IBM Sales Manual (US) - Document 5494-001

5494-001 IBM Remote Control Unit Model 001

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1 IBM U.S. Product Life Cycle Dates

Type	Model	Announced	Available	Marketing Withdrawn	Replaced By
5494-001		1992/02/18	1992/03/27	1994/11/25	—

2 Abstract

The IBM 5494 Remote Control Unit provides access to an AS/400 for remote workstation users. This remote attachment allows users in different buildings, different cities, or even different countries to share the resources on an AS/400 system. In addition to providing functional capabilities for nonprogrammable workstations, the 5494 offers multiple communication options for both nonprogrammable and programmable workstations. With the 5494, users get the same capabilities as if they were locally attached to the AS/400.

Model Abstract 5494-001

(For IBM US, No Longer Available as of November 25, 1994)

The Model 001 manages the operation of up to 56 twinaxial-attached workstations and allows the workstations to communicate with an IBM AS/400*. This communication is handled through a Type 2.1 connection.

3 Highlights

- Supports twinaxial devices
- Provides user-friendly configuration using PC or PS/2*
- Supports all 5394 native-mode workstation and communication functions
- Provides twinaxial device communication to an AS/400* over a token ring or Ethernet LAN
- Provides token-ring workstation attachment to a remotely located AS/400
- Provides Ethernet workstation attachment to a remotely located AS/400
- Provides an EIA 232D (V.24/V.28), V.35, or X.21 interface for attachment to analog, digital, packet-switched, or circuit-switched networks using communication cables with Auto-Wrap capability for network problem isolation
- Allows (with the 5494 Twinaxial Expansion Kit) a customer to add up to 28 additional twinaxial devices, which increases the total number of twinaxial devices supported from 28 to 56
- Allows up to 80 SNA devices to be attached over a token ring or Ethernet LAN
- Allows the attachment to a SNA subarea network
- Allows direct attachment to a Frame Relay network
- Allows source route bridging of SNA and non-SNA token-ring traffic across a Frame Relay network.
- Can communicate with up to four AS/400s at the same time

4 Description

Business Solutions

The 5494-EXT consolidates the Models 001 and 002 into a single model with optional features to meet operational requirements. With the emerging growth of LAN installations, the need for workstation communications with the host via LAN attachment is required. The IBM 5494 Remote Control Unit Model EXT is designed to meet this need.

The 5494 Token-Ring Adapter and 5494 Ethernet Adapter allow the 5494 to communicate to the AS/400 via a token-ring or Ethernet LAN. When used as a gateway, the 5494 supports up to 80 devices attached to a token-ring or Ethernet LAN. When using the Frame-Relay – Token Ring Bridge feature, non-SNA traffic on token-ring LANs can access the rest of the communication network through the 5494. Bridged devices are not included in the 80 device maximum.

Investment Protection

The 5494 can support several different interfaces such as EIA 232D, CCITT V.24/V.28/V.35, and CCITT X.21, depending upon the type of communication cable used. When migration is desired from one interface type to another, only the communication cable needs to be changed. These communication cables can be ordered as accessories, or features. The 5494 supports communication speeds up to 128 kilobits per second (Kbps) when attached to a CCITT X.21 or V.35 interface and up to 19.2 Kbps when the attachment interface is EIA 232D or CCITT V.24/V.28.

Growth Enablement

With the addition of the IBM 5494 Twinaxial Expansion Kit, the maximum number of twinaxial workstations supported can be increased from 28 to 56 workstations. Additional feature slots and memory offer the opportunity for expanding function in the future. While the footprint is approximately the same as the 5394, the 5494 can handle more workstations per controller reducing floorspace needed.

Systems Management

The reliability and availability characteristics of the IBM 5494 Remote Control Unit aid in higher system availability. The 5494's operator panel design provides direct access to the 5494 for diagnostic data and assists in faster problem determination and isolation. Support for continuous retries allows communications with an AS/400* to be reestablished automatically without operator intervention; even if the communications line has been unavailable for extended periods of time. The 5494 can be easily configured using a PC or a PS/2. The PC or the PS/2 used for configuring a 5494 need not be attached to a 5494, thus making it possible to set up the 5494 configuration on a 3.5-inch diskette without use of a 5494. The 5494 provides automatic testing of the communications cable link any time the 5494 is powered on or extended diagnostics are run. The 5494 Utility Program also allows the user to run concurrent diagnostics on an attached 5494 and/or reset and restart the 5494 without the need for operator intervention at the 5494 Remote Control Unit.

User Productivity

Help text screens are provided to assist configuring a 5494 for AS/400 communication using a PC or a PS/2. The 5494 Utility Program's menu driven interface and extensive help panels save time and effort for customers who are trying to configure the 5494 for the first time or for customers who don't configure often. During operation, the 5494 recognizes any changes to its device attachment status (removal or addition of a device) and automatically reconfigures itself without operator intervention. It also passes this information to the AS/400 for automatic configuration at the host.

Model Description 5494-001

The IBM 5494 Remote Control Unit Model 001 can support up to 56 twinaxial devices. When the business environment requires a token-ring connection, the Model 001 can be upgraded to a Model 002.

The base 5494 Model 001 Remote Control Unit enables a customer to attach up to 28 twinaxial devices.

5 Model

5.1 Model Summary Matrix

MAXIMUM DEVICES SUPPORTED

Models	Feature Code	Twinaxial Workstations	Token-Ring Workstations	Total Workstations
001	None	28	–	28
001	1200	56	–	56

INTERFACES SUPPORTED

Models	LAN Network	Supported Speed	WAN Network	Supported Speed
001	—	—	EIA 232D (V.24/V.28) V.35, X.21	19.2 Kbps 128 Kbps

6 Maximum

Not applicable.

7 Customer Setup (CSU)

Yes. The 5494 Remote Control Unit is a customer set-up device. The planning and site preparation should be done prior to receipt of the machine. Refer to the "IBM 5494 Remote Control Unit Planning Guide" (GA27-3936) for details. The CSU process is defined in detail in the "IBM 5494 Remote Control Unit User's Guide" (GA27-3960).

8 Devices Supported

Nonprogrammable Workstations (NWS)

The 5494 supports the following nonprogrammable workstations (NWS) for direct attachment with any cable that supports 5250 data-stream communication:

Display Stations:

- IBM 3179 Color Display Station Model 2
- IBM 3180 Display Station Model 2
- IBM 3196 Display Station Models A10, A20, B10, and B20
- IBM 3197 Display Station Models C10, C20, D10, D20, D40, W10, and W20
- IBM InfoWindow* 3476 Models A10, A20, AA0, AB0, B10, B20, BAx (See Note 1), BGx, BA0, BB0, EAx, and EGx1.

- IBM InfoWindow 3477 Models C1y (See Note 2), C2y, CA0, CB0, D1y, D2y, DA0, DB0, E1y, E2y, EA0, EB0, FAx, FCx, FDx, FGx, HAx, HCx, HDx, HGx, J, K, S, T, W1y, W2y, WA0, and WB0
- IBM 3486 Display Station Models BAx, BGx, Axx, and Bxx
- IBM 3487 Display Station Models HAx, HCx, HGx, Cxx, Dxx, Exx, and Wxx
- IBM 3488 InfoWindow II* Display Models H1x, V1x, V4x, and V5x.
- IBM 5251 Display Station Models 11 and 999
- IBM 5291 Display Station Models 1 and 2
- IBM 5292 Color Display Station Models 1 and 2
- IBM 5295 Display Station Models 1, 2, 0C2, 0H2, GP3, and LK1.

Note 1: The letter "x" represents the specific model designation 1 or 3.
Note 2: The letter "y" represents the specific model designation 0 through 9.

Programmable Workstations (PWS)

- IBM personal computer or Personal System/2* (PS/2)* computer with one of the following:
  - Enhanced 5250 Emulation Program
  - IBM System 36/38 Workstation Emulation Program
  - PC Support/400 Version 2 Release 1.1 or higher
  - Networking Services/Disk Operating System (NSDOS)
  - Operating System/2* (OS/2*) Extended Edition (EE) 1.2 or 1.3
  - OS/2 with Extended Services (ES) 1.0 or higher
  - OS/2 with Communications Manager/2 V1.0 or higher
- IBM Personal System/55* (PS/55*) computer:
  - Japanese 5250 PC emulation programs
  - IBM Japanese 5250 Personal Computer/2 AD (5250 PC/2 AD) Support
  - Japanese 5250 Workstation Program Version 2.0
  - OS/2 EE J1.2 or J1.3
  - OS/2 with ES J1.0
- IBM BS/150 System Running
  - Japanese 5250 PC emulation programs.

Printers:

- IBM 3812 Printer Models 1 and 2
- IBM 3816 Printer Models 01D and 01S
- IBM 3912 Page Printer Models AS0 and AS1
- IBM 3916 Printer Models AS0 and AS1
- IBM 3930 Page Printer Models 02S and 02D (with FC#9217)

- IBM 4028 Printer Model AS1
- IBM 4210 Printer Model 1
- IBM 4214 Printer Model 2
- IBM 4224 Printer Models 101, 102, 1C2, 1E2, and 1E3
- IBM 4230 Printer Models 101, 1I1, 1S2, 102, 4S3, and 4I3
- IBM 4234 Printer Models 2, 8, and 012
- IBM 4247 Serial Matrix Printer Model 001 and 002
- IBM 5219 Printer Models D01 and D02
- IBM 5224 Printer Models 1 and 2
- IBM 5225 Printer Models 1, 2, 3, and 4
- IBM 5227 Printer Models 1, 2, 3, and 5
- IBM 5256 Printer Models 1, 2, and 3
- IBM 5262 Printer Model 1
- IBM 5317 Printer Model 1
- IBM 5327 Printer Models 1, 2, and 3
- IBM 6252 Impactwriter* Models T08, T12
- IBM 6262 Printer Models T12, T14, and T22.
- IBM 6400 Line Matrix Printer All Models
- IBM 6408 Printer Model CT0, CTA
- IBM 6412 Printer Model CT0, CTA

Other Devices
The 5494 also supports the following devices:

- IBM 5208 (ASCII-5250) Line Protocol Converter
- IBM 5209 (3270-5250) Line Protocol Converter
- IBM 5299 Model 3 Terminal Multiconnector
- ROLMbridge 5250 Line Protocol Converter Model 46815B
- IBM 7820 ISDN Terminal Adapter
- IBM 9270 Voice Response Unit (5494 LIC Release 1.0 ONLY)
- IBM 8228 Multistation Access Unit
- IBM 8230 Controlled Access Unit.

Modems and DCEs

If you are communicating with your AS/400 system through an analog communication network, the 5494 and the AS/400 system are attached to the communication line through modems. The transmitting modem converts the digital signals to analog signals and transmits these signals over the communication line. The receiving modem converts the analog signals back to digital signals. The transmitting modem and the receiving modem must be compatible. For example, the modems must transmit data at the same speed and use the same modulation methods. The 5494 supports the following IBM modems:

- IBM 3833 Model 1
- IBM 3834 Model 1
- IBM 3863 Models 1 and 2
- IBM 3864 Models 1 and 2
- IBM 3865 Models 1 and 2
- IBM 3868 Models 1, 2, 3, and 4
- IBM 3872 Model 1
- IBM 3874
- IBM 5811 Models 10, 18, 20, and 28
- IBM 5812 Models 10 and 18
- IBM 5821 Model 10
- IBM 5822 Model 10
- IBM 5842 Model 1
- IBM 5853 Model 1
- IBM 5858
- IBM 5865 Models 1, 2, and 3
- IBM 5866 Models 1, 2, and 3
- IBM 5868 Models 51, 52, 61, and 62
- IBM 7855 Model 10
- IBM 7861
- IBM 7868.

If your network is an X.21 Public Data Network or an X.25 Packet-Switched Public Data Network, your 5494 and the AS/400 system are attached to the network through DCEs. The network may provide you with DCEs. If not, your network supplier should give you information for ordering this equipment. Contact your network supplier for more information.

Networks

The 5494 Model 001 or Model 002 using the EIA 232D (CCITT V.24/V.28) communication cable can attach to the following types of networks:

- Public or private, leased or switched, point-to-point or multipoint, analog lines using a modem

- Dataphone Digital Service (DDS) using a Data Service Unit (DSU) with an EIA 232D interface
- X.21 Circuit-Switched or Leased-Circuit Data Networks using an X.21 bis (V.24/V.28) DCE
- X.25 Packet-Switched Data Networks using an X.21 bis (V.24/V.28) DCE.

The 5494 Model 001 or Model 002 using the CCITT X.21 communication cable can attach to the following types of networks:

- X.21 Circuit-Switched Data Networks using an X.21 DCE
- X.21 Leased-Circuit Data Networks using an X.21 DCE (point-to-point or multipoint)
- X.25 Packet-Switched Data Networks using an X.21 DCE
- T1 Leased-Circuit using a fractional T1 multiplexer.

The 5494 Model 001 or Model 002 using the CCITT V.35 communication cable can attach to the following types of networks:

- DDS using a DSU with a V.35 interface
- Point-to-point leased line
- Broadband analog networks
- Point-to-point high-speed private line using limited-distance modems
- X.21 Circuit-Switched or Leased-Circuit Data Networks using an X.21 bis (V.35) DCE
- X.25 Packet-Switched Data Networks using an X.21 bis (V.35) DCE
- T1 Leased-Circuit using a fractional T1 multiplexer.

Programmable Workstation (PWS) Requirements for the 5494 Utility Program

To use the 5494 Utility Program, you need a supported personal computer or PS/2 computer with a 3.5-inch diskette drive capable of supporting 1.44 MB formatted diskettes. To use the Utility Program on a stand-alone PWS, DOS or OS/2 is required.

To use the 5494 Utility Program from an attached PWS, one of the following operating system/communications combinations is required:

- DOS 3.3 or higher with PC Support/400,
- OS/2 Extended Edition 1.2 or 1.3,
- OS/2 with Extended Services (ES) 1.0 or higher,
- OS/2 with Communications Manager/2* Version 1.0 or higher.

NOTE: An attached PWS is connected to the 5494 Model 001 through the Twinaxial Workstation Attachment.

Your PWS must have an additional 400 KB of available memory above the existing memory requirements for the operating system and any resident software.

9 Model Conversions

Model 001 and Model 002. Model 001 and Model 002 can be made functionally equivalent to Model EXT by installing level 3.0 microcode or later.

10 Technical Description

The IBM 5494 is a remote control unit which manages the operation of attached workstations and allows the workstations to communicate with an IBM AS/400. This communication is handled through a Type 2.1 connection with LU6.2 Low-Entry Networking (LEN) End Node Support. The connection with the AS/400 is through the AS/400's communication port for TP connections. The IBM 5494 provides the same workstation functions that are provided by the IBM 5394 Release 2.3 when attached to an AS/400.

11 Physical Specifications

- Width: 44.0 cm (17.3 inches)
- Depth: 43.0 cm (16.9 inches)
- Height: 14.0 cm (5.5 inches)
- Weight: 11.8 kg (26 lbs)
- Heat Output: 26 Kcal/hour

12 Operating Environment

- Voltage: 110 V/220 V
- Power: 50/60 HZ
- Temperature: 10C to 40.6C (50C to 105F)
- Relative humidity: 8 to 80 percent
- Wet bulb: 26.7C (80F)

13 Limitations

- A DOS or OS/2*-based PC or PS/2 computer capable of reading 1.44MB formatted 3.5-inch diskettes is required to use the 5494 Utility Program.
- One of the following devices must be attached to the IBM 5494 Remote Control Unit to perform 5494 problem determination and switched network link establishment:
  - 5250 type display station with keyboard
  - IBM Programmable Workstation, (PWS), with 5250 emulation
  - IBM PWS with 3.5-inch diskette drive, 5494 Utility Program and IBM PC Support/400 Version 2 Release 1.1 or higher.
  - IBM PWS with 3.5-inch diskette drive, 5494 Utility Program and OS/2 Extended Edition 1.2 or 1.3.
  - IBM PWS with 3.5-inch diskette drive, 5494 Utility Program and OS/2 V1.2 or higher with Extended Services.
  - IBM PWS with 3.5 inch diskette drive, 5494 Utility Program and either OS/2 V1.3 or OS/2 V2.0 with Communications Manager/2.

- If functional consistency between devices attached via local control units and remote control units is desired and the customer is using OS/400 Version 2 Release 3, then the IBM 5494 Release 2.0 is required.
- The IBM 5494 does not support 5294 emulation mode.

14 Hardware Requirements

The IBM 5494 Remote Control Unit attaches to an AS/400 via the telecommunication lines (switched or leased) using one of the following physical interfaces:

- EIA 232D
- CCITT X.21
- CCITT V.24/V.28/V.35

The 5494 supports SDLC, V.25 BIS, X.21, and X.25 protocols. Depending on the desired physical interface, the appropriate communication cable must be used to connect the 5494 to a modem/DCE which, in turn, attaches the 5494 to the AS/400 via the communication network.

15 Software Requirements

- The AS/400 must have the OS/400* Version 2 Release 1.1 or higher operating system installed for communication with an IBM 5494 Remote Control Unit.
- IBM PC Support/400 Version 2 Release 1.1 or higher or OS/2 Extended Edition 1.2 or 1.3, or OS/2 with Communications Manager/2 V1.0 or higher is required for all PCs and PS/2s that wish to use the 5494 Utility Program for interactive configuration and network link establishment.

16 Publications

The following publications are shipped with the product. To order additional copies, contact your IBM representative.

- GA27-3960 IBM 5494 Remote Control Unit User's Guide.
- GA27-3909 IBM 5494 Remote Control Unit Problem Determination Quick Reference
- GA27-3936 IBM 5494 Remote Control Unit Planning Guide
- SY27-0327 IBM 5494 Remote Control Unit Maintenance Information

A functions reference manual may also be ordered, SC30-3533.

For a current list of publications, refer to the appropriate publications option on your respective HONE system, or contact your local IBM representative.

17 Features – Specify/Special/Exchange

17.1 No Charge Specify Codes

- Low Voltage (110V) (#0802)
- High Voltage (220V) (#0801)
- Communication Cables:
  - EIA RS-232 D, V.24.V.28 (#1850 For all countries except Japan, Korea and Germany); (#1851 For Japan and Korea); (#1852 For Germany).
  - CCITT V.35 (#1853 For all countries except France); (#1854 For France).
  - CCITT X.21 (#1855 For all countries)

Power Cords

U.S.	110V	220V
14 ft. Standard	8016	1901
14 ft. Twist-Lock	8011	N/A
14 ft. Hospital	8012	N/A
6 ft. Standard	8013	N/A
6 ft. Twist-Lock	8014	N/A
6 ft. Hospital	8015	N/A

Specify feature codes for voltage, communications cables, and power cords must accompany all orders; however, power cords will automatically ship with the 5494 for those countries not listed above.

Publications Languages

- U.S. English: 1823
- French: 1829
- Spanish: 1833
- Japanese: 1832
- Korean: 1910
- U.S. English (LA & AP only): 1827

Specify feature codes for language must accompany all orders except U.S. which defaults to U.S. English.

17.2 Special Feature Codes – Chargeable

Optional Features

The following features are available as optional features for the IBM 5494 Remote Control Unit.

IBM 5494 Twinaxial Expansion Kit (P/N 73G2213, #1200)

The IBM 5494 Twinaxial Expansion Kit allows a customer to add up to 28 additional twinaxial devices to one 5494 Remote Control unit.

This kit consists of a hardware adapter, a 4 port Twinaxial Expansion Cable and installation instructions. The adapter and expansion cable provide an additional 4 ports to the 5494 increasing the total to 8 ports. Up to seven devices may be attached to any single port (a total of 56 devices if all ports are used to their maximum capacity).

Maximum Number of Features: Only one kit may be installed in any single 5494.
Prerequisites: None.
Corequisites: This kit requires that the AS/400 uses OS/400 Version 2 Release 3 and that the 5494 uses Release 2.0 or the Licensed Internal Code from the Token-Ring Upgrade Kit.
Compatibility Conflicts: None.
Customer Set-up: YES. This feature is only available as a customer set up item.
Limitations: None.
Field Installable: YES. This feature is NOT available as a factory installed feature.
Cable Order: Kit includes a Port Expansion Cable.

18 Feature Exchanges

None.

19 Accessories

The following miscellaneous adapters, cables, and power cords are available as accessories.

Communication Cables	Part Number
EIA 232D, V.24/V.28	02F9660
EIA 232D, V.24/V.28 Japan and Korea	02F9661
V.35	02F9676
X.21	02F9670

Adapters
UTP Matching Adapter RJ-45 (73G9867)

Power Cords	110V	220V
14 ft Standard	6952299	1838573
14 ft Twist lock	7842142	—
14 ft Hospital	1838584	—
6 ft Standard	6952301	—
6 ft Twist Lock	7842140	—
6 ft Hospital	1838587	—
14 ft Twist-Lock Japan	6952337	—

Accessories can be purchased from IBM Telemarketing Operations (TMO). Call IBM TMO at 1-800-438-2468.

20 Customer Replacement Parts

None.

21 Machine Elements

None.

22 Supplies

None.

Diskettes

None.

Trademarks

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