

Bell System

**TECHNICAL
REFERENCE**

Catalog
December 1975



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BELL SYSTEM TECHNICAL REFERENCES

GENERAL

Bell System Technical References provide interface information to designers and manufacturers of business machines, communications systems and terminal equipment. The subjects covered by these Technical References include data set interface specifications, data communications systems and terminals, data connecting arrangements, protective connecting arrangements, various transmission channels and services, PICTUREPHONE®service, Attestation Programs and Conformance Programs. At the present time, these Technical References fall into six basic categories: Data Communications, Voice Communications, Radio and Transmission Engineering, PICTUREPHONE®service, Attestation Programs and Conformance Programs. As additional needs are determined, new Technical References within these categories and new categories will be provided.

Technical References are prepared in two forms, Standard and Preliminary. Standard Technical References (e.g., Data Sets 201A and 201B—August 1969) are provided for equipment and services which are expected to remain unchanged and available for a relatively long period of time. Preliminary Technical References (e.g., AD1—Preliminary—October 1974) are provided for new equipment and services and indicate information which may be changed or revised in a relatively short time. This does not mean that a manufacturer should not build equipment that is compatible with the information listed but it does offer a caution that the information presented may change.

This catalog of Technical References, to be published as required, lists all current Bell System Technical References. Included for each Technical Reference is the title, a synopsis and an ordering number (PUB4XXXX). In addition, a listing is provided to permit ordering of complete sets of Technical References in either the Data Communications or Voice Communications categories. Companies on standing order distribution will automatically receive a copy of the catalog.

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Each Protective Connecting Arrangement is further defined by a Uniform Service Order Code (USOC), e.g., QKT, which should be used for ordering purposes when the customer desires the installation of a connecting arrangement.

It is the responsibility of the manufacturer to advise the customer of the proper USOC; and it is the customer's responsibility to order the proper USOC from the Telephone Company.

ORDERING OF TECHNICAL REFERENCES

One-Time Orders

All orders should indicate the Technical Reference(s) desired by catalog number and quantity using the following format:

(Quantity) Technical References (Catalog Number)

If all Technical References in either the Data Communications or Voice Communications categories are desired, they may be ordered as a set using the catalog number assigned to that particular category. For example:

(Quantity) Complete Set of Voice Communications Technical References —PUB42000

Standing Orders

In addition to one-time orders it is also possible to place a standing order for all new and revised Technical References in a given category (i.e., Transmission Engineering PICTUREPHONE service or Attestation Programs). To place a standing order, use the following words:

Standing order for (Quantity) copies of all new [Category, (e.g., Voice, Data or Transmission)] Technical References.

Bell System Companies

Bell System Organizations may order Technical References using Form SD-1.80.80 and address it to:

Western Electric Company, Incorporated
Indiana Publication Center
P. O. Box 26205
Indianapolis, Indiana 46226

Non-Bell Companies

Non-Bell Companies should submit written requests for Technical References to:

American Telephone and Telegraph Co.
Supervisor — Information Distribution Center
195 Broadway, Room 208
New York, New York 10007

All requests should include both billing and shipping addresses. Billing will be rendered by the Western Electric Company, therefore, all checks should be made payable to them.

Pricing Information

The current Commercial Price for Technical References is \$1.50 each except the following:

PUB40001(Binder)	\$4.35	ea.
PUB41004	2.10	ea.
PUB41005	1.55	ea.
PUB41006	1.65	ea.
PUB41007	3.05	ea.
PUB41008	1.75	ea.
PUB41009	1.65	ea.
PUB41204	1.65	ea.
PUB41212	1.60	ea.
PUB41213	1.95	ea.
PUB41403	2.10	ea.
PUB41405	1.70	ea.
PUB41702	1.95	ea.
PUB41704	1.70	ea.
PUB41705	1.75	ea.
PUB41706	1.70	ea.
PUB41707	1.65	ea.
PUB41708	1.80	ea.
PUB41709	1.65	ea.
PUB41712	1.80	ea.
PUB42103	1.70	ea.
PUB42201	1.70	ea.
PUB42210	1.80	ea.
PUB43101	2.80	ea.
PUB43201	2.05	ea.
PUB43301	1.70	ea.
PUB43401	1.90	ea.
PUB44101	3.90	ea.

There is no charge for addenda. Prices subject to change without notice. The price of a complete set or a PUB series (i.e., PUB 41000) is determined by the prices of individual references. Prices do not include taxes or premium mailing charges.

ADMINISTRATION

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| *PUB40000 | Technical Reference Catalog —
December 1975 | Lists all current Bell System Technical References and provides ordering information, catalog numbers and synopsis. |
| PUB40001 | Technical Reference Binder | A general purpose four-ring binder suitable for all categories of Bell System Technical References. This binder will hold approximately 15 individual Technical References. |

DATA COMMUNICATIONS

PUB41000 Complete Set of Data Communications Technical References

Facilities for Data Communications

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| PUB41001 | 30-Baud Private Line Channels
Interface Specification —
December 1967 | Describes a private line channel capable of transmitting two-state ("mark-space," "binary") signals at rates up to 30-baud for metering, supervisory control and miscellaneous signaling purposes. Metallic continuity, end-to-end, is not a requirement of this channel and will generally not be available. The interface signal is two-state direct current. |
| PUB41002 | 45- 55- & 75-Baud Private Line
Channels Interface
Specification —
December 1967 | Describes three private line channels capable of transmitting two-state ("mark-space," "binary") signals up to their respective rated speeds for teletypewriter, data, metering, supervisory control and miscellaneous signaling purposes. Metallic continuity, end-to-end, is not a requirement of this channel and will generally not be available. The interface signal is two-state direct current. |
| PUB41003 | 150-Baud Private Line Channels
Interface Specification —
Revised September 1975 | Defines the interface for the 150 Baud Private Line Channel as presented to Customer-Provided Terminals. |
| PUB41004 | Data Communications Using
Voiceband Private Line
Channels — October 1973 | Describes voiceband channel arrangements for private line data transmission. Provides analog impairment limits supported on channels, and digital performance supported with Bell System service offerings; interface requirements for analog channels; engineering considerations for two-point and multipoint channel usage; and information on maintenance and channel availability. |

* Revised

PUB41005	Data Communications Using The Switched Telecommunications Network — Revised May 1971	Describes the structure and operation of the DDD network; presents switching and transmission performance data on the network and discusses topics related to data communications on the DDD network.
PUB41006	Attenuation and Envelope Delay Characteristics from the 1969-70 Switched Telecommunications Network Connection Survey — June 1973	Provides detailed information on attenuation and envelope delay characteristics on toll connections from the 1969-70 Switched Telecommunications Network Connection Survey.
PUB41007	1969 - 70 Switched Telecommunications Network Connection Survey (Reprints of Bell System Technical Journal Articles) — April 1971	Describes analog transmission parameter performance, low-speed data transmission performance, and high-speed voiceband data transmission performance of the Switched Telecommunications Network. This is a series of three Bell System Technical Journal Articles which summarize Bell Telephone Laboratories' 1969-70 Connection Survey.
PUB41008	Analog Parameters Affecting Voiceband Data Transmission — Description of Parameters — July 1974	A tutorial describing analog parameter which may effect data transmission over voiceband channels.
PUB41009	Transmission Parameters Affecting Data Transmission — Measuring Techniques — Revised May 1975	This Technical Reference briefly defines the parameters affecting data transmission described in the companion Technical Reference (PUB41008) and describes the techniques used by the Bell System to measure these parameters. In addition, physical and environmental requirements of test equipment used by the Bell System are provided.
PUB41011	Transmission Specifications for Voice Grade Private Line Protective Relaying Channels — May 1973	This Technical Reference provides information on a voice grade private line channel specifically designed for power industry protective relaying applications.
PUB41012	1A Data Station, Multichannel Arrangement Used in Provision of Two-Point Channelizing Service — June 1973	The 1A Data Station, Multichannel Arrangement is a frequency division multiplexer capable of deriving 75 and/or 150 baud channels from a 3002 private line voiceband channel. It is arranged for mounting on the customer's premises and provides test capability for trouble sectionalization.
PUB41013	Transmission Specifications for Low Speed Signaling System Channels — July 1975	Describes a private line channel capable of unidirectional transfer of customer generated signals generally characterized as "McCulloh" systems. Metallic continuity is not a requirement of this channel.

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| PUB41021 | Digital Data System — Channel Interface Specifications — Preliminary — March 1973 | Describes the Digital Data System (DDS) and the interface between the channel termination equipment of the DDS, contained in a Channel Service Unit (CSU) and the customer's data terminal equipment. A CSU is used when the customer's equipment performs the following functions: coding and decoding, timing recovery, synchronous sampling, formatting, and generation and recognition of control signals. Also see PUB41450. |
| PUB41022 | Multistation DATAPHONE® Digital Service — Preliminary — September 1974 | Describes the Multistation DATAPHONE® Digital Service which utilizes the Digital Data System (DDS) to provide a full-duplex transmission capability between a control station and two or more remote stations. Each station may have the service terminated in either a DDS Channel Service Unit (CSU) or a Data Service Unit (DSU), described in PUB's 41021 and 41450, respectively. Data can be transmitted at the synchronous data rates of 2.4, 4.8, 9.6, or 56 kb/s. |

Data Sets, Data Auxiliary Sets and Data Service Units

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| PUB41101 | Data Set 103A Interface Specification — February 1967 | Data Set 103A provides full-duplex low-speed serial data transmission at rates up to 300 bps. The 103A is used in conjunction with Data Auxiliary Set 804B1 and may be arranged for automatic origination, automatic answering and alternate voice. This data set is used for DATAPHONE service and in TWX-CE applications. |
| PUB41102 | Data Set 103A3
Data Set 103E
Data Set 103G
Data Set 103H
Interface Specification —
October 1973 | Data Sets 103A3, E, G, and H provide full-duplex low-speed serial data transmission at rates up to 300 bps. The 103E is a basic data set without power supply and attendant controls and is designed for multiple set installations. The 103A3 set consists of a 103E in a single unit housing and operates with a standard key telephone set. The 103G is similar to the 103E but has an integrated housing and provides a card dialer. The 103H is also similar to the 103E but is designed for mounting in a data terminal. The 103G and H are now rated Manufacture Discontinued. These data sets are used for DATAPHONE service. |

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PUB41103	Data Set 103F Interface Specification — May 1964	Data Set 103F provides full-duplex low-speed serial data transmission at rates up to 300 bps. It is intended for use on private line channels and does not include a provision for voice transmission.
PUB41104	Data Set 113A Interface Specification — August 1973	Data Set 113A is an originate only, full-duplex low-speed serial data set for use at rates up to 300 bps. This is a line powered data set designed for DATAPHONE service applications.
PUB41105	113-Type Data Station — Interface Specification — October 1971	Description: The 113-type Data Station provides for low-speed, serial, FSK, full-duplex data transmission over the switched telecommunications network. It is intended for use in multiple data set, answer-only installations such as those associated with a time-shared computer. The Data Station consists of Data Sets 113B, an appropriate cabinet (3 available sizes) and Data Auxiliary Set 804T.
PUB41201	Data Sets 201A&B — August 1969	The Data Set 201-type transmits serial binary data over voice bandwidth facilities using PSK modulation. Operation is synchronous full-duplex or half-duplex and may be at 2000 bps for DATAPHONE service over the switched telecommunications network or at 2400 bps over conditioned private line channels.
PUB41202	Data Sets 202C&D Interface Specifications — May 1964	The Data Sets 202C&D provide a medium speed, binary, serial data transmission system. They operate at rates up to 1200 bps for DATAPHONE service and up to 1800 bps on conditioned private line channels.
PUB41203	Data Set 202E Series — Revised September 1971	The Data Set 202E series is a modularized family of data set transmitters designed primarily to be used as input stations in data collection systems. This data set may be used on either the switched telecommunications network or on private line channels and operates at speeds compatible with Data Sets 202C&D.
PUB41204	Data Set 203-Type — Revised April 1974	The Data Set 203 family is designed to provide synchronous transmission and reception of high-speed digital data over the switched telecommunications network or conditioned private line data channels. These sets are capable of operating at bit rates between 1800 and 10,800 bps and various options such as separate transmitter and receiver, secondary channel and alternate voice are available.

PUB41208	Data Set 202R Interface Specification — June 1971	The Data Set 202R is a manual only, minimum feature data set. It may be used on either the telecommunications network or on private line channels and operates at speeds compatible with Data Sets 202C and D.
PUB41209	Data Set 208A Interface Specification — November 1973	The Data Set 208A provides synchronous, binary 4800 bps service over basic (unconditioned) 3002-type four-wire channels. Features include automatic adaptive equalization, 50 millisecond turnaround time, status lamps and loop-around test capabilities. These features make the set especially well suited for multipoint polling applications as well as point-to-point systems.
PUB41210	Data Set 201C Interface Specification — April 1973	The Data Set 201-type transmits serial binary data over voice bandwidth facilities using PSK modulation. Operation is synchronous full-duplex or half-duplex and may be at 2000 bps (201A) or at 2400 bps (201B or 201C) over the Switched Telecommunications Network or private line channels.
PUB41211	Data Set 208B Interface Specification — August 1973	The Data Set 208B provides synchronous, binary 4800 bps service on the switched telecommunications network. Features include automatic adaptive equalization, 50 millisecond turnaround time, built-in line control, status lamps, and extensive testing capabilities which provide powerful system trouble isolating tools. These features make the set especially well suited for switched network systems requiring reliable high throughput service.
PUB41212	Data Sets 202S and 202T — Interface Specification — August 1974	Data Sets 202S and 202T, members of the new data set family, provide 1200 bps asynchronous service on the Switched Network and 1800 bps asynchronous service on the private line facilities, respectively. These data sets are line compatible with all 202-Type Data Sets; and provide an optional 5 bps reverse channel, indicator lamps that visually display the status of the set, and test features which provide the customer, as well as the Telephone Company, with fault isolating capabilities.
PUB41213	Data Set 209A Interface Specification — Preliminary — May 1974	The Data Set 209A is a synchronous, binary serial 9600 bps data set for use on a voiceband (a 3002 data channel equipped with Type D-1, High Performance Data Conditioning) 4-wire private line. The data set features multiplexing options, rapid start-up times, extensive customer testing capabilities, modern design technology, and an attractive appearance.

PUB41301	Data Set 301B Interface Specification — March 1967	The Data Set 301B provides for the transmission of binary serial synchronous data at 40,800 bps. This data set requires a group bandwidth channel and is used in private line applications only.
PUB41302	Wideband Data Stations 303-Type Interface Specification — Revised December 1974	Data Stations 303 comprise a family of wideband data stations for use in the transmission of serial binary synchronous or nonsynchronous data. Speeds available range from 19.2 to 460.8 kbps and operation may be over either analog or digital facilities.
PUB41303	The Display Data Set F-58167 Used to Provide Computer Access Service for PICTUREPHONE Stations — Preliminary — August 1970	The Display Data Set F-58167 provides an interface between a customer-provided computer and the PICTUREPHONE switching network. This data set permits the PICTUREPHONE station to interact with the computer and generates character display signals which are displayed on the PICTUREPHONE screen.
PUB41304	Wideband Data Set 306-Type Interface Specification — July 1971	Data Set 306A provides for the transmission of serial binary synchronous data at the transfer rate of 1.344 Mb/s over T1 carrier facilities.
PUB41403	Data Set 401J Interface Specification — September 1965	Data Set 401J is a multi-frequency data receiver intended for use on DATAPHONE service. It can receive either 3-out-of-14 or 2-out-of-8 parallel signals at a speed of up to 20 characters/second.
PUB41405	Data Sets 402C — 402D Interface Specification — November 1964	Data Sets 402C (transmitter) and 402D (receiver) compose a medium speed, binary, parallel data transmission system for DATAPHONE Service or private line service. The system will transmit any number of data levels up to 8 at any speed up to 75 characters per second.
*PUB41408	Data Set 407 Interface Specification — Preliminary — Revised June 1975	Data Set 407 is a multi-frequency data receiver designed for multiline installations. The data set receives at a rate of up to ten (10) characters per second over the switched telephone network or over basic (unconditioned) private lines from TOUCH-TONE® telephone sets, TOUCH-TONE pads, Bell System 401-type data set transmitter in the "numeric mode" (two out of eight signals), or equivalent signal sources.

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*Revised - Supersedes "Data Set 407A Interface Specification - November 1973"

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| PUB41450
and
PUB41450A | Digital Data System — Data Service Unit Interface Specifications — Preliminary — March 1973
Addendum — November 1974 | A data Service Unit (DSU) is used on data services provided via the Digital Data System (DDS). It provides plug-for-plug interchangeability with existing EIA Type D or E interfaces at synchronous speeds of 2400, 4800, and 9600 bits per second. At 56,000 bits per second the DSU provides the standard CCITT balanced dc interface. Also see PUB41021. |
| PUB41451
and
PUB41451A | 1.544 MB/S Service Channel Interface Specifications — Preliminary February 1974
Addendum — January 1975 | A service channel providing point-to-point, full duplex transmission of serial bipolar synchronous pulses at a transfer rate of 1.544 Mb/s with constraints on signal format. |
| PUB41601 | Data Auxiliary Set 801A (Automatic Calling Unit) Interface Specification — March 1964 | The Data Auxiliary Set 801A is a dc dial pulse Automatic Calling Unit (ACU) which permits a business machine to place calls over the switched telecommunications network. In operation, a telephone number stored in the business machine is passed to the ACU which sets up the call and transfers the circuit to the associated data set for the automatic transmission of data. |
| PUB41602 | Data Auxiliary Set 801C (Automatic Calling Unit) Interface Specification — September 1965 | The Data Auxiliary Set 801C is a TOUCH-TONE dialing Automatic Calling Unit (ACU) which permits a business machine to place calls over the switched telecommunications network. In operation, a telephone number stored in the business machine is passed to the ACU which sets up the call and transfers the circuit to the associated data set for the automatic transmission of data. |

Data Communications Systems and Terminals

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| PUB41701 | 83B3 Teletypewriter Selective Calling System —
September 1967 | The 83B3 Teletypewriter Selective Calling System is five-level half-duplex private line system using Model 28 equipment at speeds up to 100 words per minute. The traffic flow is governed by a control station which automatically polls the other stations to start their tape readers. |
| PUB41702 | 85A1 and 85A2 Data Selective Calling Service Stations —
October 1971 | The 85A-type Data Selective Calling Service Stations are used in providing eight-level, half-duplex, private line selective calling systems. The 85A1 station provides for 100 wpm operation using Model 33 or 35 equipment while the 85A2 station provides for 150 wpm operation using Model 37 equipment. The traffic flow is administered by a customer-provided computer (line control station) which sequentially polls the station transmitter and selects the designated receivers. |

PUB41703	86A1 and 86A2 Data Selective Calling Service Stations — June 1969	The 86A1 and 86A2 Data Selective Calling Service Stations are used in providing eight-level half-duplex selective calling systems. The 86A1 station provides for 100 wpm operation using Model 33 or 35 equipment while the 86A2 station provides for 150 wpm operation using Model 37 equipment. Control of these stations is from a customer-provided computer (line control stations). 86A-type stations are used in applications where the customer-provided computer controls both half- and full-duplex circuits.
PUB41704	86B-Types Data Selective Calling System Stations — November 1968	86B-type Data Selective Calling System Stations are used in providing 8-level full-duplex selective calling systems. The 86B1 stations operate at 100 wpm using Model 33 and 35 equipment. The 86B2 stations operate at 150 wpm using Model 37 equipment. Control of these stations is from a customer-provided computer.
PUB41705	Data Line Concentrator System (DLCS) Arrangements — May 1971	Data Line Concentrator System Arrangements provide for the connection of a number of stations to a smaller number of computer communications ports. The service includes a data line concentrator, private line transmission facilities and is used with Model 33 or 35 Teletypewriters and also customer-provided terminals.
PUB41706	Model 37 Teletypewriter Stations for DATAPHONE Service — September 1968	Describes the operating and line characteristics of the M37 Teletypewriter Station operating on DATAPHONE Service. Included is a list of features that are available or are planned to be available.
PUB41707	DATASPEED® Type-4 System — September 1969	The DATASPEED Type-4 Service is a paper tape transmission system operating at either 1050 wpm or 1200 wpm. This system provides error-detection and correction by tape pull back and re-transmission on error indication.
PUB41708	Type-5 DATASPEED System — June 1970	The DATASPEED Type-5 system is a medium speed paper tape transmission operating at 750 wpm. the system uses a separate sender and receiver and can accommodate 5-, 6-, 7-, or 8-level paper tape.
PUB41709	Receive-Only DATASPEED Printer Station Agreements System Interface Specification — January 1970	The receive-only DATASPEED Printer is a high speed nonimpact terminal. It operates at either 1050 wpm or 1200 wpm using serial transmission and 750 wpm using parallel transmission.

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PUB41710	4200 Series Magnetic Tape Terminal — August 1970	The 4200 Series Magnetic Tape Set will send from or receive data and record it on magnetic tape in a 150,000-character capacity cartridge. This system accommodates an eight-level code and operates at speeds from 100 wpm to 2400 wpm.
PUB41712	DATASPEED Type-2 System — December 1970	The DATASPEED Type 2 system is a medium speed, serial data transmission system. The system consists of a Sending terminal, paper tape punch, and a receiving terminal, paper tape punch. Operating speed is 1050 wpm using a 202-type data set. Information presented consists of on-line signaling and terminal characteristics.
PUB41713	Models 33, 35 and 37 Stations for Point-to-Point Private Line Service — August 1971	Describes Point-to-Point Private Line Service in which Model 33, 35 or 37 Teletypewriter Stations are connected to one or both points on a communication link. The arrangements described are composed of two interconnecting stations and their communications control capability.
PUB41714	9131 Teletypewriter Selective Calling Station Arrangement — January 1974	The 9131 Teletypewriter Selective Calling Station Arrangement is used in providing an eight-level, half-duplex, private line selective calling system. It provides for 100 wpm operation using Model 33 or 35 teletypewriters. It is a contention type system (i.e., not controlled by a master station) intended primarily for handling intraline traffic.
PUB41715	DATASPEED 40 Stations for DATAPHONE Service — Preliminary — December 1973	The DATASPEED 40 is a medium speed data terminal which provides advanced facilities for entering, displaying, editing, printing, sending and receiving data. DATAPHONE operation at 1050 or 1200 bits per second using 202-type data sets is described.

Data Interconnection

PUB41800	Complete Set of Data Interconnection Technical References	
PUB41801	Data Access Arrangement CDT for Manual Originating and Answering Terminals — Revised May 1973	Data Access Arrangement CDT is used to connect customer-provided terminal equipment to the switched telecommunications network. It provides for manual origination and answering of calls and includes a standard telephone set equipped with an exclusion key used to manually transfer between the TALK and DATA modes.

- PUB41802 Data Couplers CBS and CBT for Automatic Terminals — Revised May 1974
- Data Couplers CBS and CBT are used to connect customer-provided terminal equipment to the switched telecommunications network. They provide for automatic answering, terminating and/or dc dial pulse originating of calls and include a network control signaling unit and a data access arrangement. Data Coupler CBS provides EIA-RS 232C voltage type control leads. Data Coupler CBT provides contact closure type control leads. The conditions under which customer-provided data stations may generate tone signals for the purpose of addressing the switched telecommunications network are described.
- PUB41803 Acoustic and Inductive Coupling for Data and Voice Transmission — October 1972
- Provides information of interest to the designer of acoustically or inductively coupled data and voice transmission equipment. Information includes system design considerations, transmission speeds, transmission to other data sets, power limitations, and a test instrument assembly.
- #PUB41804 Switched Network Transaction Telephone System — Preliminary — June 1975
- The Transaction Telephone System is a short-message inquiry-response system, connecting transaction telephone terminals to a customer's computer center via the switched telecommunications network. It provides a service in which inquiries are sent semi-automatically as TOUCH-TONE signals, and responses are returned in either voice or visual form.

VOICE COMMUNICATIONS

PUB42000 Complete Set of Voice Communications Technical References

*** Protective Connecting Arrangments — Manual, Terminal**

- PUB42101 USOC
QKT —
Revised June 1971
- Manual connecting arrangement used for the connection of customer-provided voice transmitting and/or receiving equipment or communications systems to a PBX or central office station line through a Telephone Company-provided telephone set equipped with an exclusion key.
- PUB42102 CDX —
Revised February 1973
- Manual voice connecting arrangement used to connect a customer-provided device, typically patching devices, which enables the connection of an incoming call to a Telephone Company provided PBX and an outgoing central office trunk line from a Telephone Company-provided PBX.

New Technical Reference

* PUB41803 listed under the Data Interconnection section provides information of interest to the designer of acoustically or inductively coupled devices for Voice as well as Data Transmission.

PUB42103	CEBAX/CEBBX — Preliminary — Revised June 1970	Voice Connecting Arrangement CEBAX permits a customer to manually connect and disconnect customer-provided equipment, typically multi-line conferencing devices, to a specific line terminated on a Telephone Company-provided key set (control station). For use with customer-provided equipment with only one supervisory contact. Furnished on a per line per control station basis.
		Voice Connecting Arrangement CEBBX permits a customer to manually connect and disconnect customer-provided equipment, typically multi-line conferencing devices, to a specific line terminated on a Telephone Company-provided key set (control station). For use with customer-provided equipment with two supervisory contacts. Furnished on a per line basis.
PUB42104	LOH — Preliminary — July 1970	Voice connecting arrangement permitting the connection of customer-provided background music or other recorded material to central office lines terminated in a Telephone Company-provided switchboard.
PUB42105	LVH — Preliminary — July 1970	Voice connecting arrangement permitting the connection of customer-provided background music or other recorded material to central office or PBX lines, terminated in Telephone Company-provided key telephone sets, while the line is in the hold mode.
PUB42106	CEBAV — Preliminary — August 1970	Voice connecting arrangement which permits a customer to manually connect and disconnect customer-provided equipment, typically manual announcement sets, which answers an incoming call, to a specific line terminated on a Telephone Company-provided key set (control station). For use with customer-provided equipment with only one supervisory contact.
PUB42107	CEBAW — Preliminary — August 1970	Voice connecting arrangement which permits the customer to manually connect and automatically disconnect customer-provided equipment, typically intercom systems, to a specific line terminated on a Telephone Company-provided key set (associated station). For use with customer-provided equipment with two supervisory contacts.

- PUB42108 FTP — Preliminary —
April 1974
- Voice Connecting Arrangement FTP provides a means of connecting a customer-provided source of music or recorded information to the Music-On-Hold and/or Background-Music-Over-Paging features of the Telephone Company-provided Com-Key®718 and 1434 Communications Systems.
- *PUB42109 FTM — Preliminary —
November 1975
- Protective Connecting Arrangement FTM provides a means of connecting a customer-provided source of music or recorded information to the Music-On-Hold feature of a Telephone Company-provided key telephone system.

Protective Connecting Arrangements — Automatic, Terminal

- #PUB42201 CAU/SU3/SU4/SU6 —
Revised October 1975
- Protective Connecting Arrangement CAU is an alarm coupler which provides one-way transmission for use with customer-provided alarm device with dial pulse signaling.
- SU3 is a tone signaling unit for use with Protective Connecting Arrangements CAU or SU6 — permits the operation of the alarm device to be tested or verified from a remote location.
- Protective Connecting Arrangement SU4 is the combination of Protective Connecting Arrangements CAU and SU3. There is no assigned code for the combination of Protective Connecting Arrangements SU6 and SU3.
- Protective Connecting Arrangement SU6 is an alarm coupler modified to provide two-way transmission, to permit detection of dial tone or proper signal from a remote point. See SU6AQ.
- PUB42202 SU7QW —
Revised April 1975
- Protective Connecting Arrangement SU7QW provides the means for automatically connecting customer-provided dial pulse repertory dialers.
- PUB42203 RTT — Preliminary —
and January 1970
PUB42203A Addendum — October 1974
- Connecting arrangement that generates a tone to both parties under control of a customer-provided call duration timer.
- PUB42204 RDL/RDM — Preliminary —
Revised January 1973
- Voice Connecting Arrangement RDL is a recorder coupler arranged for one-way recording Voice Connecting Arrangement RDM is a recorder coupler modified to provide two-way simultaneous transmission. See RDMZR.

*New Technical Reference

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Revised-Supersedes "CAU/SU3/SU6 — Preliminary — November 1969"

PUB42205	RCZ — Revised July 1975	Recorder connector used to connect customer-provided two-way recording equipment which provides a distinctive
PUB42206 and PUB42206A	RC1 — Preliminary — Revised June 1971 Addendum — October 1974	Connecting arrangement which provides the means for customer-provided equipment to cause a short burst of 1400Hz tone to be sent to the local part; used for call duration timing.
PUB42207	C2ACP/C2AKS — Revised February 1975	Protective Connecting Arrangement C2ACP is an automatic arrangement used to connect customer-provided terminal equipment to a WATS access line, a central office station line, or a PBX/Centrex extension line. Protective Connecting Arrangement C2AKS is an automatic arrangement used to connect customer-provided terminal equipment to a WATS access line, a central office station line, or a PBC/Centrex extension line which concurrently terminates in a Telephone Company-provided station.
PUB42208	STC — Preliminary — Revised February 1974	Voice connecting arrangement that provides the means for automatically connecting customer-provided transmitting and receiving speech terminal equipment, e.g., telephone sets, utilizing a three-wire interface.
PUB42209	RDMZR/RDY — Revised December 1973	Voice Connecting Arrangement RDMZR provides the means for automatically connecting customer provided receive-only speech terminal equipment, e.g., answering sets; it supersedes and replaces Voice Connecting Arrangement RDM. Voice Connecting Arrangement RDY provides all of the features of Voice Connecting Arrangement RDMZR and, in addition, provides volume-limited receive transmission.
PUB42210	SU6AQ/STS — Preliminary — June 1971	Voice Connecting Arrangement SU6AQ provides the means for automatically connecting customer-provided transmitting and receiving speech terminal equipment, e.g., alarm systems, utilizing a multi-wire interface; it supersedes and replaces Voice Connecting Arrangement SU6. Voice Connecting Arrangement STS provides all of the features of Voice Connecting Arrangement SU6AQ and, in addition, permits the transmission of customer-provided supervisory tone signals; it provides an alternative to Voice Connecting Arrangement SU3.

PUB42211	CEZ — Preliminary — November 1971	Voice connecting arrangement which permits the manual connection and automatic disconnection of customer-provided equipment (typically conferencing devices) to a specific line on an associated Telephone Company provided key telephone set.
PUB42212	STP — Preliminary — May 1973	Voice Connecting Arrangement STP provides a means for automatically connecting customer-provided transmitting and receiving speech terminal equipment, e.g., key telephone systems.
PUB42213	ADI — Preliminary — October 1974	Connecting Arrangement ADI provides a means to associate dial pulse dialers with single or multi-line telephone sets.
PUB42214	GTS — Preliminary — December 1974	Protective Connecting Arrangement GTS provides a means of connecting an automatic answering device to a telephone line. The customer-provided answering device connects via a standard 4-prong telephone jack.

Protective Connecting Arrangements — Manual, System

PUB42301	2A (CDB) — Preliminary — February 1969	Manual voice connecting arrangement used to connect a line from a customer-provided system, which provides supervisory signals, to a central office trunk line through a Telephone Company-provided cord switchboard position.
PUB42302	1A (CDA) — Preliminary — June 1969	Manual voice connecting arrangement used to connect a cord switchboard position of a customer-provided system, which provides supervisory signals, to an exchange trunk line.
PUB42303	3A (CDN) — Preliminary — June 1969	Manual voice connecting arrangement used to connect a line from a customer-provided system, which provides supervisory signals, to an exchange line through a Telephone Company-provided key station.
PUB42304	CD1 — Preliminary — July 1969	Manual voice connecting arrangement used to connect a cord switchboard position of a customer-provided system, which does not provide supervisory signals, to an exchange trunk line.
PUB42305	CD4 — Preliminary — August 1969	Manual voice connecting arrangement used to connect a line from a customer-provided system, which does not provide supervisory signals to an exchange trunk line through a Telephone Company-provided cord switchboard position.

PUB42306	CD5 — Preliminary — August 1969	Manual voice connecting arrangement used to connect a line from a customer-provided system, which does not provide supervisory signals, to an exchange line through a Telephone Company-provided key telephone station.
PUB42307	CDY — Preliminary — October 1969	Voice connecting arrangement used to terminate —without exchange connection— a line from a customer-provided system in a Telephone Company-provided key telephone station.

Protective Connecting Arrangements — Automatic, System

PUB42401	CDH and CBF — Revised March 1974	<p>Automatic voice connecting arrangement used to connect the attendant position and dial switching equipment of a customer-provided system to an exchange trunk line arranged for two-way combination rotary or TOUCH-TONE service.</p> <p>Connecting Arrangement CBF is provided in addition to CDH when Data Communications equipment is used behind the PBX. CBF provides a linear attenuator which limits the three-second average power level transmitted to the central office without distorting the signal. The maximum allowable power level is determined at the time of installation.</p>
PUB42402	CD7/CD8/CD9 and CBF — Revised March 1974	<p>Voice Connecting Arrangement CD7 is an automatic arrangement used to connect the attendant position of a customer-provided system to an exchange trunk line arranged for one-way outgoing rotary or TOUCH-TONE service.</p> <p>Voice Connecting Arrangement CD8 is an automatic arrangement used to connect the dial switching equipment of a customer-provided system to an exchange trunk line arranged for one-way outgoing rotary or TOUCH-TONE service.</p> <p>Voice Connecting Arrangement CD9 is an automatic arrangement used to connect the attendant position of a customer-provided system to an exchange trunk line arranged for two-way rotary or TOUCH-TONE service.</p> <p>Connecting Arrangement CBF is provided in addition to CD7, CD8, or CD9, when Data Communications equipment is used behind the PBX. CBF provides a linear attenuator which limits the three-second average power level transmitted to the central office without distorting the signal. The maximum allowable power level is determined at the time of installation.</p>

<p>PUB42403 and PUB42403A</p>	<p>CET — Preliminary — October 1970 Addendum — June 1974</p>	<p>Automatic voice connecting arrangement used to connect a customer-provided system to an exchange trunk line arranged for one-way service to the operator position of a Telephone Company long distance switchboard (the equivalent of a toll terminal).</p>
<p>PUB42404</p>	<p>CD6 — Preliminary — December 1969</p>	<p>Automatic voice connecting arrangement used to connect an exchange trunk line arranged for one-way incoming service to the attendant position of a customer-provided system.</p>
<p>PUB42405 and PUB42405A</p>	<p>CED — Preliminary — April 1970 Addendum — June 1974</p>	<p>Automatic voice connecting arrangement used to connect a customer-provided system to an exchange trunk line, arranged for two-way service, to the operator position of a Telephone Company long distance switchboard (the equivalent of a toll terminal).</p>
<p>PUB42406 and PUB42406A</p>	<p>C22 — Preliminary — March 1971 Addendum — October 1972</p>	<p>Automatic voice connecting arrangement used to connect an exchange trunk line arranged for one-way direct inward dialing (DID) service to the dial switching equipment of a customer-provided system.</p>
<p>PUB42407</p>	<p>C24/C2H — Preliminary — October 1971</p>	<p>Voice Connecting Arrangement C24 is an automatic arrangement used for two-way service which provides a four-wire voice transmission interface for connecting customer-provided channel facilities to a Telephone Company PBX. An E and M type signaling interface is provided.</p> <p>Voice Connecting Arrangement C2H is an automatic arrangement used for two-way service which provides a four-wire voice transmission interface for connecting customer-provided channel facilities to Telephone Company Centrex service. An E and M type signaling interface is provided.</p>
<p>PUB42408</p>	<p>C27/C2K — Preliminary — October 1971</p>	<p>Voice Connecting Arrangement C27 is an automatic arrangement used for two-way service which provides a two-wire voice transmission interface for connecting customer-provided channel facilities to a Telephone Company PBX. An E and M type signaling interface is provided.</p> <p>Voice Connecting Arrangement C2K is an automatic arrangement used for two-way service which provides a two-wire voice transmission interface for connecting customer-provided channel facilities to Telephone Company Centrex service. An E and M type signaling interface is provided.</p>

Protective Connecting Arrangements — Private Line

PUB42501	CDQ4W — Preliminary — August 1969	Automatic voice connecting arrangement arranged for two-way service which provides a four-wire voice transmission interface to customer-provided dial switching equipment — used with a Telephone Company-provided four-wire private line channel equipped with Telephone Company-provided channel signaling with a contact-type signaling interface.
PUB42502	CDQ2W/CDQ2X — Preliminary — June 1971	<p>Voice Connecting Arrangement CDQ2W is arranged for two-way service, and provides a two-wire interface to customer-provided dial switching equipment. Used with Telephone Company-provided private line channel and Telephone Company-provided channel signaling with a contact-type signaling interface.</p> <p>Voice Connecting Arrangement CDQ2W is arranged for two-way service, and provides a two-wire interface to customer-provided dial switching equipment. Used with Telephone Company-provided private line channel and Telephone Company-provided channel signaling with an E- and M-type signaling interface.</p>
PUB42503	C234W — Preliminary — February 1971	Voice connecting arrangement for two-way service, which provides a four-wire voice transmission interface to customer-provided dial switching equipment. Used with a Telephone Company-provided four-wire private line channel and customer-provided channel signaling.
PUB42504	C232W — Preliminary — September 1971	Voice connecting arrangement arranged for two-way service, which provides a two-wire interface to customer-provided dial switching or station terminal equipment. Used with a Telephone Company-provided private line channel and customer-provided channel signaling (inband signaling only).
PUB42505	CDQ4X — Preliminary — October 1971	Automatic voice connecting arrangement arranged for two-way service, which provides a four-wire interface to customer-provided dial switching equipment. Used with a Telephone Company-provided four-wire private line channel equipped with Telephone Company-provided channel signaling with a E and M signaling interface.

Protective Connecting Arrangements — Miscellaneous

- PUB42601 CEK — Preliminary —
 April 1970
- Connecting arrangement used to associate customer-provided message registers where the customer is providing the communications system and the necessary equipment to associate the station with the message registers with a central office trunk line.
- PUB42602 CAK — Preliminary —
 Revised May 1972
- Specification CAK describes a procedure used by AT&T Co. for the evaluation of customer-provided antique/decorator set housings. Replaces B drawings previously furnished by the local Telephone Companies.
- PUB42603 C1V/RCX/GC2 — Preliminary —
 Revised June 1972
- Connecting Arrangement C1V is used to connect customer-provided elapsed time or pen register equipment to PBX WATS lines, PBX central office trunks or station lines. This arrangement provides a closure that is maintained when the line is off-hook and will not follow dial pulses.
- Connecting Arrangement RCX is used to connect customer-provided elapsed time or pen register equipment to PBX WATS lines, PBX central office trunks, or station lines. This arrangement provides a closure that is maintained when the line is off-hook and opens on each dial pulse.
- Connecting Arrangement GC2 consists of an ac ring-up relay bridged across the line. Provides a contact closure to customer-provided equipment when ringing voltage is present. Used with ring indicator devices.
- PUB42604 C25 — Preliminary —
 July 1971
- Connecting arrangement used to connect the customer-provided automatic number identification equipment of a customer-provided communications system to a Bell System central office for automatic identified outward dial (AIOD) service.
- PUB42605 CTD —
 Revised June 1975
- Protective connecting arrangement used to connect customer-provided call diversion equipment to a Telephone Company CO trunk terminated on a Telephone Company PBX. The arrangement provides a high impedance line status indication of the supervisory and address signals on the trunk and receives a contact closure to cause diversion of an outgoing call from the PBX in the normal manner.

PUB42606	HZM — Preliminary — November 1972	Connecting Arrangement HZM is used to connect customer-provided traffic measuring equipment to station lines, PBX C. O. trunks, and some types of tie lines. Permits the deduction of on-hook, off-hook, dial pulse, TOUCH-TONE, and signaling through a high resistance connection to the line.
PUB42607	VCP — NOTICE — May 25, 1973	Connecting Arrangement VCP provides the capability for a customer, on an optional basis, to supply the dc power to voice connecting arrangements associated with customer-provided PBX's and certain other voice connecting arrangements where specifically provided for in its technical reference.
PUB42608	KTX — Preliminary — October 1973	Connecting arrangement used to connect customer-provided call diversion equipment to a Telephone Company line terminated in a Telephone Company Key Telephone System. The arrangement provides a high impedance line status indication of the supervisory and address signals on the line and receives a constant closure to divert an outgoing call. Restriction tone or an announcement is provided by the customer.
PUB42609	CTH — Preliminary — December 1973	Protective connecting arrangement used to connect customer-provided call diversion equipment to a Telephone Company C.O. trunk terminated in a Telephone Company PBX. The arrangement provides a high impedance line status indication of the supervisory and address signals on the trunk and receives a contact closure to cause diversion of the call. Restriction tone or an announcement is provided by the customer.

Protective Connecting Arrangements — PBX Adjuncts

PUB42701	DCT — Preliminary — June 1971	Voice connecting arrangement (formerly designated Recorded Telephone Dictation Trunk Circuit) which provides trunk level access, e.g., dial "7", from a station on a Bell System PBX or Centrex system to customer-provided dictation equipment.
PUB42702	DCW — Preliminary — July 1971	Voice connecting arrangement (formerly designated Interface Trunk Circuit) which provides a two-part trunk level access, e.g., dial "7", from a station on a Bell System PBX or Centrex system to customer-provided equipment capable of receiving dialed digits (serial or parallel coded) for central purposes.

PUB42703 DCK/DCL —
Revised October 1974

Voice Connecting Arrangements DCK and DCL provide trunk level access, e.g., dial "7" from a station on a Bell System PBX or Centrex system to customer-provided equipment (e.g., dictation or radio paging) capable of receiving TOUCH-TONE digits directly or dial pulse digits over a separate pair for control purposes.

PUB42704 TSPXY/TSPZ1 — Preliminary —
March 1975

Protective Connecting Arrangements TSPXY and TSPZ1 provide a means of connecting customer-provided recording and control equipment to PBX trunks. With these arrangements, an outgoing trunk can be split to allow dialing extra digits or to pulse a number into the central office.

RADIO AND TRANSMISSION ENGINEERING

PUB43000 Complete Set of Radio and Transmission Engineering Technical References.

Private Line Facilities

PUB43101 Voice Grade Entrance Facilities
for Extending Customer-Provided
Communications Channels —
Preliminary — May 1969

Describes the various entrance facility serving arrangements, provides transmission characteristics of entrance facilities, describes signal power limitations and discusses the division of responsibility for design, operation and maintenance.

PUB43201 Private Line Interconnection
Voice Applications —
Preliminary — June 1970

Describes the standard private line offerings for voice applications which may be interconnected at one or both ends with customer-provided voice communications systems or terminal equipment. Also describes minimum protection criteria, signaling arrangements and maintenance techniques.

PUB43401 Transmission Specifications for
Private Line Metallic Circuits —
Preliminary — December 1971

Describes the signal level criteria objectives for private line metallic circuits (cable pairs without signal battery or amplification devices). This material is provided for those who use the metallic continuity of local private line channels implemented by wire pairs. It should be noted that the Telephone Companies have no obligation to provide private line channels on a metallic basis.

Mobile Radio

PUB43301 Domestic Public Land Mobile
Telephone Service — Customer-
Provided Dial Stations —
Preliminary — March 1973

Provides information needed to interface customer-provided mobile telephone dial stations with Telephone Company-provided mobile telephone radio systems.

PUB43302 Intermodulation Interference in
Radio Systems —
November 1972

With the explosive growth of radio systems, problems of "overpopulation" are beginning to misuse valuable radio spectrum. One of the principal overpopulation problems encountered today, yet one about which relatively little information is available, is intermodulation interference. This Technical Reference represents present views of the problem and presents some possible solutions.

PUB43303 Domestic Public Land Mobile and
Maritime Radio Service System
Interface Criteria —
Preliminary — June 1974

This Technical Reference is a guide for designers, manufacturers, and operators of common carrier radio systems which interface with the Bell System telephone network. The document describes the electrical information which must pass between a Bell System Central Office and a common carrier radio system in order to originate and terminate calls. This Technical Reference is not intended to provide complete design specifications or parameters or to assure the quality or performance of the common carrier radio system.

PICTUREPHONE SERVICE

PUB44000 Complete Set of PICTUREPHONE Service Technical References

PICTUREPHONE Interconnection

PUB44101 PVF — Preliminary —
September 1970

PICTUREPHONE connecting arrangement which permits the connection of customer-provided video/audio terminal equipment to PICTUREPHONE facilities using a Telephone Company-provided TOUCH-TONE telephone set.

ATTESTATION PROGRAMS

PUB45000 Complete Set of Attestation Program Technical References

Headsets

PUB45001 4-Wire Headset Interface Ter-
and minations and Interface
PUB45001A Specification 1001 —
Preliminary — Revised July 1973
Addendum — August 1974

Provides the procedural requirements and technical specifications (Interface Specification 1001) for the attestation of certain customer-provided 4-wire headsets for use with headset jacks (Headset Interface Terminations) in Bell System attendant switchboards, attendant consoles, and telephone sets.

PUB45002 6-Wire Headset Interface Ter-
and minations and Interface
PUB45002A Specification 1002 —
Preliminary — October 1974
Addendum — January 1975

Provides the procedural requirements and technical specifications (Interface Specification 1002) for the attestation of certain customer-provided 6-wire headsets for use with headset jacks (Headset Interface Terminations) in Bell System attendant switchboards, attendant consoles, and telephone sets.

Non-Powered Conferencing Devices

PUB45101 Interface Termination JTC and
and Interface Specification 2001 —
PUB45101A Preliminary — May 1973
Addendum — October 1973

Provides the procedural requirements and technical specifications (Interface Specification 2001) for the attestation of certain non-powered conferencing devices for use with Interface Termination JTC which is associated with Bell System key telephone system stations.

CONFORMANCE PROGRAMS

PUB46000 Complete Set of Conformance Program Technical References

PUB46001 Conformance Program for
and Answering Devices Incorporating
PUB46001A Authorized Protective Connecting
Modules — Preliminary —
Revised January 1975
Addendum — October 1975

Provides the procedural requirements and technical specifications (Interface Specification 3001) for the conforming of certain customer-provided automatic answering devices for use with individual line exchange service or PBX/Centrex station service.

