF FIRST DELIVERY: System/370 Model 125-0–April 1973; Model 125-2–February 1976.

NUMBER DELIVERED TO DATE: Information not available.

SERVICED BY: IBM.

CONFIGURATION

Up to 22 communications lines in various combinations can be interfaced to an IBM System/370 Model 125-0 or Model 125-2 processor. In general, two groups of up to eight asynchronous lines operating up to 1200 bps plus up to six synchronous lines operating at up to 7200 bps can be physically accommodated within the processor cabinetry. One synchronous line can operate at up to 50 kbps. Not all lines that can be physically accommodated can be operated simultaneously. Speed, line type, and use of autopoll on synchronous lines affect the capability for simultaneous operation. For many of the line types, IBM Line Adapters (modems) can be included internally.

The available features are explained in the accompanying configuration diagram and notes.

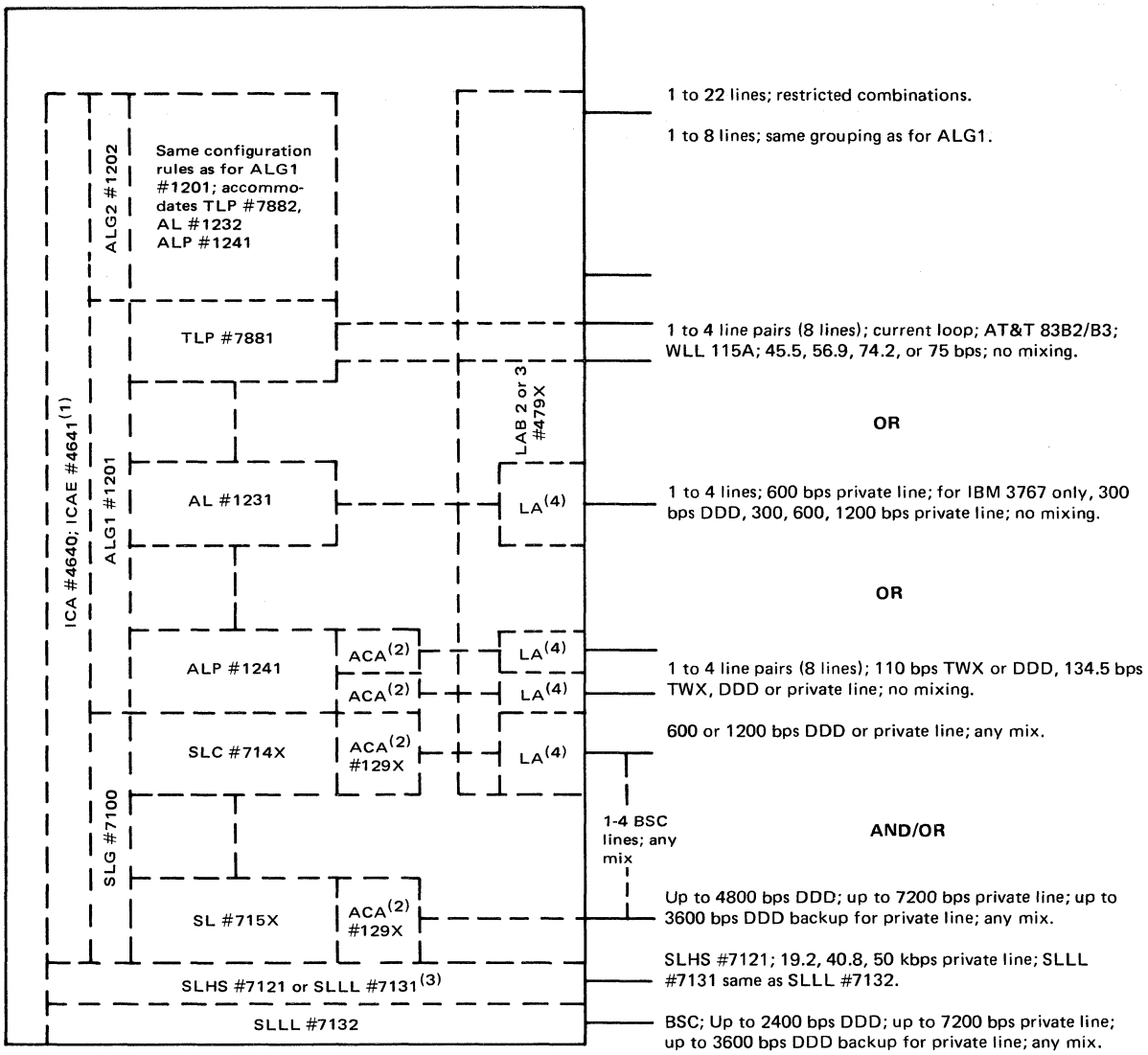
TRANSMISSION SPECIFICATIONS

Through the appropriate features, the ICA can interface switched lines, including Western Union TWX and the public telephone network (DDD), leased subvoice-grade lines (ATT/WU 1002, 1005, 1006, or equivalent), leased voice-grade lines (ATT/WU 3002 or equivalent), and leased wide band lines (ATT/WU 5000 series, 8000 series, or equivalent). All leased line facilities, except a wide band facility, can be operated point-to-point or multipoint; a wide band facility can be operated point-to-point only. The configuration diagram shows the operating parameters of each feature and any restrictions pertaining to types of terminals that can be used. ➤

IBM System/370 Model 125
Integrated Communications Adapter (ICA)

Configuration

3125-0/-2 Processor (Model 125)



Maximum configuration is:

- 1 ALG1, 1 ALG2, 1 SLG, 1 SLHS, and 1 SLLL or
- 1 ALG1, 1 ALG2, 1 SLG, and 2 SLLL.

ALG1 or ALG2 can each include:

- 4 TPL, 4 AL, or 4 ALP (no mixing within ALG).

(1) ICAE #4641 required only if there is a mix of asynchronous and synchronous lines.

(2) Each ACA (Automatic Call Adapter) replaces one ALP or SLC; an ACA is required for each *line*; maximum 2 per ALG1, ALG2, or SLG, 6 total.

(3) SLHS #7121 and SLLL #7131 are mutually exclusive. SLHS cannot be operated with any other ICA communications line.

(4) External modems can be used in place of internal LA's. One LA is required for each *line*. Available LA's include:

- #4743 Leased Line Adapter; for 134.5 or 600 bps private line with AL #1231/1232 or ALP #1241/1242.
- #4781 1200 bps Line Adapter; for private line with AL #1231/1232 or SLC #714X.
- #4782 1200 bps Line Adapter; for DDD with AL #1231/1232 or SLC #714X; includes autoanswer.
- #4791 same as #4782, but equipped to operate with ACA.

Line Adapter Base 2 (LAB2) #4792 accommodates up to 2 #4781, #4782, or #4792 1200 bps Line Adapters plus up to 4 #4793 Leased Line Adapters; LAB3 accommodates up to 12 LA's in any mix.

IBM System/370 Model 125
Integrated Communications Adapter (ICA)

➤ Not all physical combinations permitted can operate simultaneously. Permitted operating combinations can be determined from the following table of load factors. The maximum load factor permitted for concurrent operation is 100 percent. The load factors given apply to the whole group stated, regardless of the number of lines actually operating within that group. Refer to the configuration diagram for the permitted physical combinations.

	Lines	For Each Group of	Load Factor
Asynchronous–			
45.5/56.9 bps	TLP	8 lines	20%
74.2 - 1200 bps	TLP ALP AL	4 lines	20
Synchronous*–			
1200 bps	SL SLC	4 lines	20
2400 bps	SL	2 lines	20
4800 bps	SL SLLL	2 lines 2 lines	40 20
7200 bps	SL SLLL	2 lines 1 line	60 20
19.2-50 kbps	SLHS	1 line	100

*For operation with autopoll, multiply the load factors for SL and SLC lines by 1.25 and SLLL lines by 1.5, except, operation of one SLLL line at 4800 bps imposes a load of only 25 percent.

SOFTWARE

All programming support for the System/370 Model 125 ICA is under the virtual storage operating system, DOS/VS, which supports QTAM and BTAM telecommunications access methods. VTAM is not supported for the Model 115 ICA. In addition, remote job entry is supported by the RJE feature of POWER/VS, a standard part of DOS/VS. CICS, an IBM communications monitor program product, is available for operation under DOS/VS using BTAM; see report C15-491-101 behind the Software tab in this volume. BTAM supports essentially all IBM terminals, asynchronous and synchronous; however, SDLC terminals are not supported under the ICA. QTAM supports essentially all asynchronous IBM terminals, but no synchronous terminals.

PRICING

The ICA and related features are available as options for the basic System/370 Model 125-0 and 125-2 processors. As such, they are available on short term (MAC) and long term (Term Lease) rental arrangements and for purchase. A separate maintenance arrangement is provided for purchased equipment; rented equipment includes maintenance.

The short term plan (Monthly Availability Charge or MAC) is a month to month arrangement that includes equipment and maintenance and entitles the customer to 176 hours of billable time per month. Time used in excess of that amount is charged for at a rate of 10 percent of the basic hourly rate (i.e., 10 percent of 1/176 of the monthly rental for each hour of extra use. This plan can be cancelled on one month's notice.

The Term Lease Plan is a long term arrangement, which carries the same basic monthly charges as MAC, but offers unlimited usage (with no additional charge) and a measure of protection against price increases. It is a 48-month arrangement with a penalty for early termination of a machine or feature, which is the lesser of: (1) 25 percent of the Term Lease Plan monthly charges multiplied by the remaining months of its base term or (2) 12.5 percent of the Term Lease Plan monthly charges multiplied by the total number of months in its base term. The early termination charge is then six months' rental for the first 24 months of the Term Lease Plan and declines by 25 percent of one month's charges per month thereafter.

Under the Term Lease Plan, IBM may increase the monthly charges by no more than five percent (non-compounded) per year after the first year of the contract.

The Term Lease Plan can be renewed for an unlimited number of one year increments following the expiration of the original contract and for one extension of less than one year. Purchase option accruals of up to 50 percent of the purchase price are permitted.

			Monthly Rental*	Purchase	Monthly Maint.
#4640	ICA	Integrated Communications Adapter	$230	$8,585	$27.50
#4641	ICAE	Integrated Communications Adapter Extension	84	3,160	1.50
#1201	ALG1	Asynchronous Line Group #1**	43	1,660	3.50
#1231	AL	Asynchronous Line, Medium Speed	43	1,685	3.00
#1241	ALP	Asynchronous Line Pair, Low Speed	60	2,295	4.00
#7881	TLP	Telegraph Line Pair	61	2,295	9.50
#7100	SLG	Synchronous Line Group	43	1,685	3.50
#7141X	SLC	Synchronous Line, Medium Speed with clock	61	2,295	4.00
#7151X	SL	Synchronous Line, Medium Speed	49	1,905	3.50
#7121	SLHS	Synchronous Line, High Speed	112	4,200	9.00
#7131	SLLL	Synchronous Line, Low Load, First	112	4,200	9.00
#7132	SLLL	Synchronous Line, Low Load, Second	112	4,200	9.00
#1291	ACA	Auto Call Adapter	21	824	1.50
#4743	LA	Leased Line Adapter	15	424	3.00
#4781	LA	1200 bps Line Adapter, non-switched	16	535	3.00
#4782	LA	1200 bps Line Adapter, switched with autoanswer	21	714	3.50
#4791	LA	1200 bps Line Adapter, switched with autoanswer and autocall	72	1,970	12.00
#4792	LAB2	Line Adapter Base 2	28	1,035	2.00
#4793	LAB3	Line Adapter Base 3	28	1,035	2.00

*Includes maintenance. Short-Term and Long-Term plans available; see Pricing paragraphs.

**Asynchronous Line Group 2 (#1202) and associated features (#1232, #1242, and #7882) are priced identically with corresponding items for ALG 1. ■

IBM System/370 Model 125 Integrated Communications Adapter (ICA)

MANAGEMENT SUMMARY

For connecting a modest communications network to an IBM System/370 Model 125, the Integrated Communications Adapter (ICA) is an economical alternative to the 3704 controller. A physical maximum of 22 lines (up to 16 asynchronous and 6 synchronous) can be connected. The ICA can be optionally equipped with internal modems and automatic calling/answering features. The ICA, with all desired options, is completely mounted within the System/370 processor cabinetry.

The ICA can handle two asynchronous groups of eight lines each. Each group is independent, but all lines within a group must operate at the same speed and with the same line control. If all 6 lines are connected, the maximum operating speed of one line is 134.5 bps; however, up to 1200 bps asynchronous operation is possible by reducing the number of lines.

Up to six synchronous (BSC only) lines can also be connected along with the asynchronous groups. Speeds and protocols within the synchronous section may be mixed and up to 7200 bps operation is permitted; a single bisync line running at up to 50,000 bps can also be connected, but when it is operating, no other line can pass data.

The cost and space-saving advantages of the ICA are offset somewhat by rigid throughput restrictions and configuration limitations. Different terminal types are allowed to operate in the same asynchronous group as long as they all utilize the same type of line control and operate at the same code and speed. The six synchronous lines can use different speeds, but all six lines cannot operate at the maximum of 7200 bps simultaneously. Some examples of concurrent operation that are allowed are:

- 8 asynchronous lines at 134.5 bps, plus 2 asynchronous lines at 1200 bps, plus 4 bisynchronous lines at 2400 bps; or
- 8 telegraph lines at 75 bps, plus 4 asynchronous EIA lines at 600 bps, plus 1 bisynchronous line at 2400 bps; or
- 4 asynchronous lines at 1200 bps, plus 4 asynchronous lines at 110 bps, plus 1 bisynchronous line at 4800 bps; or
- 8 asynchronous lines at 134.5 bps, plus 1 bisynchronous line at 7200 bps.

The number of lines that can be connected is also dependent upon feature selection, such as Autocall and Autopoll. Special types of synchronous line features are available that control the amount of active line time at 4800 or 7200 bps to restrict operation to what is effectively a burst mode, thereby lowering the overall throughput to acceptable limits.□

An internal set of features for connecting up to 22 communications lines, in various combinations of asynchronous and synchronous transmission, to a System/370 Model 125.

Maximum operating speeds of 1200 bps asynchronous and 7200 bps synchronous can be achieved; one high-speed line at 50,000 bps can also be connected. Integrated modems and automatic calling/answering features can be provided.

An ICA equipped to accommodate a small network of eight asynchronous and two synchronous lines rents for approximately $950 per month, including internal modems and maintenance.

A fully expanded arrangement serving 16 asynchronous lines (8 EIA with internal modems and 8 telegraph) and 6 synchronous lines (4 low speed with internal modems and 2 high speed with external modems) rents for about $1,620 per month, including maintenance.

CHARACTERISTICS

VENDOR: International Business Machines Corporation, Data Processing Division, 1133 Westchester Avenue, White Plains, NY 10604. Telephone (914) 696-1900.

DATE OF ANNOUNCEMENT: System/370 Model 125-0—October 1972; Model 125-2—November 1975.

DATE OF FIRST DELIVERY: System/370 Model 125-0—April 1973; Model 125-2—February 1976.

NUMBER DELIVERED TO DATE: Information not available.

SERVICED BY: IBM.

CONFIGURATION

The ICA can physically connect up to 22 communications lines in various synchronous (BSC only) and asynchronous combinations to interface with an IBM System/370 Model 125-0 or Model 125-2. Options available include attachments for automatic call origination and/or answering and integrated modems or Line Adapters (LA's) that can service asynchronous or synchronous lines running at up to 1200 bps. Synchronous lines operating about 1200 bps require external modems that provide clocking. Telegraph loops operating at up to 75 bps can also be connected.

The ICA provides the basic control storage and common circuits for the connection of: one or two Asynchronous Line Group (ALG) features; one Synchronous Line Group (SLG) feature; one or two Synchronous Line, Low Load (SLLL) features; and one Synchronous Line High Speed (SLHS) feature. The SLHS feature is in lieu of one SLLL ►

IBM System/370 Model 125
Integrated Communications Adapter (ICA)

feature. See the accompanying configuration diagram for feature availability and restrictions.

Each ALG can be arranged differently, and they operate independently; however, each ALG must be configured to allow the connection of only *one* of the following communications disciplines:

- Up to 8 current loop telegraph circuits (AT&T 83B), WU 115, or equivalent) operating at 45.5, 56.9, 74.2, or 75 bps (TLP feature #7881); or
- Up to 4 asynchronous 600 bps private lines. For use with IBM 3767 teleprinters *only*, these four lines can operate at 300 bps over the public telephone network, or at 300, 600, or 1200 bps over private lines. (AL feature #1231); or
- Up to eight lines operating at 110 or 134.5 bps over either the public telephone network or private lines (ALP feature #1241).

Within the selected ALG option, all lines must be operated at the same speed and under the same type of line control. The SLG can be configured to allow the operation of four of the following BSC transmission facilities in any combination:

- 600 or 1200 bps over the public telephone network or private lines (SLC feature #714X);
- Up to 4800 bps over the public network or private lines (SL feature #715X);
- Up to 7200 bps over private lines with fallback to 3600 bps over the dial network for backup (SL feature #715X).

The SLLL, feature #713X, has the same transmission possibilities as SL feature #715X, except that it is constrained from operating full time and therefore has a lower duty cycle or load factor. This feature permits more physical connections at high operating speeds without overloading the ICA.

The SLHS, feature #7121, is a point-to-point facility for operating at up to 50,000 bps. It must be operated alone. When the SLHS is connected, it displaces the first SLLL feature (#7131).

Internal modems or Line Adapters (LA's) can be provided for all EIA lines operating at up to 1200 bps. (See accompanying configuration diagram for available Line Adapters.) When internal IBM Line Adapters are used, a Line Adapter Base (LAB) is required. An LAB2 must be used when automatic calling/answering functions are provided for the Line Adapters. The LAB2 can house up to four asynchronous LA's and two of the synchronous type. For all other applications, the LAB3 may be used, which accommodates up to eight asynchronous and four synchronous Line Adapters or 12 asynchronous Line Adapters.

The Automatic Call Adapter (ACA) can be used with either asynchronous lines in an ALG or synchronous lines in the SLG. Up to two ACA's are allowed in each group for an ICA maximum of six. When used, the ACA replaces one line group position. All Line Adapters must be installed in sequence. In the ALG, the slot numbers are A1 through A4 (ALG1) or A5 though A8 (ALG2); in the SLG, the slot numbers are S1 through S4. When an ACA is installed in either group, the highest numbered slot in that group cannot be used. The ACA using slot 4 provides the automatic calling function for the Line Adapter in slot 1. (In ALG2, slot 8 provides the function for the LA in slot 5.) If two ACA's are installed in the same group, slot 3 is precluded from use and the calling function utilizing slot 3 supports the Line Adapter in slot 2. (In ALG2, slot A7 precluded and supports slot A6.) The ACA's and LA's must be assigned in order; slot combination 4/1 then 3/2 (i.e., the LA in slot 2 cannot have autocall unless the LA in slot 1 is similarly configured). (In ALG2, slot combination 8/5 then 7/6.) When the ACA is used in conjunction with the ALP feature, each ACA takes the place of one line pair (two lines). In all other cases, the trade-off is one ACA per line.

TRANSMISSION SPECIFICATIONS

Through the appropriate features, the ICA can interface switched lines, including Western Union TWX and the public telephone network (DDD), leased subvoice-grade lines (ATT/WU 1002, 1005, 1006, or equivalent), leased voice-grade lines (ATT/WU 3002 or equivalent), and leased wide band lines (ATT/WU 5000 series, 8000 series, or equivalent). All leased line facilities, except a wide band facility, can be operated point-to-point or multipoint; or wide band facility can be operated point-to-point only. The configuration diagram shows the operating parameters of each feature and any restrictions pertaining to types of terminals that can be used.

Not all physical combinations permitted can operate simultaneously. Permitted operating combinations can be determined from the following table of load factors. The maximum load factor permitted for concurrent operation is 100 percent. The load factors given apply to the whole group stated, regardless of the number of lines actually operating within that group. Refer to the configuration diagram for the permitted physical combinations.

	Lines	For Each Group of	Load Factor
Asynchronous—			
45.5/56.9 bps	TLP	8 lines	20%
74.2-1200 bps	TLP ALP AL	4 lines	20
Synchronous*—			
1200 bps	SL SLC	4 lines	20
2400 bps	SL	2 lines	20
4800 bps	SL SLLL	2 lines 2 lines	40 20
7200 bps	SL SLLL	2 lines 1 line	60 20
19.2-50 kbps	SLHS	1 line	100

*For operation with autopoll, multiply the load factors for SL and SLC lines by 1.25 and SLLL lines by 1.5, except that operation of one SLLL line at 4800 bps imposes a load of 1.25. SLHS cannot use autopoll.

SOFTWARE

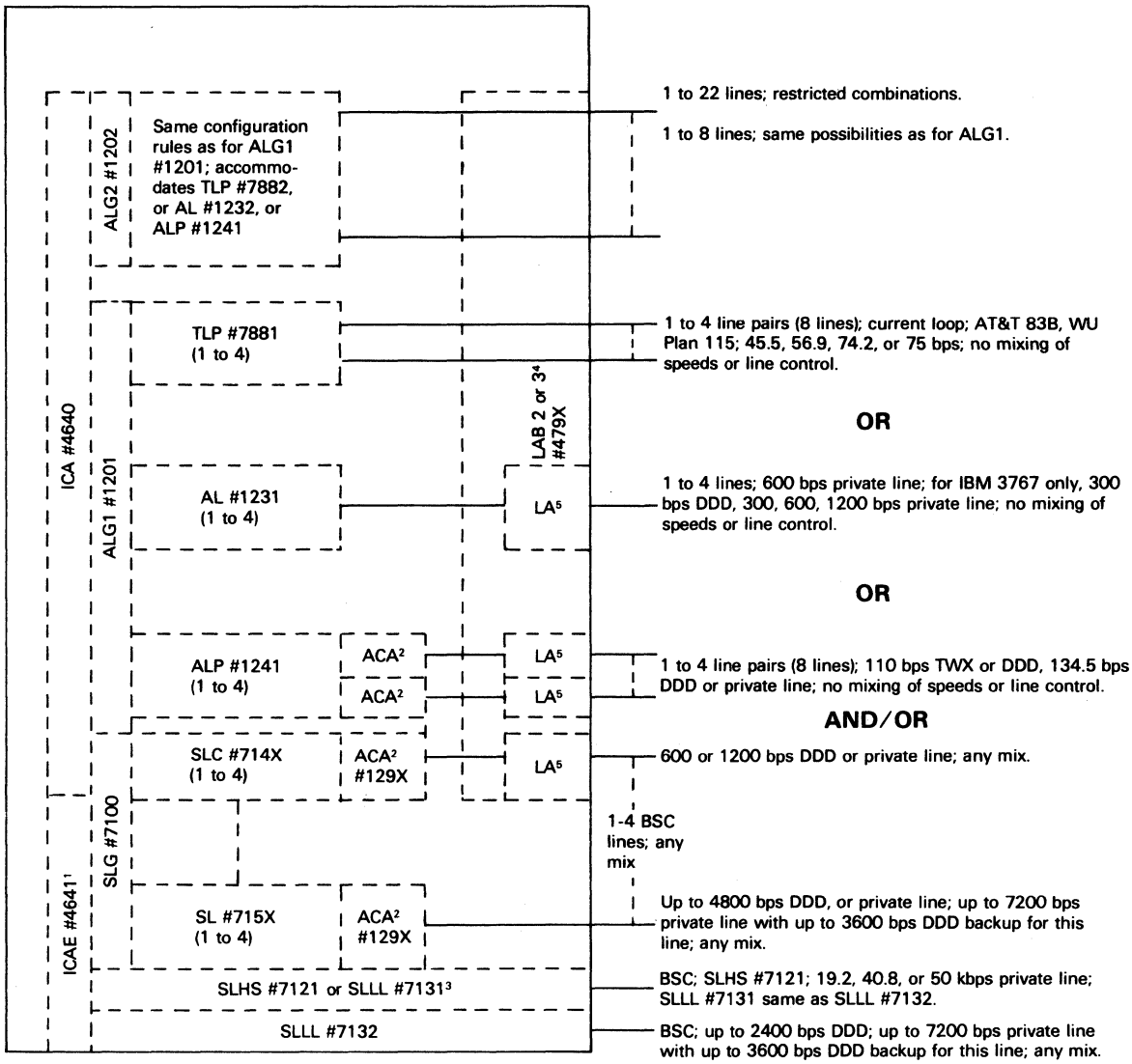
All programming support for the System/370 Model 125 ICA is under the virtual storage operating system, DOS/VS, which supports QTAM and BTAM telecommunications access methods. VTAM is not supported for the Model 125 ICA. In addition, remote job entry is supported by the RJE feature of POWER/VS, a standard part of DOS/VS. The IBM communications monitor program product, CICS, is available for operation under DOS/VS using BTAM. (See Report C15-491-101.)

BTAM supports essentially all IBM terminals, asynchronous and synchronous; however, SDLC terminals are not supported by the ICA. QTAM supports essentially all asynchronous IBM terminals, but no synchronous terminals.

IBM System/370 Model 125
Integrated Communications Adapter (ICA)

Configuration

3125-0/-2 Processor (Model 125)



Maximum configurations are:
- 1 ALG1, 1 ALG2, 1 SLG, 1 SLHS, and 1 SLLL; or
- 1 ALG1, 1 ALG2, 1 SLG, and 2 SLLL.

ALG1 or ALG2 can each include:
- 4 TLP, or 4 AL, or 4 ALP (no mixing within ALG).

(1) ICAE #4641 required only if there is a mix of asynchronous and synchronous lines.

(2) Each ACA (Automatic Call Adapter) replaces one ALP, SL, or SLC; an ACA is required for each *line*; maximum 2 per ALG1, ALG2, or SLG, 6 total.

(3) SLHS #7121 and SLLL #7131 are mutually exclusive. SLHS cannot be operated concurrently with any other ICA communications line.

(4) Line Adapter Bases (LAB's) are required only when using internal IBM Line Adapters (LA's). LAB2, #4792, is used with LA's operating with automatic calling/answering features and accommodates up to four asynchronous LA's and two synchronous LA's. LAB3, #4793, may be used in all other applications and accommodates up to eight asynchronous LA's plus four synchronous LA's, or 12 asynchronous LA's.

(5) External unclocked modems can be used in place of internal LA's. One LA is required for each *line*. Available LA's include:
- #4743 Leased Line Adapter; for 134.5 or 600 bps private line with AL #1231/1232 or ALP #1241/1242.
- #4781 1200 bps Line Adapter; for private line with AL #1231/1232 or SLC #714X.
- #4782 1200 bps Line Adapter; for DDD with AL #1231/1232 or SLC #714X; includes auto answer.
- #4791 same as #4782, but equipped to operate with ACA and incorporates AT&T 801 equivalent functions.

IBM System/370 Model 125
Integrated Communications Adapter (ICA)

PRICING

The ICA and related features are available as options for the basic System/370 Model 125-0 and 125-2 processors. They can be acquired by purchase, month-to-month rental, or under a four-year lease contract. A lease can be extended indefinitely in increments of one year, or, one time for less than a year. IBM's present pricing policy on the 125 ICA allows for lease extensions at a maximum increase of five percent of the monthly lease charge (five percent upper limit) for equipment in place. Penalty charges for early termination of a lease (including feature downgrades or removals) are assessed as the lower of either 6 months charges or 25 percent of the remaining value of the lease.

The ICA monthly rental plan covers equipment and maintenance and entitles the customer to 176 hours of usage per month. Time used in excess of that amount is charged at a rate of 10 percent of the basic hourly charge per hour of overtime usage. This plan can be cancelled on 30-day notice.

The lease plan provides for unlimited usage and allows purchase credits for basic payments made to be accrued to a maximum of 55 percent of the total purchase price.

The lease and rental plans include prime-shift maintenance; a separate agreement can be arranged for purchased equipment. The ICA is covered under Category A maintenance, which includes coverage for any consecutive nine-hour period between 7 AM and 6 PM, Monday through Friday (prime-shift maintenance). Extended maintenance coverage is available for up to 24 hours a day, 7 days a week. The Monthly Maintenance Charge shown in the accompanying price list covers prime-shift maintenance for purchased equipment and serves as a basis for calculating extended charges for rented or leased equipment. The premiums for extended maintenance are expressed in the following table as percentages of the basic maintenance charge given in the price list.

	Consecutive Hours				
	9*	12	16	20	24
Monday-Friday	10%	14%	18%	22%	26%
Saturday	4%	5%	7%	8%	9%
Sunday	5%	7%	9%	11%	12%

*Outside prime shift.

			Monthly Charges*			
			Rental	4-Yr. Lease	Purchase	Monthly Maint.
#4640	ICA	Integrated Communications Adapter	$230	$210	$8,585	$27.50
#4641	ICAE	Integrated Communications Adapter Extension	84	77	3,160	1.50
#1201/2	ALG	Asynchronous Line Group	43	40	1,685	3.50
#1231/2	AL	Asynchronous Line, Medium Speed	43	40	1,685	3.00
#1241/2	ALP	Asynchronous Line Pair, Low Speed	61	56	2,295	4.00
#7881/2	TLP	Telegraph Line Pair	61	56	2,295	9.50
#7100	SLG	Synchronous Line Group	43	40	1,685	3.50
#714X	SLC	Synchronous Line, Medium Speed with clock	61	56	2,295	4.00
#715X	SL	Synchronous Line, Medium Speed	49	45	1,905	3.50
#7121	SLHS	Synchronous Line, High Speed	112	102	4,200	9.00
#7131/2	SLLL	Synchronous Line, Low Load	112	102	4,200	9.00
#129X	ACA	Auto Call Adapter, per line	21	20	824	1.50
#4792	LAB2	Line Adapter Base 2	28	26	1,035	2.00
#4793	LAB3	Line Adapter Base 3	28	26	1,035	2.00
	LA	IBM Leased Line Adapter, per line	15	14	424	3.00
#4781	LA	1200 bps Line Adapter, non-switched	16	15	535	3.00
#4782	LA	1200 bps Line Adapter, switched, auto-answer	21	20	714	3.50
#4791	LA	1200 bps Line Adapter, switched, auto-answer and autocall (requires 129X)	72	66	1,970	12.00

*Includes monthly maintenance.■

IBM System/370 Models 135, 135-3, and 138 Integrated Communications Adapter (ICA)

MANAGEMENT SUMMARY

For IBM System/370 Models 135, 135-3, and 138, the Integrated Communications Adapter (ICA) provides a low-cost method of connecting a small communications network. From one to eight lines, in any combination of asynchronous and bisynchronous communications modes, can be accommodated. Automatic calling features are available as options. Unlike the ICA's for System/370 Models 115 and 125, internal modems cannot be included. The ICA can accept up to eight lines in any combination of the following speeds and protocols:

- Asynchronous at 134.5, 300, or 600 bps.
- Asynchronous at 1200 or 2400 bps.
- Asynchronous at 110 bps (TWX).
- Synchronous (BSC) at 600, 1200, 2000, 2400, 4800, or 7200 bps.

The Model 135/138 ICA does not include control storage; rather, it is obtained from available control storage in the host. The ICA will require from 3500 to 11,560 bytes of control storage, depending upon the modes of operation implemented. The Model 135 has between 24K and 48K bytes available; the Model 135-3 and Model 138 have 128K bytes available as standard.

USER REACTION

In the summer of 1977, Datapro conducted a survey of communications processor users. Three responses were received covering a total of five Model 135 ICA's in use. The number of lines connected to the ICA ranged from a minimum of one to the maximum of eight. The average number of lines per ICA was four, and all but one line connection was operated in a multipoint polled environment. The ratings assigned by these users are summarized as follows.

	Excellent	Good	Fair	Poor	WA*
Overall satisfaction	1	2	0	0	3.3
Ease of installation	2	0	0	1	3.0
Throughput	0	1	2	0	2.3
Hardware reliability	3	0	0	0	4.0
Promptness of mfr's maint.	1	2	0	0	3.3
Quality of mfr's maint.	1	2	0	0	3.3
Mfr's software	0	0	2	0	2.0
Mfr's technical support	0	1	1	0	1.7

*WA Weighted Average based on 4.0 for Excellent.

In March 1978, two of these users representing a total of four installed ICA's were contacted by telephone. In both cases hardware reliability was cited as outstanding, and previously given ratings on throughput were revised upward due to the addition of control memory and the ➢

An internal set of processor features, completely housed within the processor cabinetry, that are capable of supporting up to eight asynchronous or synchronous communications lines simultaneously.

Lines operating at speeds of up to 2400 bps asynchronous and 7200 bps synchronous can be mixed in any combination. Automatic calling feature is available as an option.

The monthly rental for a minimum configuration of one line is $242 per month, including maintenance. The maximum configuration of eight lines, in any combination, rents for approximately $720 per month, including maintenance.

CHARACTERISTICS

VENDOR: International Business Machines Corporation, Data Processing Division, 1133 Westchester Avenue, White Plains, New York 10604. Telephone (914) 696-1900.

DATE OF ANNOUNCEMENT: System/370 Model 135—March 1971; Model 135-3—June 1976; Model 138—June 1976.

DATE OF FIRST DELIVERY: System/370 Model 135—May 1972; Model 135-3—February 1977; Model 138—November 1976.

NUMBER DELIVERED TO DATE: Information not available.

SERVICED BY: IBM.

CONFIGURATION

A maximum of eight communications lines, in various speed and protocol combinations, can be serviced by the ICA. Four different types of adapters are available for this purpose, three asynchronous types and one synchronous (BSC) type. The adapters differ in the transmission mode used, the kind of terminal they serve, and the speed at which they operate; however, the ICA permits any combination of adapters to operate simultaneously. The adapter types available are shown in the accompanying configuration diagram. Additional features may be required to implement the various combinations and methods of operation desired. With the exception of the autocall feature, all hardware is supplied with the Additional Line features.

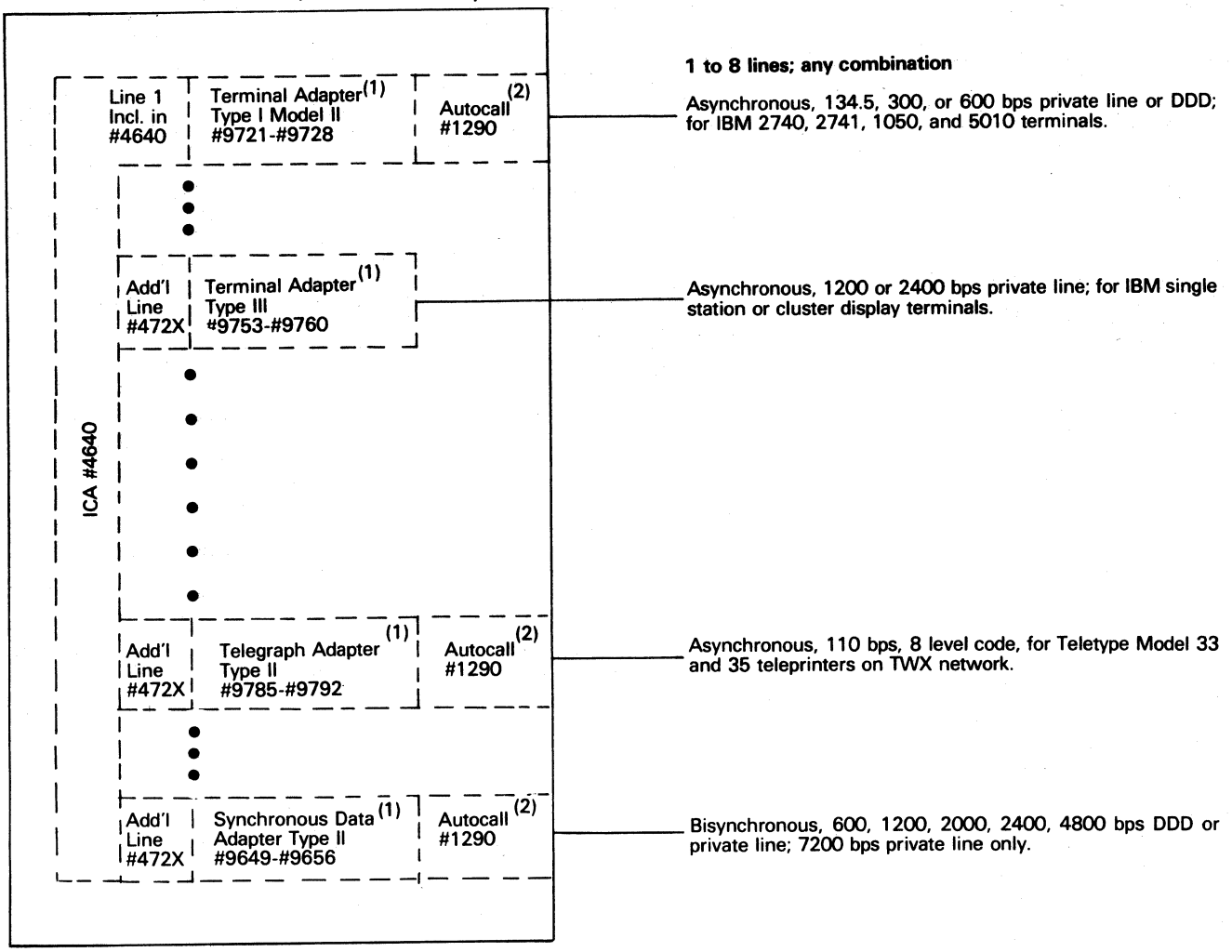
A portion of control storage is required for each feature to be implemented. One block of storage per feature is required regardless of the number of lines utilizing the feature. The control storage requirements per feature are:

ICA base unit	**2100 bytes**
Adapter Base Type I:	
Terminal Adapter Type I, Model II	**1700**
Telegraph Adapter Type II	**1400**
Both Adapters	**1900**
Terminal Adapter Type III	**2100**
Synchronous Data Adapter	**3700**
Autocall feature	**440**

➤

IBM System/370 Models 135, 135-3, and 138 Integrated Communications Adapter (ICA)

Configuration



(1) All 9000 series Adapters, including features required for a specific terminal, speed, and/or operating mode, are no-cost options.

(2) Each Autocall #1290 feature replaces one Additional Line (#472X) feature; maximum 4; extra cost option.

reconfiguration of communications lines to reduce the error rate. The major areas of difficulty were given in the written response as throughput, communications lines, and modems. Because these items are highly interrelated, the users contacted were questioned as to their present level of satisfaction. The answers indicated satisfaction. One user commented that the ICA "has served us well . . . we have just outgrown them." The one Poor rating concerning ease of installation was clarified as not really being a direct ICA problem, but rather a difficulty in configuring multipoint lines for adequate throughput; this has since been rectified.□

TRANSMISSION SPECIFICATIONS

The ICA can interface with switched lines (public telephone network or TWX) and leased voice-grade circuits (ATT 3002 or equivalent). Leased lines can operate point-to-point or multipoint. The accompanying configuration diagram delineates the operating parameters of each type of connection arrangement accommodated. All lines can operate simultaneously, and each requires an external modem.

SOFTWARE

The Model 135/138 ICA is supported under the virtual storage operating systems DOS/VS or OS/VS1. Under DOS/VS, QTAM and BTAM telecommunications access methods are supported. Under OS/VS1, TCAM and BTAM are supported. Neither operating system supports VTAM for the ICA. In addition, remote job entry is supported under both operating systems. For DOS/VS, it is supported under the RJE feature of POWER/VS, a spooling facility. For OS/VS1, RJE is supported through the Remote Entry Services (RES) feature of the Job Entry Subsystem (JES) spooling facility. In general, BSC terminals are supported for remote job entry. CICS, an IBM communications monitor program product is available for operation under either operating system; see Report C15-491-101 behind the Software tab in this volume. BTAM and TCAM both support essentially all IBM asynchronous and synchronous terminals. (SDLC is not supported for the ICA.)

PRICING

The ICA and related features are available as options for the basic System/370 Models 135, 135-3, and 138 processors. They can be acquired by purchase, month-to-month rental,

IBM System/370 Models 135, 135-3, and 138
Integrated Communications Adapter (ICA)

or under a four-year lease contract. A lease can be extended indefinitely in increments of one year, or one time for less than a year. IBM's present pricing policy on the ICA allows for lease extensions at a maximum increase of five percent of the monthly charges (non-compounded, five percent upper limit) for equipment in place. Penalty charges for early termination of a lease (including feature downgrades or removals) are assessed as the lower of either 6 months charges or 25 percent of the remaining value of the lease.

The ICA monthly rental plan covers equipment and maintenance and entitles the customer to 176 hours of usage per month. Time used in excess of that amount is charged at a rate of 10 percent of the basic hourly charge per hour of overtime usage. This plan can be cancelled on 30-days' notice.

The lease plan provides for unlimited usage and allows purchase credits for basic payments made to be accrued up to a maximum of 50 percent on the Model 135 ICA and a maximum of 55 percent on the Model 138.

The lease and rental plans include prime shift maintenance; a separate agreement can be arranged for purchased equipment. The ICA is covered under Category A maintenance, which includes coverage for any consecutive nine-hour period between 7 AM and 6 PM, Monday through Friday (prime-shift maintenance). Extended maintenance coverage is available for up to 24 hours a day, 7 days a week. The monthly maintenance charge shown in the accompanying price list covers prime-shift maintenance for purchased equipment and serves as a basis for calculating extended charges for rented or leased equipment. The premiums for extended maintenance are expressed as percentages of the basic maintenance charge given in the price list and are as follows:

	Consecutive Hours'				
	9*	12	16	20	24
Monday-Friday	10%	14%	18%	22%	26%
Saturday	4%	5%	7%	8%	9%
Sunday	5%	7%	9%	11%	12%

*Outside prime shift.

		Monthly Charges*			
		Rental	4-Yr. Lease	Purchase	Monthly Maint.
#4640	Integrated Communications Adapter	$242	$220	$9,470	$25.00
	Additional Line:				
#4722	Second	47	43	1,900	5.00
#4723	Third	95	87	3,815	10.00
#4724	Fourth	47	43	1,900	5.00
#4725	Fifth	144	131	5,690	16.00
#4726	Sixth	47	43	1,900	5.00
#4727	Seventh	47	43	1,900	5.00
#4728	Eighth	47	43	1,900	5.00
#1290	Autocall, per line	56	51	2,180	1.00

*Includes maintenance.■

IBM System/370 Models 135 and 138 Integrated Communications Adapter (ICA)

MANAGEMENT SUMMARY

The Integrated Communications Adapter (ICA) offers an economical alternative to the IBM 3704 for connecting a modest communication network to an IBM System/370 Model 135 or 138. The ICA also occupies less physical space because it is mounted entirely within the cabinetry of the processor. The ICA begins at $242 per month for one line and extends up to $716 per month for eight lines. Unlike the ICA for the System/370 Models 115 and 125, internal modems are not available for the Model 135 ICA.

The ICA accommodates up to eight lines in any combination of:

- Asynchronous at 134.5, 300, or 600 bps.
- Asynchronous at 1200 or 2400 bps (for 2260).
- Asynchronous at 110 bps (Teletype 33/35 over TWX).
- Synchronous (BSC only) at 600, 1200, 2000, 2000, 2400, 4800, or 7200 bps.

Control storage for the Model 135/138 is obtained from the overall control storage available, rather than included as part of the ICA feature, as is the case with the ICA for the IBM Model 115 and 125. In general, the ICA can require from 3500 to 10,240 bytes of control storage. In the Model 135, 24K to 48K bytes are available total; in the Model 135-3 and 138, 128K bytes are standard.

USER REACTION

In Datapro's December 1975 survey of communications processors users, a total of six responses were received from users of System/370 Model 135's equipped with ICA's.

The number of lines implemented ranged between 1 and 6 and averaged 3.3. The total number of terminals handled ranged between 4 and 10 and averaged 7.2. All but one of the users operated at least one multipoint line.

The ratings assigned by these users to the Model 135/ICA combination are summarized below.

	Excellent	Good	Fair	Poor	WA*
Overall satisfaction	2	4	0	0	3.3
Ease of installation	5	1	0	0	3.8
Throughput	1	4	1	0	3.0
Hardware reliability	4	2	0	0	3.7
Promptness of mfr's. maint.	5	1	0	0	3.8
Quality of mfr's. maint.	5	1	0	0	3.8
Mfr's. software	1	2	2	0	2.8
Mfr's. technical support	1	4	1	0	3.0

*Weighted Average based on 4.0 for Excellent.

The favorable user comments centered around low cost (three mentions) and reliability (three mentions). Also ➢

An internal set of processor features for implementing up to eight communications asynchronous and synchronous lines.

Asynchronous operating speeds up to 2400 bps and synchronous operating speeds up to 7200 bps can be accommodated in any mix.

The minimum monthly rental for one line is $242 per month, including maintenance.

A modest arrangement of four lines (any combination) costs about $430 per month, including maintenance.

A fully expanded arrangement of eight lines (any combination) costs $716 per month, including maintenance.

CHARACTERISTICS

VENDOR: International Business Machines Corporation, Data Processing Division, 1133 Westchester Avenue, White Plains, New York 10604. Telephone (914) 696-1900.

DATE OF ANNOUNCEMENT: System/370 Model 135–March 1971; Model 135-3–June 1976; Model 138–June 1976.

DATE OF FIRST DELIVERY: System/370 Model 135–May 1972; Model 135-3–February 1977; Model 138–November 1976.

NUMBER DELIVERED TO DATE: Information not available.

SERVICED BY: IBM.

CONFIGURATION

Up to eight communications lines can be accommodated within the processor cabinet. Four different types of adapters are available to handle different terminals. They include three asynchronous adapters and one synchronous (BSC) adapter. Any combination of lines, up to the maximum of eight, can be interfaced. The accompanying Configuration diagram completely specifies the components required for each type of line.

Each of the features requires the assignment of a portion of control storage. Only one block is required for each feature type regardless of the number of lines of that type implemented. The control storage requirements are as follows:

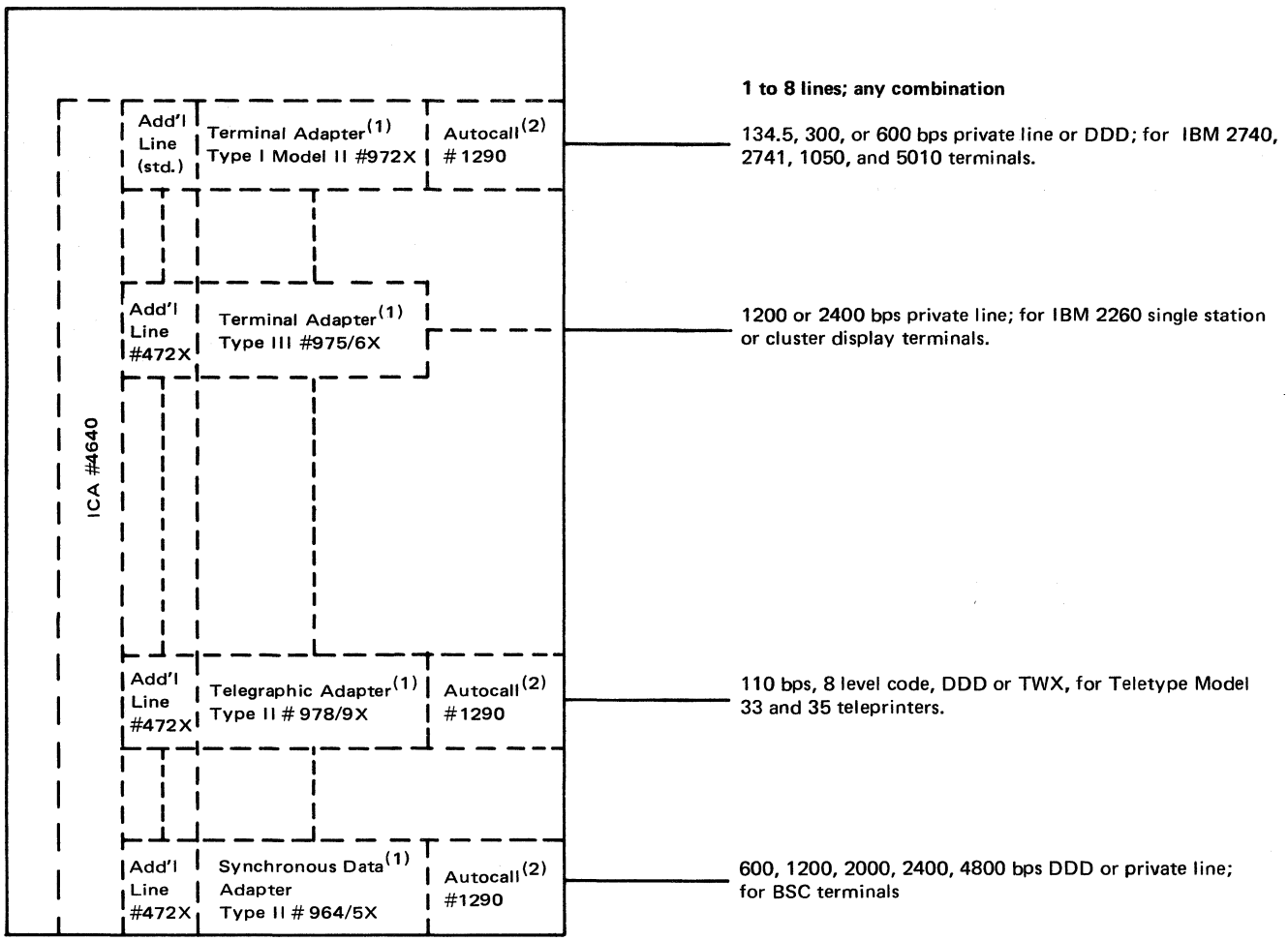
Integrated Storage Adapter:	2100 bytes
Terminal Adapter Type I Model II:	500
Telegraph Adapter Type II:	200
Terminal Adapter Type III:	2100
Synchronous Data Adapter:	3700
Autocall	440

➤

IBM System/370 Models 135 and 138
Integrated Communications Adapter (ICA)

Configuration

3135 or 3138 Processor (Model 135 or 138)



(1) The 9000 series Adapters and all related features, except Autocall, required to adapt them for a specific terminal, speed, and operating mode are no-cost options.

(2) Each Autocall #1290 feature replaces one Additional Line feature; maximum 4.

mentioned as advantages were the space savings and ease of use. On the negative side, users commented on the demands placed by the unit on the central processor (i.e., not a programmable front end). Four of the six users pointed this out in one way or another. In addition, one user mentioned difficulties encountered with the software.□

If either or both the Terminal Adapter Type I Model II or Telegraph Adapter Type II are included, a single Adapter Base Type 1 assignment of 1200 bytes of control storage is required in addition to the above amounts.

TRANSMISSION SPECIFICATIONS

Through the appropriate features, the ICA can interface switched lines, including the public telephone network (DDD) and Western Union TWX and leased voice-grade lines (ATT/WU 3002 or equivalent). All leased facilities can be operated point-to-point or multipoint. The configuration diagram shows the operating parameters of each feature.

All line combinations can operate simultaneously.

SOFTWARE

The Model 135/138 ICA is supported under the virtual storage operating systems DOS/VS or OS/VS1. Under DOS/VS, QTAM and BTAM telecommunications access methods are supported. Under OS/VS1, TCAM and BTAM are supported. Neither operating system supports VTAM for the ICA. In addition, remote job entry is supported under both operating systems. For DOS/VS, it is supported under the RJE feature of POWER/VS, a spooling facility. For OS/VS1, RJE is supported through the Remote Entry Services (RES) feature of the Job Entry Subsystem (JES) spooling facility. In general, BSC terminals are supported for remote job entry. CICS, an IBM communications monitor program product is available for operation under either operating system; see Report C15-491-101 behind the Software tab in this volume. BTAM and TCAM both support essentially all IBM asynchronous and synchronous terminals. (SDLC is not supported for the ICA.)

PRICING

The ICA and related features are available as options for the basic System/370 Model 135 and 138 processors. As such, they are available on short term (MAC) and long term

IBM System/370 Models 135 and 138
Integrated Communications Adapter (ICA)

(Term Lease) rental arrangements and for purchase. A separate maintenance arrangement is provided for purchased equipment; rented equipment includes maintenance.

The short term plan (Monthly Availability Charge or MAC) is a month to month arrangement that includes equipment and maintenance and entitles the customer to 176 hours of billable time per month. Time used in excess of that amount is charged for at a rate of 10 percent of the basic hourly rate (i.e., 10 percent of 1/176 of the monthly rental for each hour of extra use. This plan can be cancelled on one month's notice.

The Term Lease Plan is a long term arrangement, which carries the same basic monthly charges as MAC, but offers unlimited usage (with no additional charges) and a measure of protection against price increases. It is a 48-month arrangement with a penalty for early termination of a machine or feature, which is the lesser of: (1) 25 percent of the Term Lease Plan monthly charges multiplied by the remaining months of its base term or (2) 12.5 percent of the Term Lease Plan monthly charges multiplied by the total number of months in its base term. The early termination charge is then six months' rental for the first 24 months of the Term Lease Plan and declines by 25 percent of one month's charges per month thereafter.

Under the Term Lease Plan, IBM may increase the monthly charges by no more than five percent (non-compounded) per year after the first year of the contract.

The Term Lease Plan can be renewed for an unlimited number of one year increments following the expiration of the original contract and for one extension of less than one year. Purchase option accruals of up to 50 percent of the purchase price are permitted.

		Monthly Rental*	Purchase	Monthly Maint.
4640	Integrated Communications Adapter	$242	$11,900	$25
4722	Additional Line, Second	47	2,385	5
4723	Additional Line, Third	95	4,790	10
4724	Additional Line, Fourth	47	2,385	5
4725	Additional Line, Fifth	144	7,150	10
4726	Additional Line, Sixth	47	2,385	5
4727	Additional Line, Seventh	47	2,385	5
4728	Additional Line, Eighth	47	2,385	5
1290	Autocall (per line)	56	2,740	1

* Includes maintenance. Short-Term and Long-Term Plans are available. See Pricing paragraph.■

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or under a four-year lease contract. A lease can be extended indefinitely in increments of one year, or one time for less than a year. IBM's present pricing policy on the ICA allows for lease extensions at a maximum increase of five percent of the monthly charges (non-compounded, five percent upper limit) for equipment in place. Penalty charges for early termination of a lease (including feature downgrades or removals) are assessed as the lower of either 6 months charges or 25 percent of the remaining value of the lease.

The ICA monthly rental plan covers equipment and maintenance and entitles the customer to 176 hours of usage per month. Time used in excess of that amount is charged at a rate of 10 percent of the basic hourly charge per hour of overtime usage. This plan can be cancelled on 30-days' notice.

The lease plan provides for unlimited usage and allows purchase credits for basic payments made to be accrued up to a maximum of 50 percent on the Model 135 ICA and a maximum of 55 percent on the Model 138.

The lease and rental plans include prime shift maintenance; a separate agreement can be arranged for purchased equipment. The ICA is covered under Category A maintenance, which includes coverage for any consecutive nine-hour period between 7 AM and 6 PM, Monday through Friday (prime-shift maintenance). Extended maintenance coverage is available for up to 24 hours a day, 7 days a week. The monthly maintenance charge shown in the accompanying price list covers prime-shift maintenance for purchased equipment and serves as a basis for calculating extended charges for rented or leased equipment. The premiums for extended maintenance are expressed as percentages of the basic maintenance charge given in the price list and are as follows:

	Consecutive Hours				
	9*	12	16	20	24
Monday-Friday	10%	14%	18%	22%	26%
Saturday	4%	5%	7%	8%	9%
Sunday	5%	7%	9%	11%	12%

*Outside prime shift.

		Monthly Charges*			
		Rental	4-Yr. Lease	Purchase	Monthly Maint.
#4640	Integrated Communications Adapter	$254	$231	$9,470	$25.00
	Additional Line:				
#4722	Second	48	44	1,900	5.00
#4723	Third	99	90	3,815	10.00
#4724	Fourth	48	44	1,900	5.00
#4725	Fifth	151	137	5,690	16.00
#4726	Sixth	48	44	1,900	5.00
#4727	Seventh	48	44	1,900	5.00
#4728	Eighth	48	44	1,900	5.00
#1290	Autocall, per line	58	53	2,180	1.00

*Includes maintenance.■