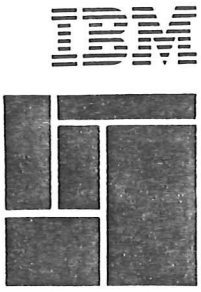


Product Reference Literature

Order No. GA19-0022-2

IBM 3976 Modem
Models 1, 2, and 3 with serial numbers 73 39999 and below
Installation Manual – Physical Planning

This publication contains information on the physical installation of the IBM 3976 Modem Models 1, 2 and 3, and provides the specifications (dimensions, service clearances, weight, power requirements, environmental requirements, telephone line cable, and data terminal interface connection) of the machine.

For further information on the 3976 Modem, refer to:

1. *IBM 3976 Modem Modulator - Demodulator Equipment Models 1 and 2, Reference Manual,* Order No. GA19-0020.
2. *Original Equipment Manufacturers' Information, IBM 3976 Modem Modulator - Demodulator Equipment Models 1 and 2,* Order No. GA19-0021.
3. *IBM 3976 Modem Model 3 with serial numbers 73 39999 and below Component Description,* Order No. GA19-0031.

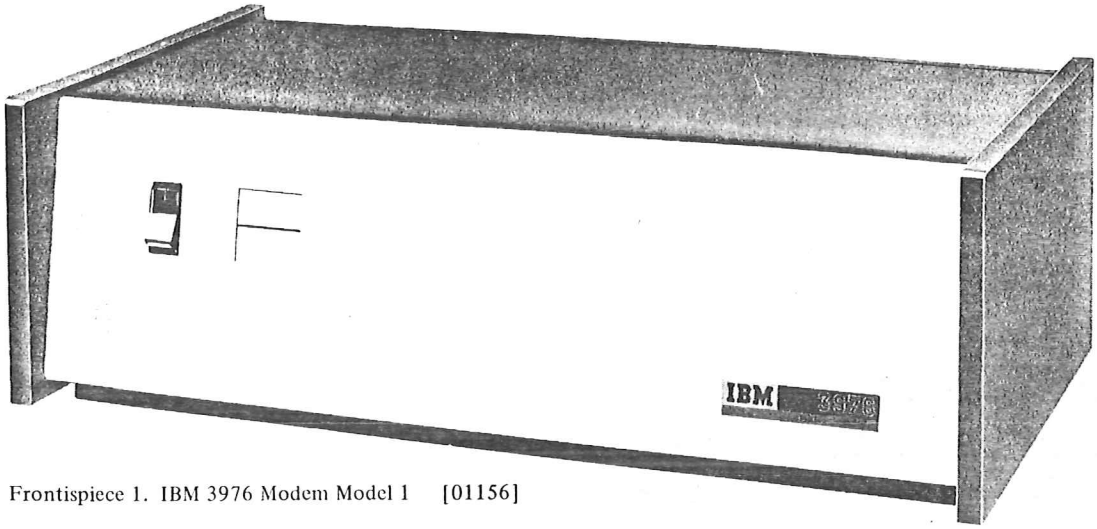
Third Edition (July 1970)

This is a major revision of, and obsoletes, GA19-0022-1. The 3976 Modem Model 3 information is limited to machines with serial numbers 73 39999 and below. Changes are continually made to the specifications herein; any such changes will be reported in subsequent revisions or Technical Newsletters.

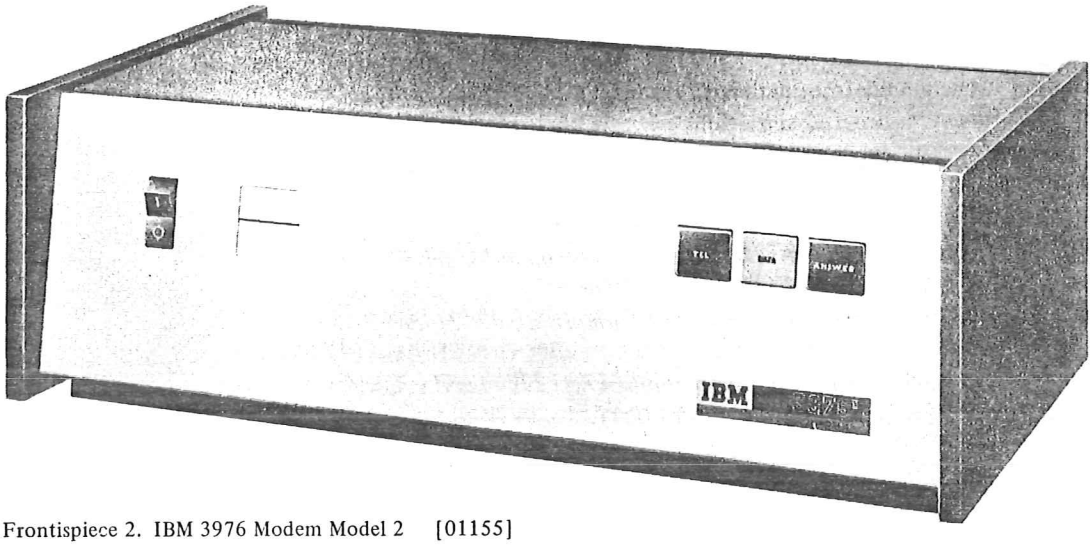
Text for this manual has been prepared with the IBM 72 Composer.

Requests for copies of IBM publications should be made to your IBM representative or to the IBM branch office serving your locality.

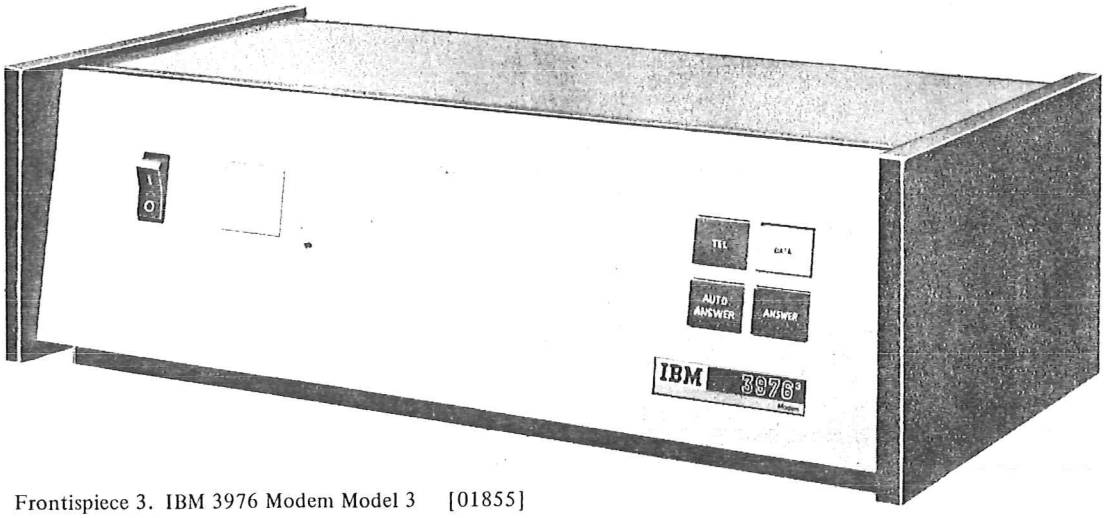
Address comments regarding the contents of the publication to:
IBM France, Centre d'Etudes et Recherches, Product Publications, Dept 868, 06, La Gaude, France.



Frontispiece 1. IBM 3976 Modem Model 1 [01156]



Frontispiece 2. IBM 3976 Modem Model 2 [01155]



Frontispiece 3. IBM 3976 Modem Model 3 [01855]

PHYSICAL INSTALLATION

Structural Description

The IBM 3976 Modem (see Frontispieces) is housed in a rectangular case made of formed sheet metal. A drawer-like construction allows complete removal of the chassis from the front (Figure 1) while the case remains fixed. The rear cover can be removed separately.

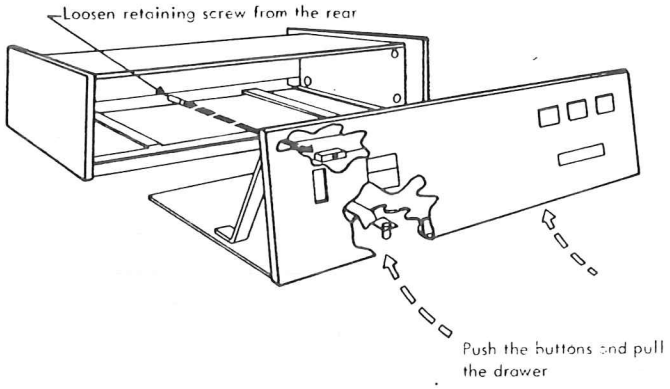
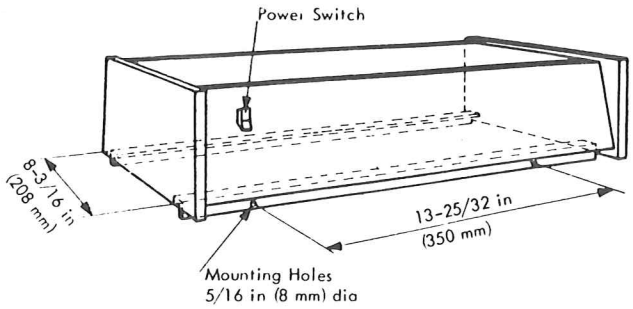


Figure 1. Chassis Removal [01109]



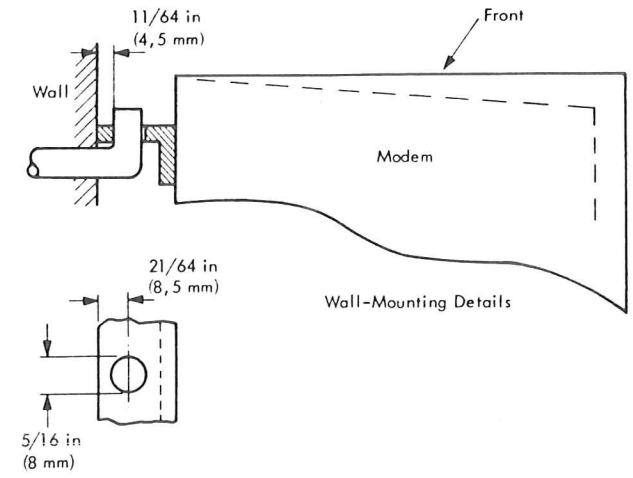


Figure 2. Modem Installation Details [01153A]

Installation

The 3976 Modem can be placed on a horizontal surface, such as a desk top or shelf, or fixed to a vertical wall by two wall hooks (Figure 2). Wall mounting is not recommended for multiple installations.

A minimum clearance of 2 inches (5 centimeters) must be allowed between the back of the modem and any vertical surface to permit cooling and cable exits. It must be possible to move the modem, or modem chassis, to a position where the necessary clearance is available for servicing the modem (see Figure 4); the lengths of the power cord, telephone line cable, and data terminal interface cable must be sufficient to permit the modem to operate in such a position.

For multiple installations, such as in connection with an IBM multiplexer, modems can be stacked in columns of up to six high (Figure 3). With such an arrangement, a service clearance of 30 inches (75 centimeters) must be provided at the front and rear of the modem.

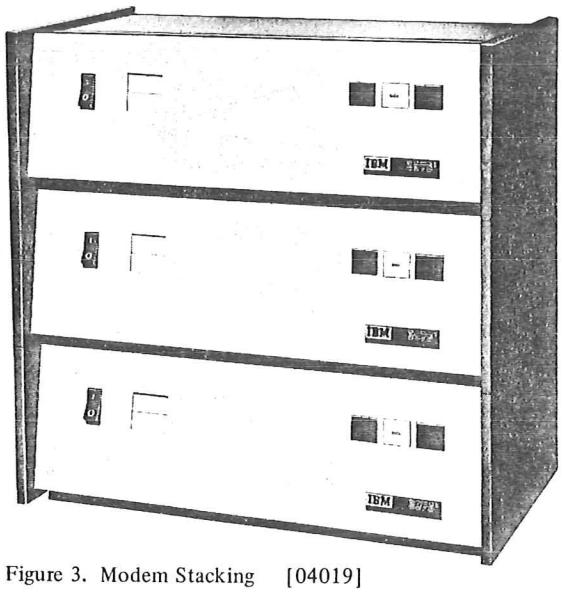


Figure 3. Modem Stacking [04019]

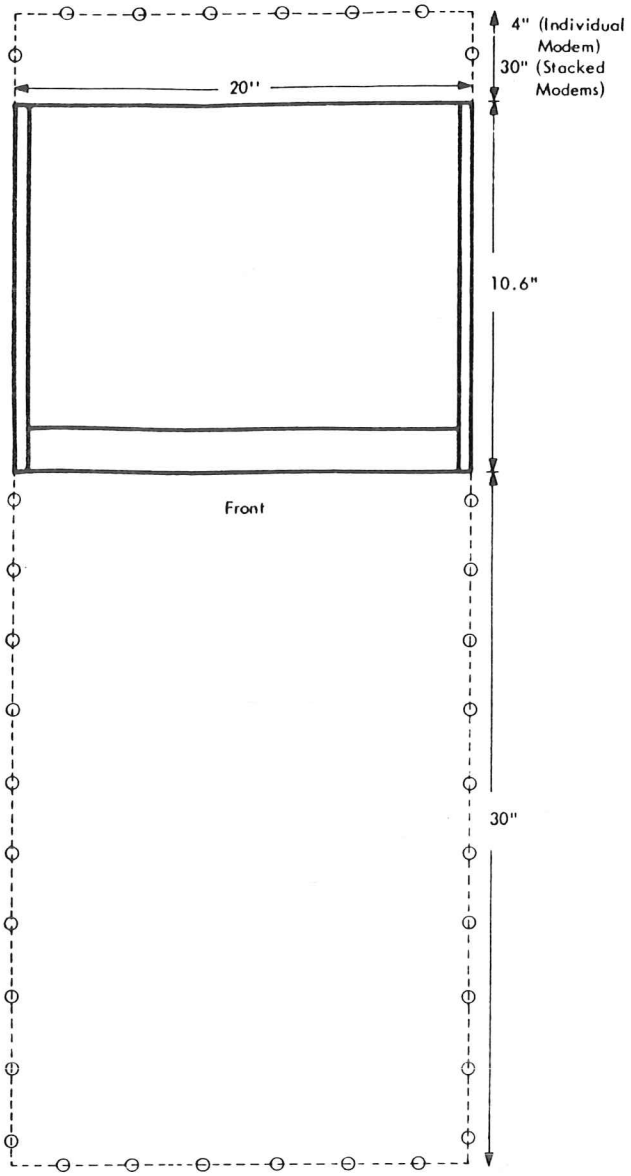


Figure 4. Plan View of Modem [04020]

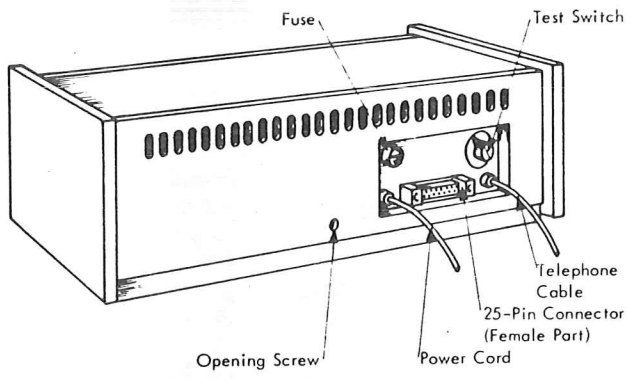


Figure 5. Rear View of Modem [04021]

IBM World Trade
Americas/Far East Corporation
Town of Mount Pleasant
Route 9, North Tarrytown
New York, 10591, USA

IBM Eurocoordination
Tour Franklin
Cedex 11
92081 Paris, La Défense
France

UNIT SPECIFICATION

Dimensions

	Width	*Depth*	*Height*
Inches	20.0	10.6	6.6
Centimeters	51,0	27,0	16,7

Service Clearances

	Front	*Rear (Individual Modem)*	*Rear (Stacked Modems)*	*Sides*
Inches	30	4	30	0
Centimeters	75	10	75	0

Weight

	Model 1	*Models 2 and 3*
lb	33	35
kg	15	16

External Power Requirements

Voltage	112.5V, 123.5V, 195V, 220V, 235V
Voltage tolerance	±10%
Phase	Single
Frequency	49 to 61 hertz (Hz)
Power consumption	35 VA maximum at rated voltages

Power Cord

Specification	2 wires plus ground; length 7ft (2,1m); outside diameter 0.37 in (7,8 mm). Three versions of cord are available.

Conductor colors

1. United Kingdom (50 Hz) — Ground – Green/yellow; Phase – Black / Red
2. Other countries using 50 Hz — Ground – Green/yellow; Phase – Black / Blue
3. Countries using 60 Hz — Ground – Green/yellow; Phase – Black / White

Environmental Requirements

Temperature	50 to 110°F (10 to 43°C)
Relative humidity	8 to 80%

If 80% relative humidity is exceeded during storage or shipment, the modem must be placed in an environment of less than 80% for five days before operation.

Air conditioning is only needed in order to meet the foregoing environmental requirements.

Telephone Line Cable

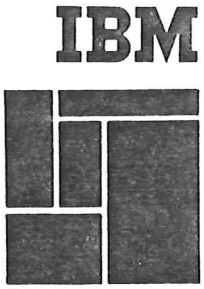
An eight-wire telephone cable is provided for connection to the telephone junction box.

Length	8 ft (2,5 m)
Outside diameter	0.169 to 0.303 in (4,3 to 7,7 mm)

Data Terminal Interface Connector

The 25-pin female connector, part 2133194 (Figure 5) provides for connection to the data terminal equipment. The data terminal interface cable and its male connector are normally provided with the data terminal equipment.

IBM 3976 Models 1, 2, ... 3 Installation Manual—Physical Planning GA19-0022-2
Printed in Denmark
Johan Ullstad & Sønner A/S, Copenhagen



Product Reference Literature

Order No. GA19-0042-2

IBM 3976 Modem Model 3 with serial numbers 73 40001 and above Installation Manual–Physical Planning

This publication contains information on the physical installation of the IBM 3976 Modem Model 3 with serial numbers 73 40001 and above, and provides the specifications (dimensions, service clearances, weight, power requirements, environmental requirements, telephone line cable, and data terminal interface connection) of the machine.

For further information on this Modem refer to:

IBM 3976 Modem Model 3 with serial numbers 73 40001 and above, Component Description, Order No. GA19-0041.

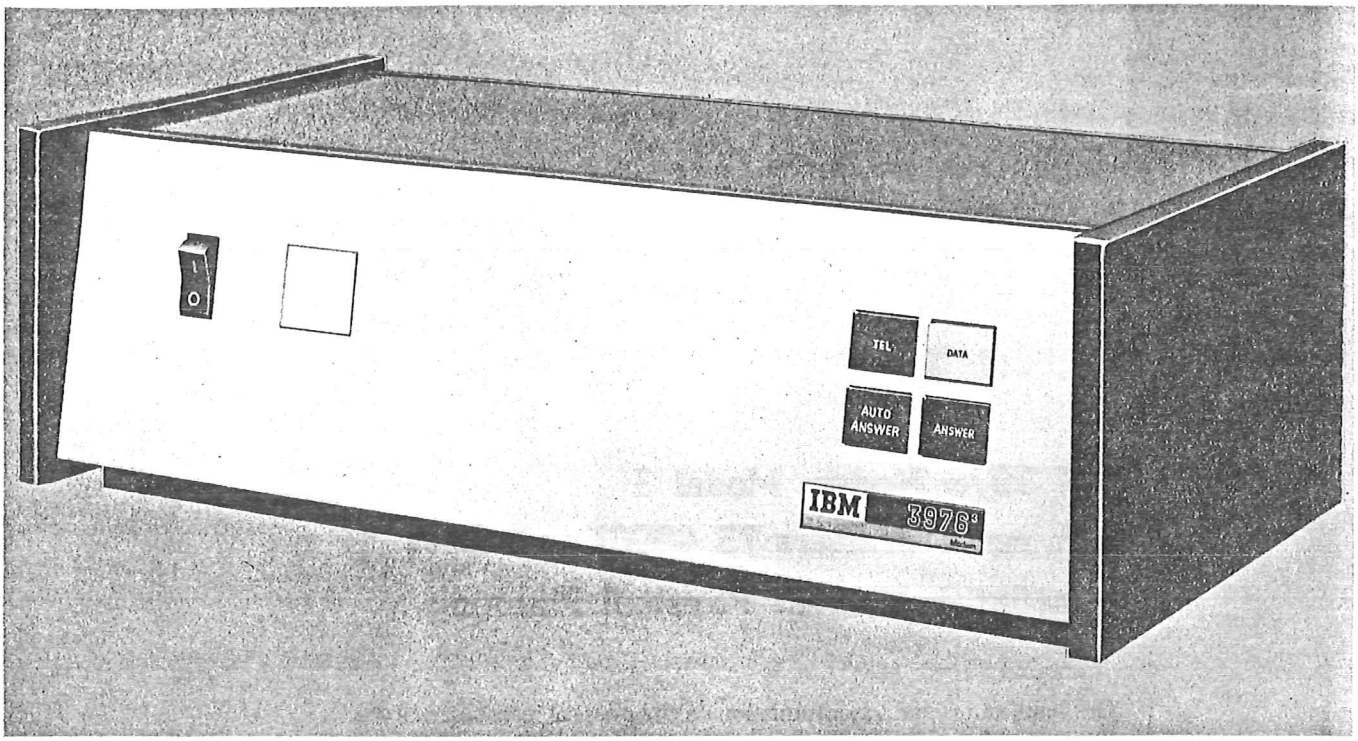
Third Edition (January, 1975)

This is a major revision of, and obsoletes, GA19-0042-1. Changes have been made to reflect the availability of the 3976 in Japan. Such modifications to the text and/or illustrations are indicated by a vertical line to the left of the change.

Changes are periodically made to the information herein; any such changes will be reported in subsequent revisions or Technical Newsletters.

Requests for copies of IBM publications should be made to your IBM representative or to the IBM branch office serving your locality.

Address comments regarding the contents of the publication to:
IBM France, Centre d'Etudes et Recherches, Dept 0762, 06610, La Gaude, France.
Comments become the property of IBM.



Frontispiece. IBM 3976 Modem Model 3 [01855]

PHYSICAL INSTALLATION

Structural Description

The IBM 3976 Modem Model 3 with serial numbers 73 40001 and above (see Frontispiece) is housed in a rectangular case made of formed sheet metal. A drawer-like construction allows complete removal of the chassis from the front (Figure 1) while the case remains fixed. The rear cover can also be removed separately when the retaining screw is loosened.

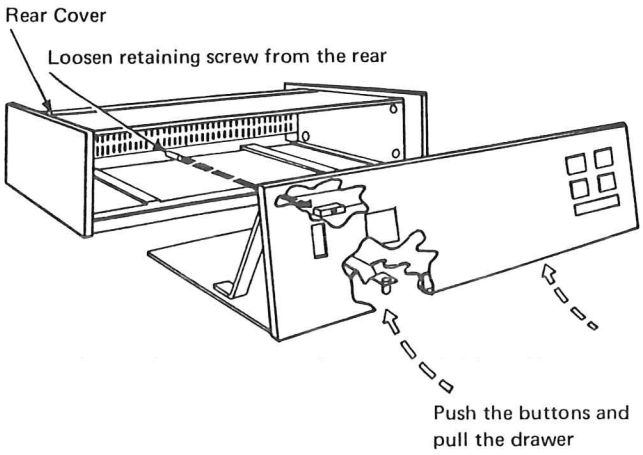


Figure 1. Chassis Removal [07998]

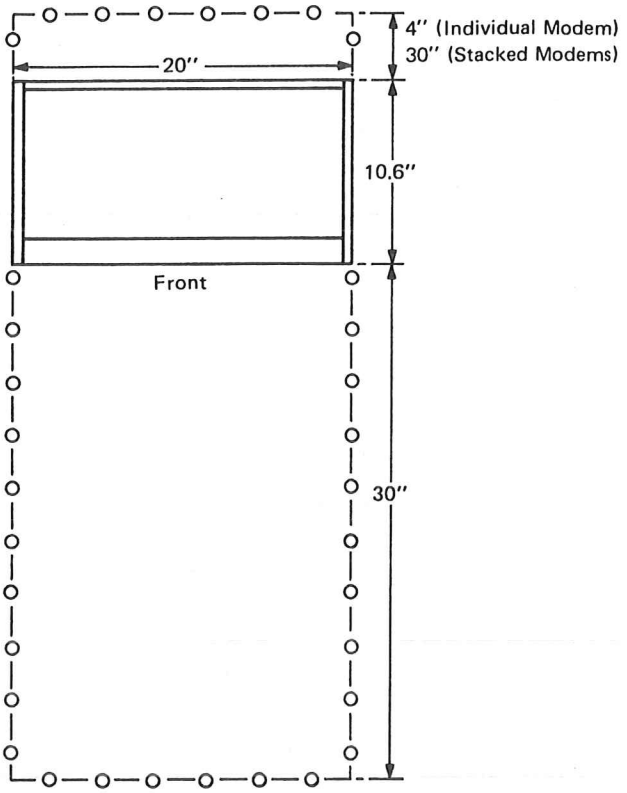


Figure 2. Plan View of Modem [07999]

Installation

The 3976 Modem Model 3 can be placed on a horizontal surface, such as a desk top or shelf.

A minimum clearance of 4 inches (10 centimeters) must be allowed between the back of the modem and any vertical surface to permit cooling and cable exits. It must be possible to move the modem, or modem chassis, to a position where the necessary clearance is available for servicing the modem (Figure 2); the lengths of the power cord, telephone line cable, and data terminal interface cable must be sufficient to permit the modem to operate in such a position.

For multiple installations, such as in connection with an IBM multiplexer, modems can be stacked in columns of up to six high (Figure 3). With such an arrangement, a service clearance of 30 inches (75 centimeters) must also be provided at the rear of the modem.

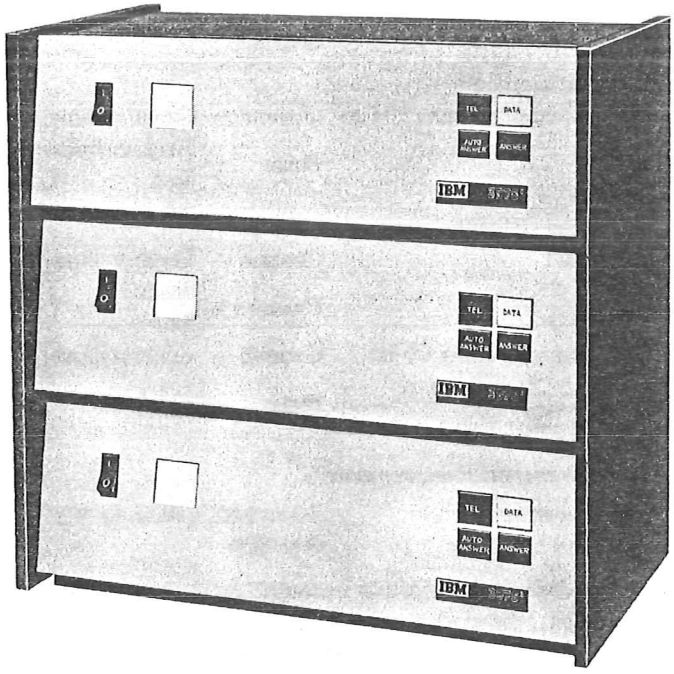


Figure 3. Modem Stacking [08000]

UNIT SPECIFICATION

Dimensions

	Width	*Depth*	*Height*
Inches	20.0	10.6	6.6
Centimeters	51,0	27,0	16,7

Service Clearances	*Front*	*Rear (Individual Modem)*	*Rear (Stacked Modems)*	*Sides*
Inches	30	4	30	0
Centimeters	75	10	75	0

Weight

lb	35
kg	16

External Power Requirements

Voltage
50 Hz 100V, 110V, 123.5V, 200V, 220V, and 235V
60 Hz 100V, 115V, 200V, 208V, and 230V.

Voltage tolerance	±10%
Phase	Single
Frequency	50 or 60 Hz
Frequency tolerance	±1 Hz
Power consumption	60 VA maximum at rated voltages

Power Cord

Specification	2 wires plus ground; length 7 ft (2,1m); outside diameter 0.37 in. (7,8 mm). Three versions of cord are available.

Conductor colors

1. United Kingdom (50 Hz)	Ground	Green/yellow
	Phase	Black or brown / Red
2. Other countries using 50 Hz	Ground	Green/yellow
	Phase	Black / Blue
3. Countries using 60 Hz and Japan (even if 50 Hz)	Ground	Green/yellow
	Phase	Black / White

Environmental Requirements

Temperature	50 to 110° (10 to 43°C)
Relative humidity	8 to 80%

If 80% relative humidity is exceeded during storage or shipment, the modem must be placed in an environment of less than 80% for five days before operation.

Air conditioning is only needed in order to meet the foregoing environmental requirements.

Data Terminal Interface Connector

The 25-pin female connector, Part 2133194, located at the rear of the modem (Figure 4) provides for connection to the data terminal equipment. The data terminal interface cable and its male connector are normally provided with the data terminal equipment.

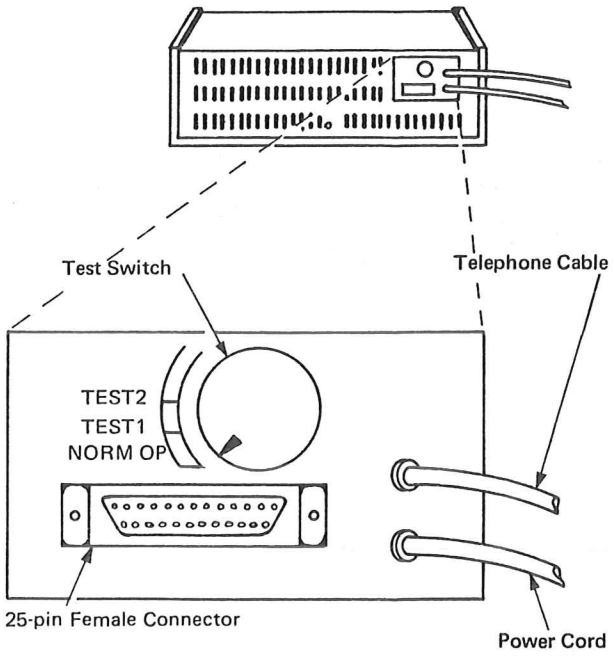


Figure 4. Rear View of Modem [08001]

Telephone Line Cable

An eight-wire telephone cable (see Figure 4) is provided for connection to the telephone junction box:

Length	8 ft (2,5m)
Outside diameter	0.169 to 0.303 in. (4,3 to 7,7 mm)

Details of the equipment connections to the cable are given in Figure 5.

Wire Colors Non-Japan	Wire Colors Japan*	To be connected to:
Pink / Gray	–	Automatic Calling Equipment **
Red / Blue	Yellow / Black	Receive Pair of Four-Wire Telephone Line
Yellow / Green	–	Telephone Set and Recorded Voice Announcement Equipment **
Brown / White	Red / White	Two-Wire Telephone Line ** or Transmit Pair of Four-Wire Telephone Line

* Cable is terminated by plug type 283B
** Not available in Japan

Figure 5. Telephone Line Cable Connections [08002A]

Telephone Line Characteristics

The modem operates with telephone lines having the typical characteristics given in Figure 6. Departures from these characteristics must be discussed with the IBM representative and the appropriate PTT.

It is recommended that the telephone line be protected against lightning strikes.

	Typical PTT Line	3002 Channel with C1 Conditioning*
Characteristic Impedance	600 ohms	600 ohms
Maximum Frequency Shift arising from Frequency Translation	±6 Hz	±6 Hz
Attenuation/Frequency Distortion	−2.5 to +4.5 dB in the frequency range 500 to 2000 Hz −2.5 to +6.0 dB in the frequency range 300 to 2600 Hz	−2 to +6 dB in the frequency range 300 to 2700 Hz −1 to +3 dB in the frequency range 1000 to 2400 Hz −3 to +12 dB in the frequency range 2700 to 3000 Hz
Delay/Frequency Distortion	Maximum difference of 1000 microseconds in the frequency range 1000 to 2400 Hz Maximum difference of 1500 microseconds in the frequency range 800 to 2600 Hz	Maximum difference of 1000 microseconds in the frequency range 1000 to 2400 Hz Maximum difference of 1750 microseconds in the frequency range 800 to 2600 Hz
Minimum Signal-to-Noise Ratio**	16 dB for a data signaling rate of 1200 bps*** 12 dB for a data signaling rate of 600 bps	16 dB for a data signaling rate of 1200 bps*** 12 dB for a data signaling rate of 600 bps

* Characteristics taken from A.T. & T channel specifications

** Noise measurements to be made with a "C-message-weighted filter" and with impulse noise added. The amount and method of measurement of impulse noise should be in accordance with CCITT recommendation V55.

*** bps = bit per second

Figure 6. Telephone Line Characteristics [08003]

GA19-0042-2

IBM 3976 Model 3 ⩾ 73 40001 Installation Manual — Physical Planning Printed in Denmark GA19-0042-2

IBM

IBM World Trade Corporation
821 United Nations Plaza, New York, New York 10017