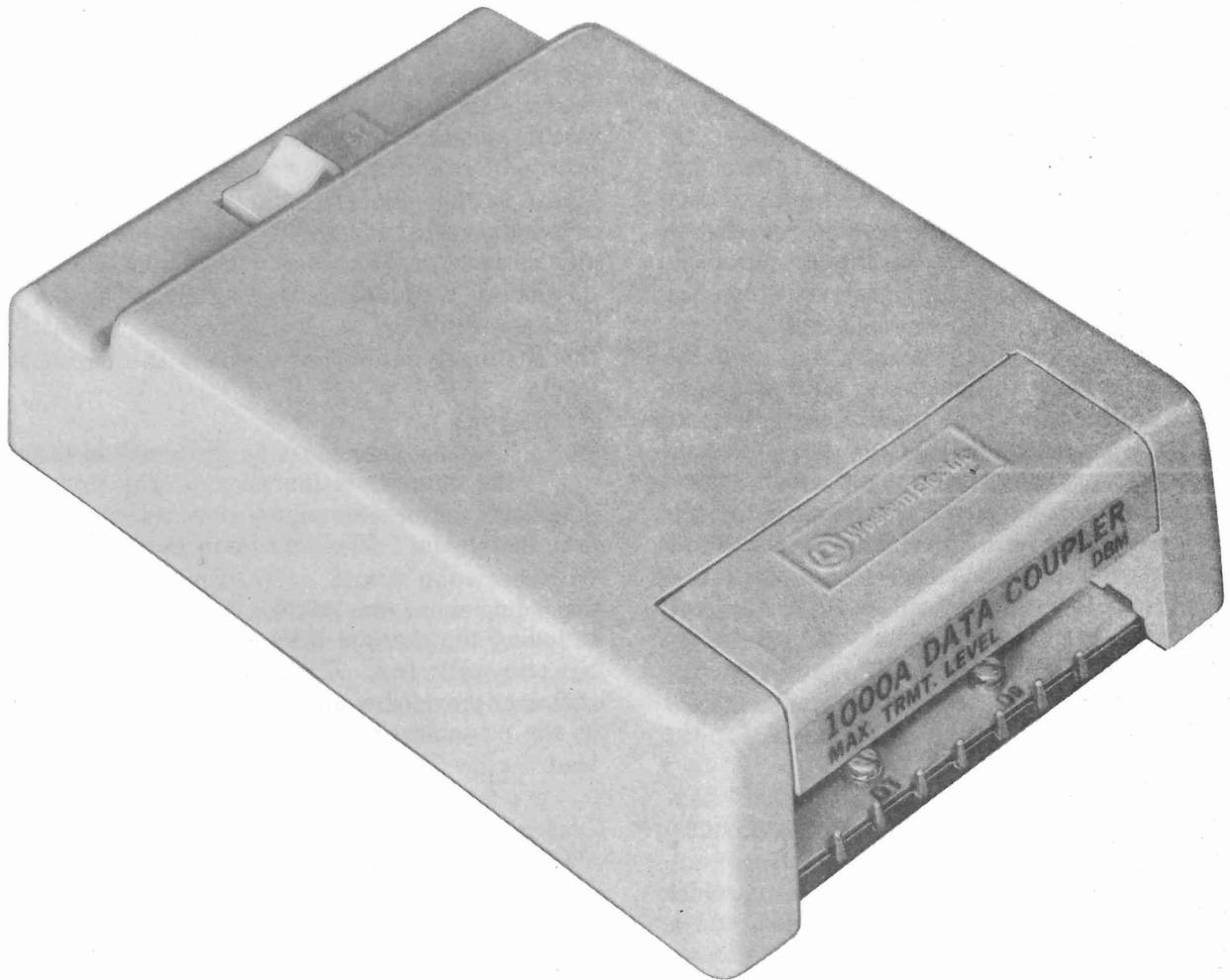


1000A DATA COUPLER REFERENCE GUIDE



1000A Data Coupler

1. GENERAL

1.01 The 1000A data coupler is a manual line-powered unit which permits customer-provided data apparatus to be connected to the switched telecommunications network for data communications. The unit plus an associated telephone set provides the data access arrangement (DAA) as described in appropriate tariffs.

1.02 The coupler has the following provisions:

- Limits customer data signals automatically to a prescribed maximum signal power
- Permits alternate data and voice transmission
- Protects customer from telephone fault surges in excess of 50 volts

SECTION 590-000-110

- Protects telephone company personnel and equipment from hazardous voltages which may be applied to the telephone line from the customer-provided equipment
- Provides longitudinal isolation of the telephone plant from customer-provided equipment
- 2-wire bidirectional operation
- Remote testing
- May be associated with a multiple function telephone which allows monitoring of data transmission and provides a telephone mode indicator.

1.03 The service offering in which the coupler is used provides the customer with the same end-to-end transmission performance characteristics as are provided in DATA-PHONE® service. Because the customer apparatus over which the Bell System has no control may contribute significantly to error performance, the Bell System cannot assume responsibility for the accuracy of the transmitted data. The end-to-end facilities, including the local loop, will be engineered and maintained to the equivalent DATA-PHONE service requirements. These requirements are specified in Section 314-205-501 for local loops and Section 314-205-500 for the DDD network.

2. PHYSICAL AND ELECTRICAL CHARACTERISTICS

2.01 The coupler is a wall-mounted unit which weighs approximately 1-1/2 pounds, and is 4-3/4 inches wide, 7 inches high, and 2 inches deep.

2.02 The coupler consists of a printed circuit pack mounted on a plastic base, enclosed by a gray plastic cover assembly. Two screw terminals are provided under the hinged portion of the cover for the interface connection to the customer apparatus or equipment. Two additional screw terminals are provided on the circuit pack for connection to the associated telephone apparatus. Two holes are provided in the base for mounting the coupler on a wall or other vertical surface.

2.03 A test key is provided at the top of the coupler for testing the unit and line. The test oscillator of the coupler will hold its output to ± 1 dBm over the temperature range of 20° to 120°F.

2.04 The data coupler is a bidirectional, network protective unit designed to interface a customer-provided data modem. The coupler protects the telephone network by limiting the total customer data signal power to a prescribed maximum limit. To determine when the limiting function is required, the coupler continuously monitors the output level of the customer equipment. Whenever the total signal power averaged over any 3-second interval exceeds the maximum limit, a limiting circuit is activated and a loss is automatically inserted in the transmission path to attenuate the signal to the prescribed limit. The loss inserted in the transmission path will attenuate the customer signals in both directions of transmission, and the distortion introduced is negligible. The limiting circuit is activated as long as the rms output from the customer equipment exceeds the permissible level.

2.05 The customer must be informed at the time the coupler is installed of the prescribed maximum permissible signal power output for his data equipment. The maximum output level may vary between 0 and -10 dBm, in 1-dB steps, depending upon the 1000-Hz loss of the local loop including the nominal 2-dB insertion loss presented by the coupler. The output level of the customer-provided equipment is the power measured at the customer interface into a 600-ohm resistive load.

Note: The prescribed maximum limit must be marked on the data coupler at the time of installation.

2.06 The telephone line interface of the data coupler is a standard, common battery *loop-current* termination that can be associated with standard network control signaling arrangements. The network controlling functions may be provided for the coupler by key telephone equipment or by one of the following telephone sets:

- 502A/B or 558F wall telephone set (standard option)
- 503C-61 rotary dial or 2503C-61 TOUCH-TONE® dial multiple function telephone (MFT) set (option must be specified).

The associated apparatus is used to originate, answer, and disconnect calls, and to control the data key through which the coupler connects to

the telephone line. The data key may be an exclusion switch on the telephone set or a designated key associated with the key telephone equipment, and is used to transfer between the talk and data modes of operation. Either the coupler or the associated network controlling apparatus must always be on-line to hold the connection.

2.07 The MFT set, in addition to the uses described in 2.06, may be used on an option basis to monitor data transmission and voice answer-back signals and/or to provide the customer with a contact closure when the line is connected to the telephone (voice mode). Both the rotary dial and TOUCH-TONE version of the MFT set are available in a light gray housing; however, they may be enclosed in a standard 500- or 2500-type housing if another color is required.

3. OPERATION

3.01 The data coupler provides two modes of operation: a data mode and a test mode.

3.02 *Data Mode:* In response to incoming ringing or the desire to initiate a call, the customer must establish the connection using the associated telephone set. When ready to transmit or receive data, the external data key is operated to place the coupler in the data mode.

Note: When the exclusion key on an associated telephone set is used as the data key, the telephone handset must remain off-hook when the coupler is in the data or test mode.

At the completion of data transmission, restoring the data key returns the operation of the coupler to an idle state.

3.03 *Test mode:* A test circuit provides the means for applying a tone to the line, through the coupling transformer. This permits testing of the data coupler and/or the local loop. The coupler may be remotely tested from the serving central office or tested locally on the customer premises. The test circuit consists of a tone oscillator and a TST key.



Accidental or intentional operation of the TST key while transmitting data will interrupt the data signals.

3.04 Restoring the TST key removes the test oscillator from the circuit and returns the coupler to the data mode.

4. SERVICE ORDER INFORMATION

4.01 Service orders for data services should describe the desired service by USOC and should not specify particular coupler codes. The encoding procedure to determine the appropriate USOC is described in Section 590-000-100. An explanation of features and options common to most data services is given in Section 590-000-101. A rapid cross-reference between USOC, couplers, and reference guides is presented in Section 590-000-102. Intercity Service Manual (ISM) Section 87 gives customer billing nomenclature, shows tariff listings for data services, and provides general reference information.

4.02 Service orders *should not* specify coupler codes. USOC decoding procedures are described in Section 590-000-100. Engineering or Plant Design personnel responsible for selecting couplers are not compelled to use any particular coupler codes specified or suggested on the service order. To achieve maximum re-use of data station apparatus, the first choice in selecting apparatus should be the oldest unit that will satisfy the service requirements as identified by USOC.

4.03 Service offerings are outlined in Table A. Note that there is a separate USOC code for the 1000A coupler and the MFT. If the MFT is required, the USOC for the MFT must appear on the service order along with the coupler USOC. Customer option decisions for the MFT are shown in Table B and are described in 4.04. The only Telco options are those which limit the customer signal power to a level which will not exceed -12 dBm at the serving central office.

4.04 The following paragraphs provide detailed information on customer options for the MFT.

(a) **DECISION A—With or Without Audio Monitoring**

(1) **1. With:** Allows monitoring of data transmission and voice answer-back signals through the telephone handset. Used in Digital Inquiry Voice Answer-back (DIVA) applications.

TABLE A
SERVICE OFFERINGS

| USOC | FEATURE | MODEL | REMARKS |
|------|--------------------------------|-----------------------|--------------------------------|
| CDT | Manual Data Access Arrangement | 1000A | |
| CBY | Multiple Function Telephone | 503-Type 2503-Type | Rotary Dial TOUCH-TONE Dial |

TABLE B
CUSTOMER OPTION DECISIONS
FOR MULTIPLE FUNCTION TELEPHONE

| DECISION | OPTION |
|----------|---|
| A | 1. With audio monitor 2. Without audio monitor |
| B | 3. With mode indicator 4. Without mode indicator |

(2) **2. Without:** Does not allow monitoring.

(b) **DECISION B—With or Without Mode Indicator**

(1) **3. With:** Furnishes a contact closure to the customer when the line is connected to the telephone (voice mode).

(2) **4. Without:** Does not provide indication of status of telephone line.

5. REFERENCES

5.01 The following references provide additional information on the 1000A Data Coupler:

(a) BSP 590-103-103—1000A Data Coupler—Description, Installation, Maintenance, and Tests

(b) CD & SD-1D025-01

(c) EL 692, 1576, and 1093

(d) Bell System Technical Reference—Data Access Arrangement CDT for Manual Originating and Answering Terminals.