

F-58012 DATA COUPLER

INSTALLATION AND CONNECTIONS

1. GENERAL

1.01 This section provides the installer with the procedures and connections necessary for the proper installation of F-58012 Data Coupler.

1.02 This section is reissued to:

- Add information pertaining to Series 1 and Series 2 F-58012 Data Couplers.
- Change the rating of the section from "Special" to "Standard" with limited distribution. The apparatus, however, will retain "Special" rating.
- Change title from "Data Coupling Unit F-58012" to "F58012 Data Coupler."

Since this is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The Series 1 and 2 data couplers are similar with the exception of the test circuits and power supply connections. For a Series 1 unit, the test circuit contains a level adjusting network which must be set at time of installation for the particular station parameters. The test circuit for a Series 2 unit contains a constant level test circuit which does not require adjustment when installed.

1.04 The unit may be used with various types of central office lines, key telephone systems, or PBX lines that provide access to the switched message telecommunications network.

1.05 Verify that the loop facilities assigned meet the transmission requirements for the specific data service before proceeding with the installation. The general requirements for data access arrangements (DAA) will be covered in future revisions of Section 314-205-501. The following exceptions and/or additions to the section are specified for the F-58012 Data Coupler.

(a) **Loop Loss:** Maximum 1000-Hz insertion loss is 9 dB.

(b) **Set Classification:** The installation measurements to be made should have been determined by the design engineer from the type of data modem information provided by the customer and specified on the service order. When the modem type cannot be determined, high-speed requirements should be specified. When type of modem can be obtained from customer, the following guidelines should be used.

- (1) For all analog modems, high-speed requirements should be specified.
- (2) For all other modems, requirements based on speed of modem (same as for DATA-PHONE® service) should be specified.
- (3) If the type of modem is known to be similar to a Bell System DATA-PHONE data set, use the requirements for that particular data set.

1.06 The unit shall be installed in conformance with existing practices covering installation of station sets. This includes standard dc talk, signaling, and supervision requirements.

1.07 Information relating to a selection of type of connecting blocks and electrical code requirements is given in Section 590-010-200.

1.08 When test or demonstration calls are made at the time of installation, refer to Section 010-250-001 for proper procedure of crediting charges.

2. INSTALLATION AND CONNECTIONS

2.01 The data coupler may be shelf-mounted or placed on a desk or table. It must be located within range of the interface connector cord supplied by the customer. In general, this cord will not exceed 50 feet in length. The location of

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the unit should also provide easy access for manual operation by the customer attendant. See Fig. 1 for typical interconnection block diagram.

2.02 Power is supplied by a KS-16886-L2 transformer that is shipped loose with each coupler. The KS-16886-L2 transformer is equipped with a 17-inch, 2-wire cord and plug, and should be mounted within 12 inches of a 117 \pm 12 volt, 60 \pm 1 Hz ac power receptacle. The customer must furnish the receptacle which will accept the standard two parallel blades of the transformer plug. The receptacle must not be under control of a switch.

2.03 The wiring options listed on the service order must be wired in the unit. See Table A and Fig. 2 for options available and location of option terminals.

2.04 Refer to Section 590-103-301 for removal and replacement procedures for the front and rear covers.

2.05 Connect the unit mounting cord and the power transformer to the telephone line connecting block as shown in Fig. 3.

2.06 When an optional 801-type ACU is provided for automatic call origination, install the ACU in accordance with existing practices for the particular unit. Figure 4 shows the connections and options required when an ACU is used with the data coupler.

Note: FRAME GROUND and SIGNAL GROUND are tied together in the ACU.

2.07 Figure 5 shows typical connections required when the unit is arranged to operate with key telephone systems.

2.08 When the connections are completed, the level option terminals on the data coupler must be properly strapped. To determine the nominal strapping for a particular installation, the insertion loss of the local loop and coupler must be verified by performing the insertion loss test outlined in Section 590-103-501. The actual measured loss (AML) must meet the expected measured loss (EML) requirements within the limits specified in Section 314-205-501. This level, if it meets specifications, determines the strapping option **row** to use in Table B under the MEASURED LEVEL column.

Note: Do **not** place any straps at this time.

2.09 Perform the impedance matching test outlined in Section 590-103-501. The value obtained determines the **column** to use under LIMITER OPTION TERMINALS in Table B. The intersection of this column and the row obtained in 2.08 determines the proper strapping for the limiter option terminals. The proper option terminals for the test oscillator on a Series 1 unit are determined by the row obtained in 2.08 and the TEST OSCILLATOR column. For Series 2 couplers, option terminals for the test oscillator are **not** provided since the level of the oscillator is preset and nonadjustable.

2.10 The option terminals are located on circuit pack F-58014 (Fig. 2). (Existing straps should have been removed when performing the tests in 2.08 and 2.09.) Strap the proper terminals using 24-gauge bare wire, firmly seated to insure good contact. An example of strapping a Series 1 coupler when test results indicate an 8.5-dB loss in loop and coupler and a measured value of -15 dBm from impedance matching test is as follows:

STRAP OPTION TERMINALS

<u>TEST OSCILLATOR</u>	<u>LIMITER</u>
H-L, N-O	A-C

Note: Although the variation of line impedance may cause a change to the limiter nominal option terminals, the strapping on the test oscillator terminals and the maximum customer level recorded on the rear of the unit remain the same and **must not** be changed. For a Series 2 unit, only the required limiter option terminals would be strapped. Using the same example, terminals "A-C" would be strapped in a Series 2 unit.

2.11 The maximum customer level from Table B shall be recorded, with pen or pencil, on the nameplate on the rear of the coupler. Using the example in 2.10, "-4" would be marked on the nameplate.

2.12 The level limiting function of the data coupler must be checked after installation. Perform the limiter operational test outlined in Section

590-103-501. If the coupler fails to meet the test requirements, the unit must be replaced.

2.13 When an ACU is associated with the coupler, perform the automatic calling unit test outlined in Section 590-103-501.

2.14 After the installation has been completed, perform the remote test outlined in Section 590-103-501. If the data coupler fails to meet the test requirements, a trouble condition exists in either the coupler or loop. Replacing the coupler or performing additional tests on the local loop

may be necessary to clear the trouble condition. Instructions may be requested from the Plant Service Center before proceeding with further activity.

2.15 All level measurements and test results made during installation must be recorded on a line trouble history card to assist in analyzing future trouble and to detect gradual degradation of the service. The installer shall telephone the test results to the Plant Service Center, or equivalent test location, prior to leaving the customer location.

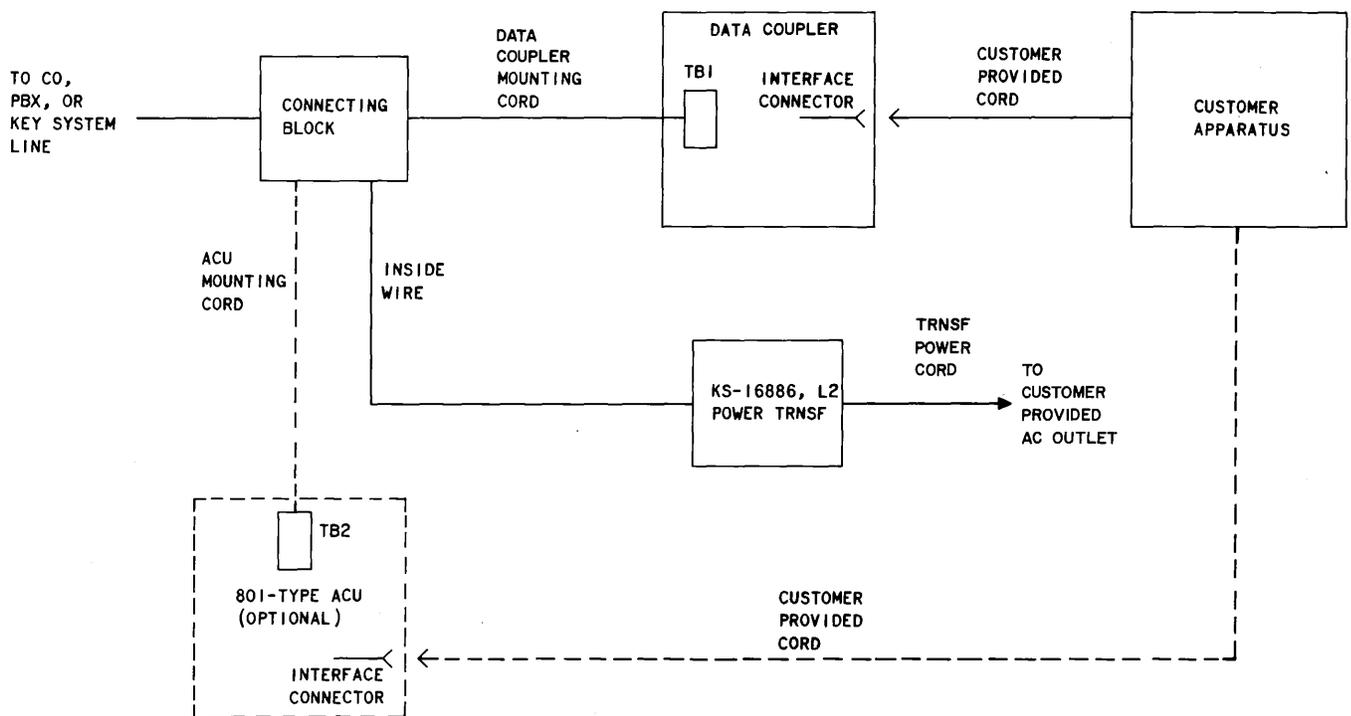


Fig. 1—Block Diagram of Typical F-58012 Data Coupler Installation

TABLE A
F-58012 DATA COUPLER OPTIONS

FEATURE		WIRING OPTIONS	STRAPPING	
SIGNALING	LOOP (TIP TO RING)	W*	TB1 Terminals on Data Coupler	1-2, 4-5
	TIP (TIP TO GRD)	U		2-3, 4-5
	RING (RING TO GRD)	V		1-2, 3-4
FRAME GRD TO SIGNAL GRD	S*	8-9		
LOOP CURRENT SUPERVISION†		Z*	Z Terminals on F-58013 Circuit Pack and **Green Wire between CP1-28 and TB2-1	
OUT-OF-SERVICE (FOR RECEIVE ONLY TYPE LINES)		Y	Y Terminals on F-58013 Circuit Pack	

* Factory Supplied

** This portion of the Z option applies to Series 2 units only. When the Z option is not provided, remove the green wire from TB2-1 and connect to terminal C on the network.

† With the Z option strap installed, the C relay is placed under direct control of the DTR lead, independent of the H relay and loop current. With the Z option strap removed, the C relay is controlled by the H relay and the DTR lead. See Fig. 4 in Section 590-103-101.

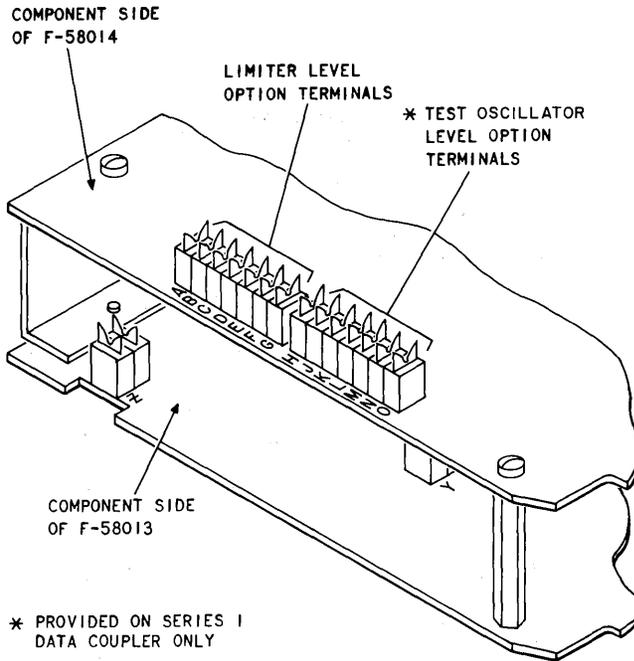


Fig. 2—Location of Level Option Terminals on Circuit Packs

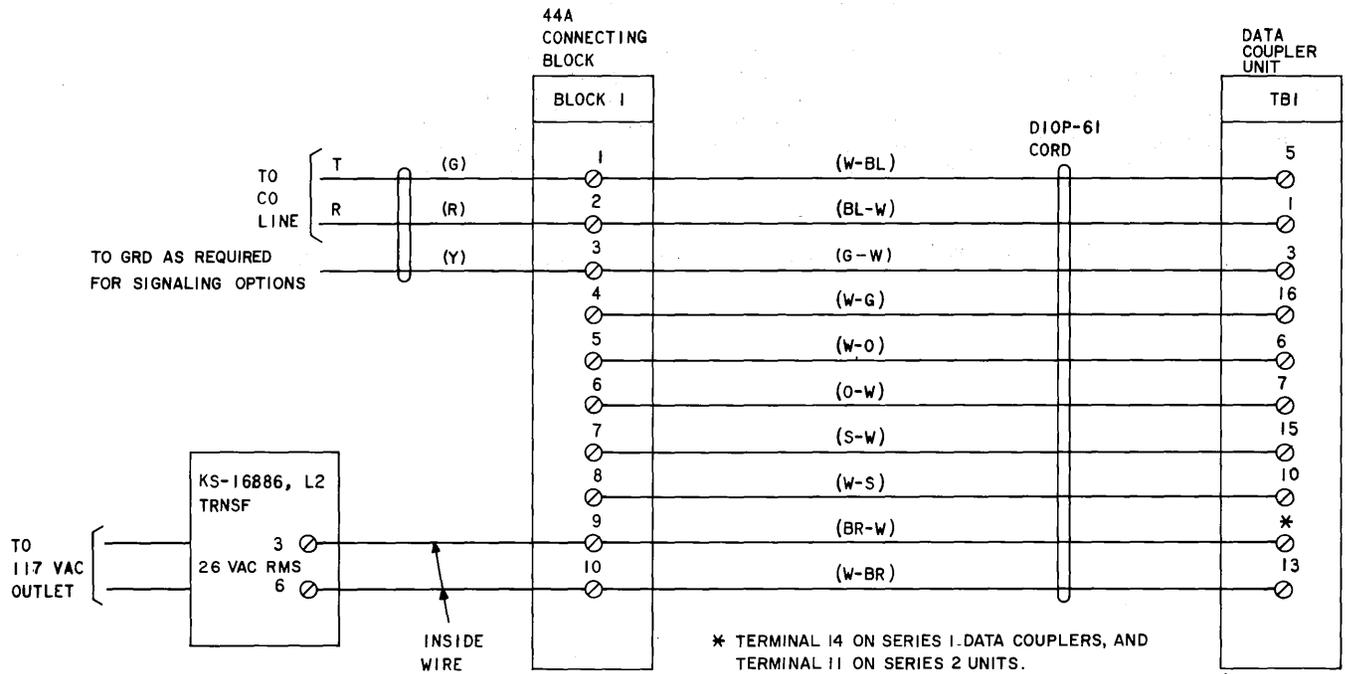
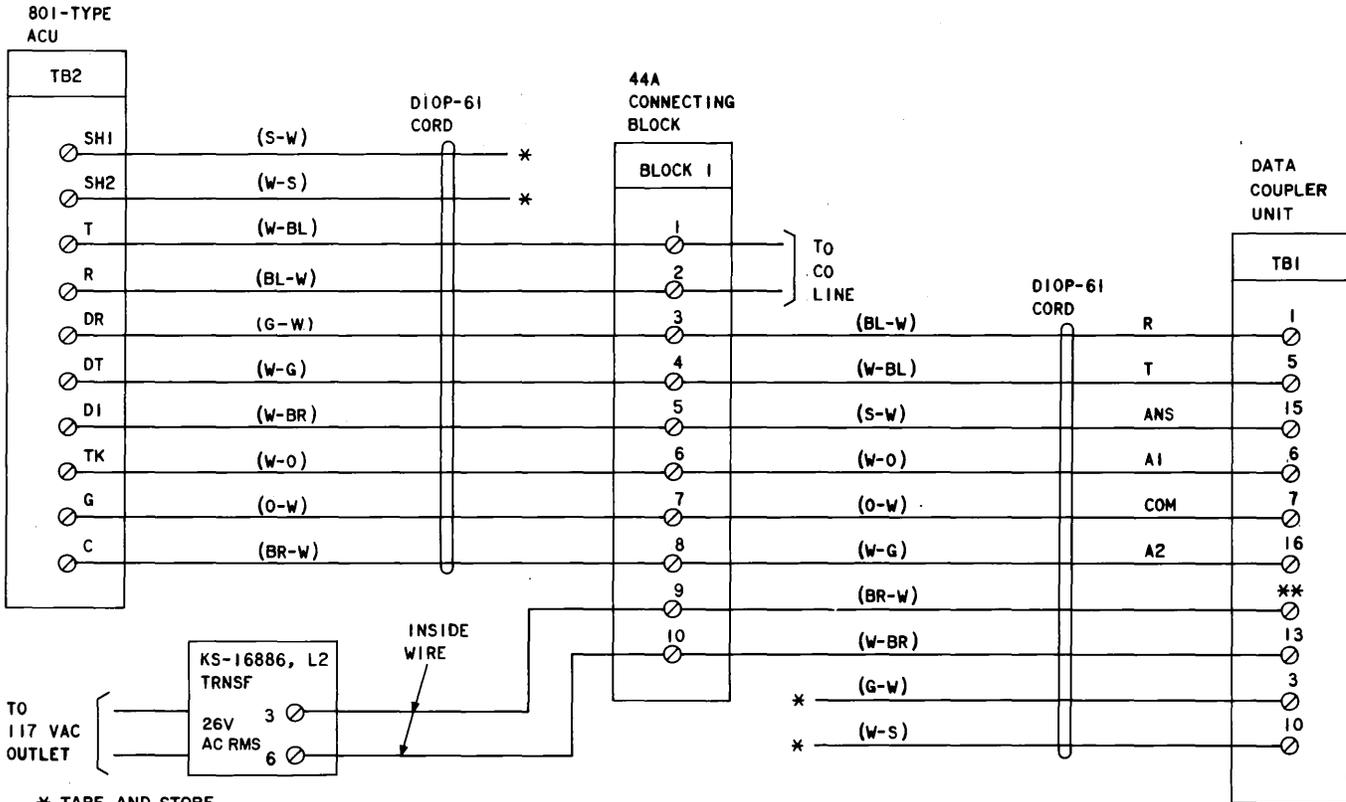


Fig. 3—F-58012 Data Coupler Connections

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* TAPE AND STORE

** TERMINAL 14 ON SERIES 1 DATA COUPLERS, AND TERMINAL 11 ON SERIES 2 UNITS.

NOTES:

1. OPTIONS B, G, M, AND Q MUST BE PROVIDED IN AUTOMATIC CALLING UNITS (ACU) 801A5, A6, C3, AND C4 WHEN ASSOCIATED WITH THE F-58012 DATA COUPLER. OPTION ZM AND ZH MUST ALSO BE PROVIDED IN A 801C3 AND C4.
2. THE Z, S, AND W OPTIONS MUST BE PROVIDED IN THE DATA COUPLER WHEN ASSOCIATED WITH AN ACU.
3. THE DATA COUPLER IS NOT EQUIPPED WITH A DIAL-TONE BUTTON WHICH IS USED WHEN THE TELEPHONE LINE IS GROUND START AND THE ASSOCIATED ACU IS NOT POWERED. WHEN REQUIRED, PROVIDE THIS FEATURE BY UNLOCKING THE FIRST KEY OF THE DATA COUPLER AND WIRING ONE OF THE NORMALLY OPEN CONTACTS BETWEEN RING (TBI-1) AND COMMON (TBI-7). SUITABLY LABEL THE KEY.

Fig. 4—F-58012 Data Coupler Connections with Automatic Calling Unit

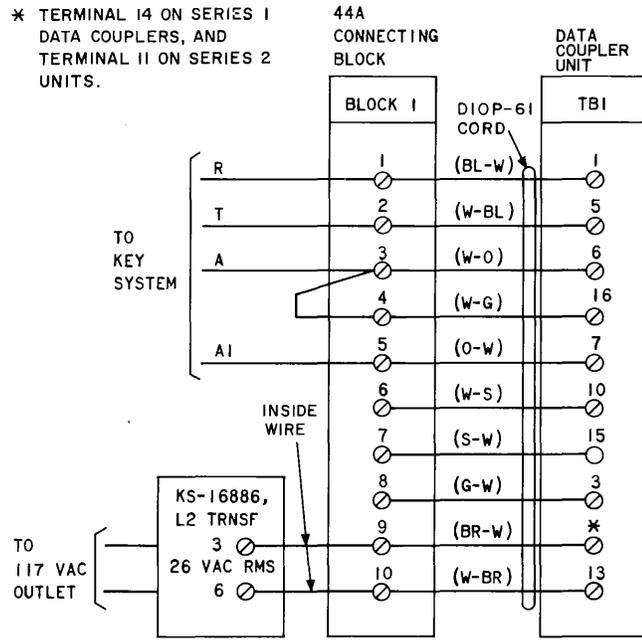


Fig. 5—F-58012 Data Coupler Connections with Key Telephone Systems

TABLE B

LEVEL OPTIONS FOR F-58012 DATA COUPLER

MEASURED LEVEL (INSERTION LOSS TEST)	MAXIMUM ALLOWABLE CUSTOMER LEVEL dBm	†TEST OSCILLATOR OPTION TERMINALS	LIMITER OPTION TERMINALS			
			MEASURED LEVEL (IMPEDANCE MATCHING TEST)			
			ABOVE -13.6	NOMINAL	-14.7 TO -15.6	-15.7 OR BELOW
-13.7 TO -14.6						
-12 or less	0	H-K, M-N		None	B-C, D-E	A-B, D-E
-11 to -11.9	-1	J-K, L-M, N-O	None	C-D, E-F	B-D, E-F	A-B, C-D, E-F
-10 to -10.9	-2	H-N	C-D, E-F	B-C, D-E	A-B, D-E	A-C
-9 to -9.9	-3	H-K, N-O	B-C, D-E	B-D, E-F	A-B, C-D, E-F	A-C, D-F
-8 to -8.9	-4	H-L, N-O	B-D, E-F	A-B, D-E	A-C	A-D, E-F
-7 to -7.9	-5	M-O	A-B, D-E	A-B, C-D, E-F	A-C, D-F	A-F
-6 to -6.9	-6	H-M, N-O	A-B, C-D, E-F	A-C	A-D, E-F	A-F
-5 to -5.9	-7	J-L, M-O	A-C	A-C, D-F	A-F	A-F
-4 to -4.9	-8	J-K, L-O	A-C, D-F	A-D, E-F	A-F	A-F
-3 to -3.9	-9	*K-O	A-D, E-F	*A-F	A-F	A-F

* Factory Supplied

† Provided on Series 1 data couplers only.