COMMUNICATIONS DISPLAY INTERFACE MODULES

CDIF801, CDIF802, CDIF803, CDIF805, CDIF806, AND CDIF816

INSTALLATION AND PROGRAMMING

1. GENERAL

1.01 This section provides installation and programming procedures for CDIF801, CDIF802, CDIF803, CDIF805, CDIF806, and CDIF816 interface modules. It is reissued to add information and the latest engineering changes. TCN 1607 and TCN 1747 (effecting CDIF802, CDIF803, CDIF805, and CDIF806) were reviewed and do not effect the content of this section. Due to a general revision, marginal arrows are omitted.

1.02 Refer to wiring diagrams included with module for electrical connections, and Section 578-110-100 for additional electrical data. After modules are installed, check electrical and mechanical connections.

1.03 References to left, right, front, and rear are viewed from the operator's position facing forward and facing the display tube, with editing control cluster on the left.

1.04 Section 570-005-800 lists the standard tools required for installation and routine service of the terminal.

1.05 The interface module is factory assembled and tested. It is usually installed in a CDT cabinet or buffer/interface set before shipment. The module can also be shipped separately for field installation. Module mounting information for buffer/interface sets may be found in Section 578-141-200.

2. UNPACKING

2.01 When modules are packed in separate cartons for field installation, unpack each module, inspect for damaged parts, and carefully set aside until all components are unpacked.

2.02 The following procedure is recommended for unpacking the modules from their cartons:

(1) Observe all unpacking instructions and cautions.

(2) Remove tape covering center seam on carton. Open box flaps and remove Wiring Diagram Package (WDP).

(3) Remove four plastic corner protectors.

(4) Carefully lift covered module out of carton and remove protective liner.

(5) Remove tape securing circuit cards.

(6) Remove muslin bags containing cables and cable connectors (if equipped) tied to module frame before installation.

3. VISUAL INSPECTION

3.01 Visual inspection should be as follows (Figure 1):

(a) Verify identification code on module.

IDENTIFICATION
PLATE

(Right Rear
Side View)

CABLE
CONNECTOR
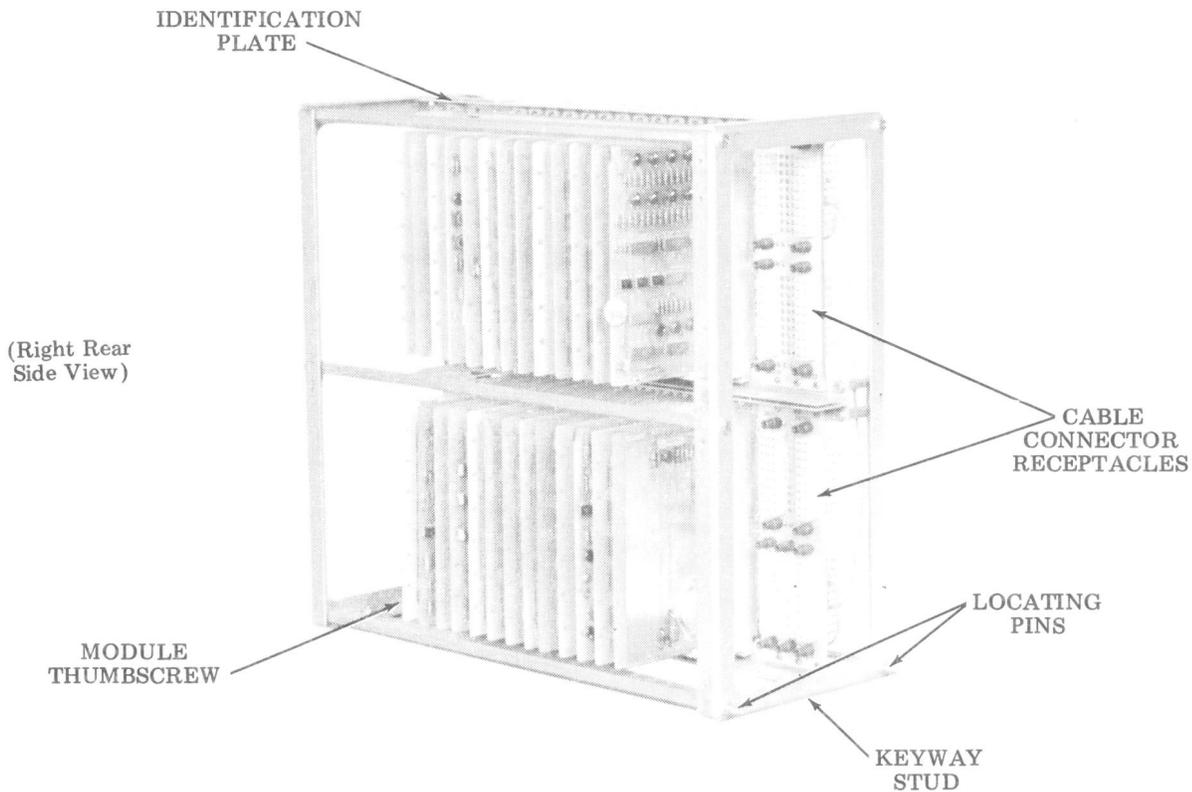RECEPTACLES

LOCATING
PINS

MODULE
THUMBSCREW

KEYWAY
STUD

Figure 1 - Typical Interface Module

(b) Visually inspect for damaged parts, loose circuit cards, broken wires, or shorted terminals.

(c) Check each circuit card to be sure it is fully seated in its appropriate connector.

(d) Check all wiring options. Refer to the appropriate Wiring Diagram Package (WDP) and Circuit Descriptions (CD).

4. INSTALLATION

4.01   Remove the CDT cabinet front panel by turning the two fasteners (Figure 2) one-quarter turn to the left. The front panel can now be lifted up and removed from the cabinet.

4.02   Loosen the three screws that secure the module hold-down bar (Figure 3). Slide the bar upward and retighten screws. If the set is not going to be moved, or if the modules are removed frequently, the hold-down bar may be left in this position.

4.03   Loosen the two captive screws on the front of the module shelf. Pull the shelf out to its extended position (Figure 3). Place the module on the shelf in its proper position.

4.04   Align the locating pins (Figure 1) and shelf keyway stud (in the lower rear of the module) into their proper holes. Move the module to the rear of the shelf until the locating pins are protruding through the shelf guide holes (Figure 3), and the module frame is seated squarely against the rear flange of the shelf.

4.05   Connect the proper interconnecting cables to the module. Tighten the module thumbscrew located in the front bottom frame of the module securing the module to the shelf (Figure 1).

4.06   When all modules are installed and connected, slide shelf to the rear of the cabinet. Make sure all module cables are clear of components and obstacles when moving the shelf back into the cabinet. Make certain ventilating fans (rear) are not obstructed by cables. Check fans for air flow at rear of cabinet after power is turned on.

FRONT
PANEL

FRONT PANEL
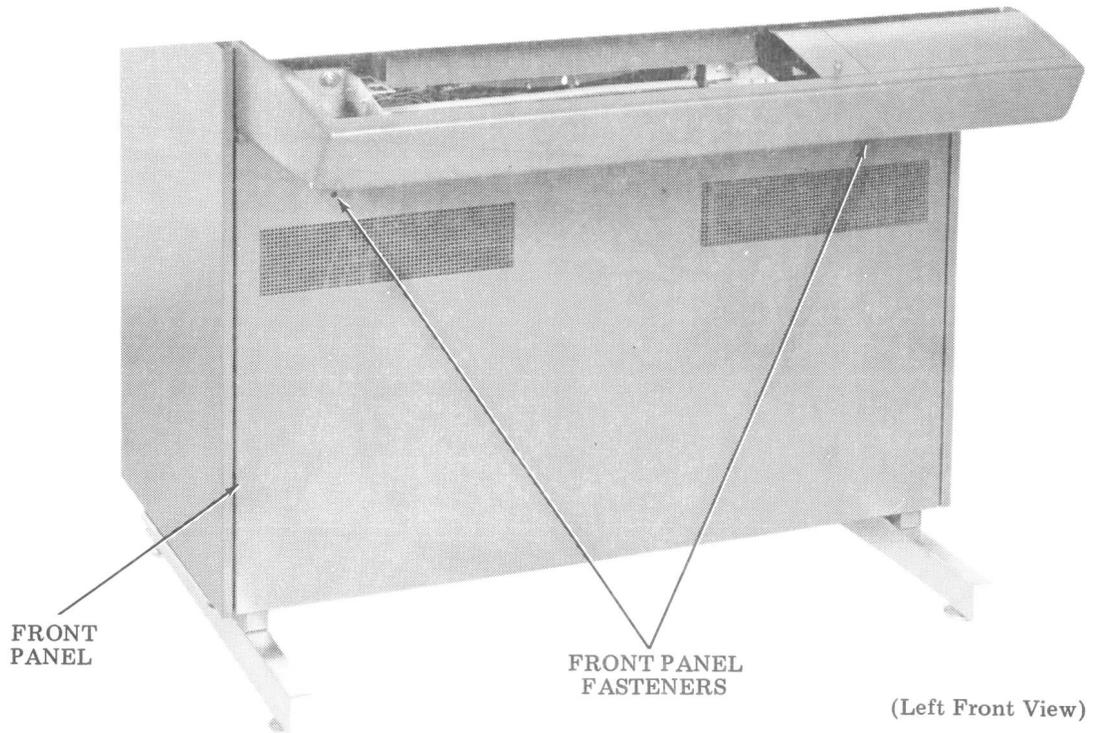FASTENERS

(Left Front View)

Figure 2 - CDT Cabinet

4.07   Tighten the two captive screws on the front of the module shelf securing it to the cabinet frame (Figure 4). Replace the front panel on the cabinet, and tighten the two panel fasteners.

5.   PROGRAMMING

CDIF801

General

5.01   The CDIF801 module (Figure 5) contains transmit and receive sections. The transmit section accepts 8-level parallel data and control signals, and is capable of converting 8- to 5-level signals for transmitting to 5- or 8-level remote receiver.

5.02   The receive section handles up to four 8-level inputs of parallel data and control signals, and transmits to a local receiver. As soon as an input message is finished from one source, the module polls other inputs for further traffic.

5.03   Parallel input to the module from a remote transmitting terminal must be located within 1000-cable feet of the module.

Parallel output from the module to a remote receiving terminal will be transmitted to a TELETYPE® Parallel Terminal Interface (PTI) terminator within 1000-cable feet. Data and control signals must be PTI compatible.

5.04   Data signals are a high state for space, and a low state for mark. Control functions are a high state for on, and a low state for off. These signals are not voltage sensitive, so voltage levels cannot be defined. In the high state, maximum current should be 20 mA nominal; in the low state, less than 3 mA should be detected.

MC969

5.05   Remove the five TP322969 (MC969) circuit cards from module connector locations ZB114, 115, 116, 117, and 315 (Figures 5 and 6). Install the program screw into location A (unidentified) on each circuit card. Only location B is identified. Reinsert all five programmed cards in their respective receptacles.

MC986

5.06   Remove the TP322986 (MC986) 3-character recognizer card from the module in location ZB110 (Figures 5 and 7).

MODULE HOLD-
DOWN BAR

SHELF GUIDE
HOLES (6 Places)

SHELF
KEYWAY
(3 Places)

MODULE
SHELF

CAPTIVE
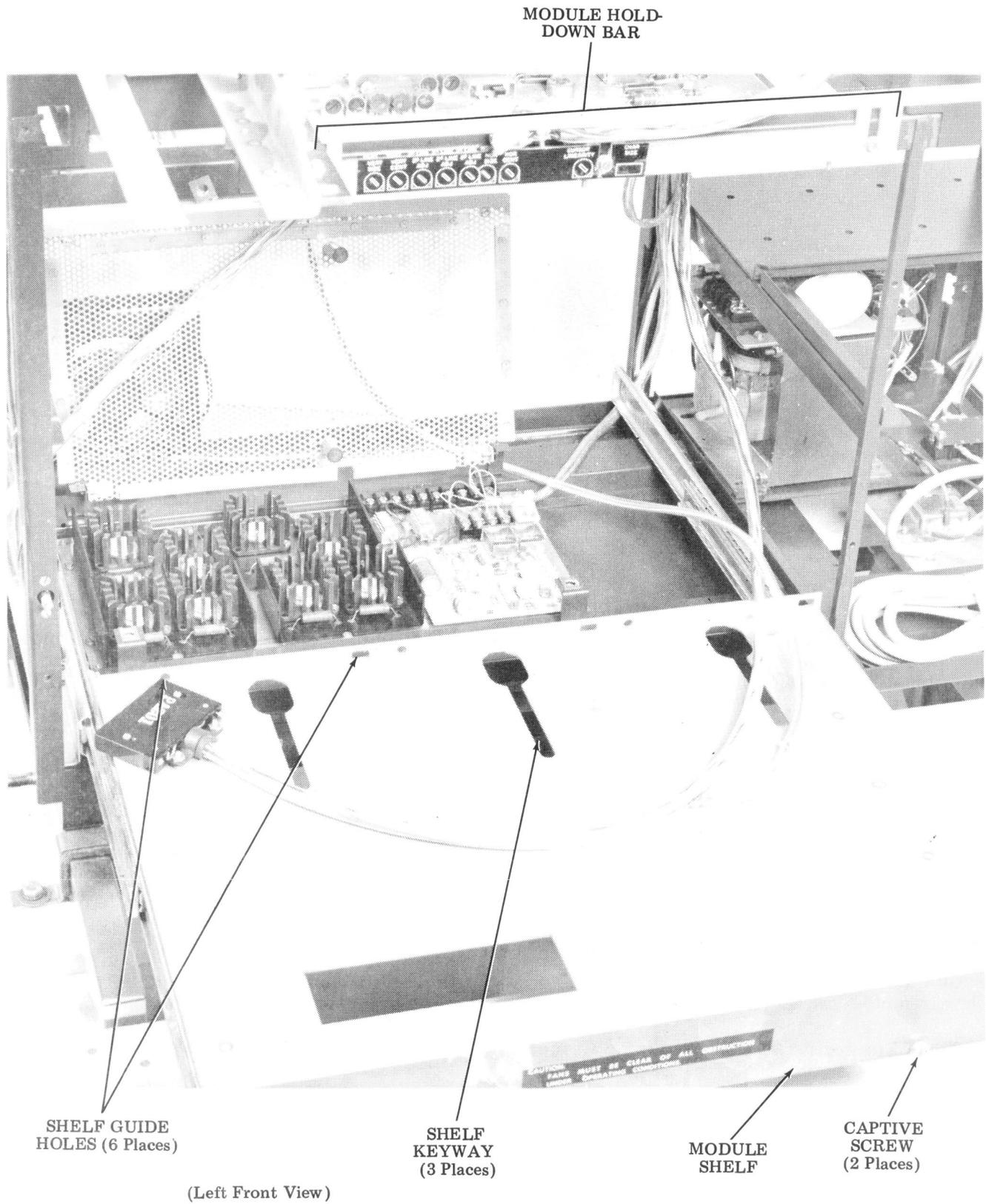SCREW
(2 Places)

(Left Front View)
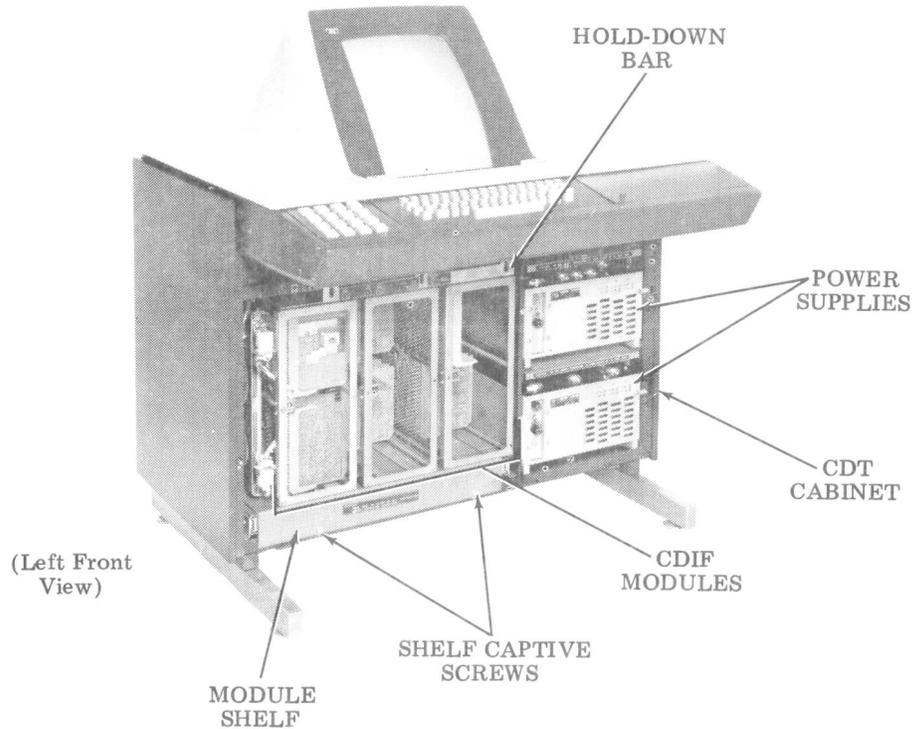
Figure 3 - Module Shelf Extended

Figure 4 - CDT Set

Program the card for detection of one, two, or three message-ending characters (system requirement). Programming screws are provided to code characters for mark (M) or space (S) on bit levels B1 through B8. See following code information.

5.07 Determine mark or space character code from ASCII (American National Standard Code for Information Interchange) chart in Figure 19. To code a marking bit level, remove programming screw from S and install it in M for that bit level. To code a spacing level, leave the programming screw in the S position for that particular bit level. Complete coding for remaining bit levels.

5.08 As a coding example see the following:

(a) To detect ETX in row X, programming screws will remain in position S for bits 3, 4, 5, 6, 7, and 8; and will be moved to position M for bits 1 and 2.

(b) To detect FF in row Y, programming screws will remain in position S for bits 1, 2, 5, 6, 7, and 8; and will be moved to position M for bits 3, 4, and 8.

Replace the card to its respective location in the module.

MC095

5.09 Remove the TP322095 (MC095) ASCII to Baudot code converter from the module in location ZB314 (Figures 5 and 8). The three operating options available for selection are A and C, B, and D. These options are explained in the following paragraphs and may be activated by installing a programming screw in the option selected. Only one option may be used at any one time.

5.10 The options are as follows:

(a) Options A and C are used where exact character count is required. Upon receipt of a Shift-Out (SO) or Shift-In (SI) character at the input interface, a 5-level Figures or Letters character (respectively) will be presented at the output interface.

(b) Option B is also used to insure character count. When this option is used, an SI character on the input interface is

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Figure 5 - CDIF801 Interface Module (See Note)

OPTION B

OPTION A

Figure 6 - MC969 Parallel Terminal Interface (PTI)
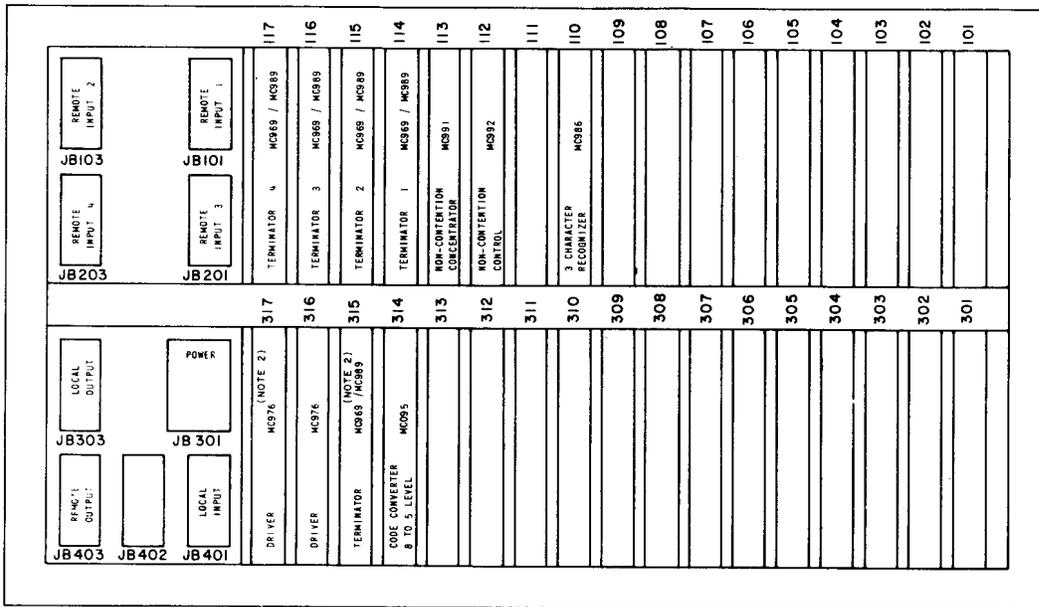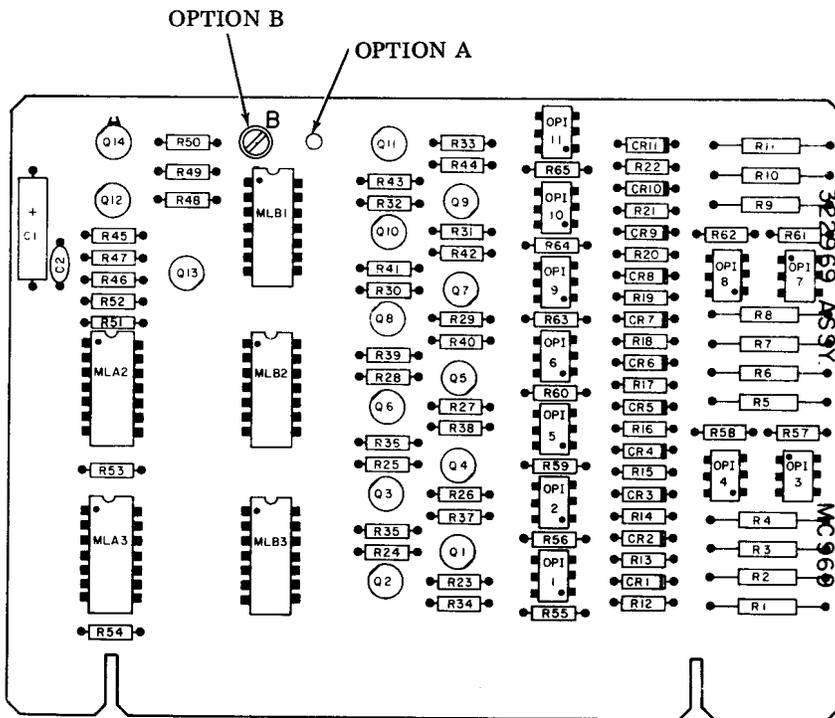Terminator Circuit Card (See Note)

Note: Some early designed CDIF801 modules (arrangement AA) were shipped with MC976 in ZB317, and MC969/MC989 in ZB315. Strapping was also included to eliminate the code converter in ZB314. These cards and wiring are no longer included.
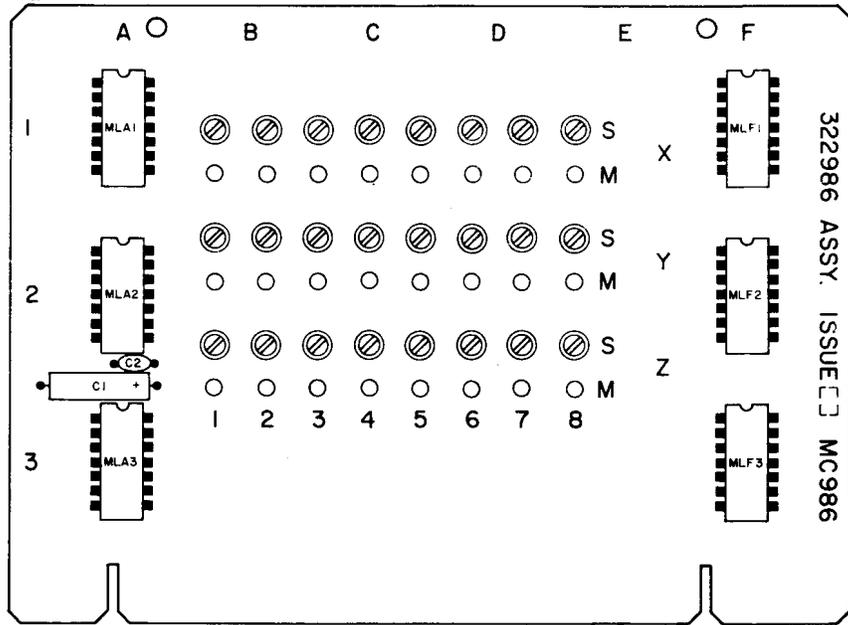
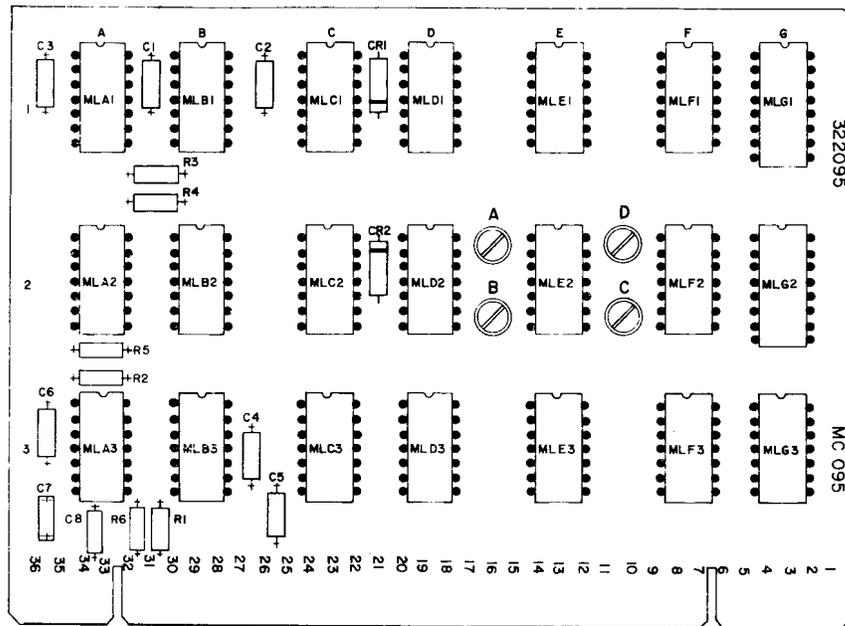Figure 7 - MC986 3-Character Recognizer Circuit Card

Figure 8 - MC095 ASCII to Baudot Code Converter Circuit Card

changed to a Figures character. The Letters ASCII equivalent is the Delete character. Therefore, a Letters character is generated when a Delete is presented to the converter.

(c) Option D (unshift on space), when activated, shifts internal circuitry to letters mode when a Space character is received. A Letters character is not transmitted due to the receiving circuitry also shifting to the letters mode.

5.11 Options A and C are used in teletypewriter systems that require exact character counts. When using this option, SI and SO characters can be used for equivalents of 5-level Letters and Figures shift characters.

5.12 If a character is received and is not preceded by an appropriate SI or SO character, a circuit in option A and C will automatically generate a Figures or Letters character. If this should occur, the total character count for that message segment will be greater.

5.13 Option B is an alternate for option A and C. This option insures an exact character count when indiscriminate use of SO character would render the system inoperative. This option also includes automatic generation of a 5-level Letters character at the output whenever an ASCII Delete character is received at the input.

5.14 Option D conditions the interface module logic circuitry into a letters state whenever a Space character is received. A Letters character is not generated to the 5-level receiving device because it is also required to mechanically shift from figures to a letters state when the Space character is received. The receiving device must be equipped with the "unshift-on-space character" feature.

JB303 Local Output

5.15 The CDT display terminal, or character buffer storage module, that connects to JB303 (local output) should be equipped with an MC969 parallel terminal interface or equivalent. Remove the circuit card (MC969) from the appropriate receive module position; program it for option B (reference 5.05).

Note: When a module is ordered with a CDT or 2541 Buffer Interface Set, the TP335600 connector assembly is also furnished for connecting Telco cabling to the module. If the module is ordered separately, the connectors are not furnished (Figure 9).

*Registered Trademark of AT&TCo.
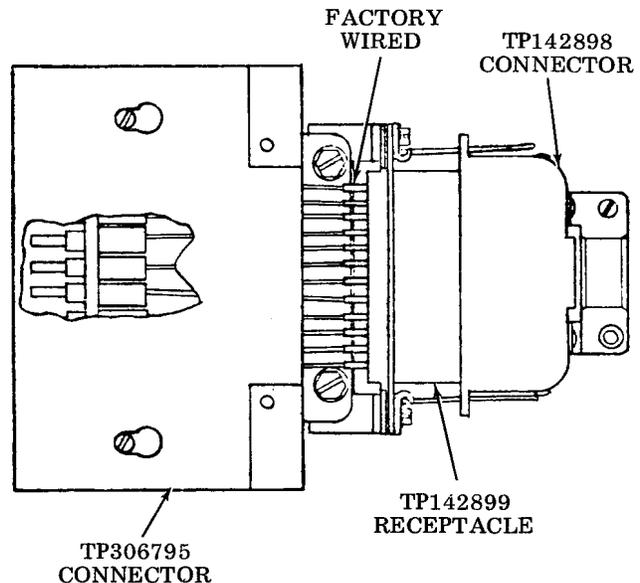
Figure 9 - TP335600 Connector Assembly

5.16 Where DATASPEED* 40 connects to JB303 module connector, its receive selectable interface circuit should be programmed for receive selectable — on. Program instructions for the TP410677 circuit card is provided in Sections 575-100-351 (early design) and 575-100-350 (present factory production or late design). Program information for DATASPEED 40 is provided in 1406SD, Sheet D3.

5.17 Replace the MC969 circuit card in its module. If DATASPEED 40 was programmed, replace the TP410677 to its respective controller circuit card connector.

JB403 Remote Output

5.18 The receiving module connecting to JB403 (Figure 9) remote output should have appropriate circuitry to interface parallel terminal signals. When the CDT receiving logic circuitry has an MC969 interface terminator, it should be programmed for option A (reference 5.05).

5.19 Where a DATASPEED 40 connects to JB403, it should be programmed for receive selectable — off. Program instructions for the TP410677 circuit card are provided in Sections 575-100-351 (early design) and 575-100-350 (present factory production or late design). Program information for DATASPEED 40 is provided in 1406SD, Sheet D3.

5.20   If other interface circuitry is used, refer to 1064SD-B3 and appropriate wiring diagrams for information regarding message control and character control signaling to CDIF801. Section 578-110-100 provides a description of PTI signal requirements.

5.21   Interconnecting PTI signal cables to the interface module is limited to a maximum of 1000-cable feet. EIA (Electronic Industries Association) Standard RS-232-C (serial) signal cables between modules must not exceed 50-cable feet, each cable.

CDIF802

General

5.22   The CDIF802 module (Figure 10) contains transmit and receive sections. The transmit section accepts local 5- or 8-level parallel data and control signals, and transmits 5- or 8-level parallel or serial data and control signals to a remote receiver. This section converts 8-level signals to 5-level, and also provides a transmitter distributor to convert parallel signals to serial.

5.23   The receive section of the module accepts remote serial or parallel 5- or 8-level input signals, and transmits to a local receiver either 5- or 8-level parallel data and control signals. This section converts 5-level to 8-level signals, and provides a receiving distributor to convert serial signals to parallel.

5.24   Parallel input (PTI signals) to the module from a remote transmitting terminal must be located within 1000-cable feet of the module. Parallel output from the module to a receiving terminal will be transmitted to a PTI terminator within 1000-cable feet. Data and control signals must be PTI compatible.

5.25   Data signals are at a high state for space, and low state for mark. Control signals are at a high state for on, and a low state for off. Data and control signals are not voltage sensitive, so voltage levels cannot be defined. In the high state, maximum current should be 20 mA; in the low state, less than 3 mA should be detected.

MC969

5.26   Remove the two TP322969 (MC969) circuit cards from module connector locations ZB117 and ZB313. Install the program screw into location A (unidentified; only location B is identified) on each circuit card (Figure 6). Reinsert both MC969 cards in their respective receptacles.
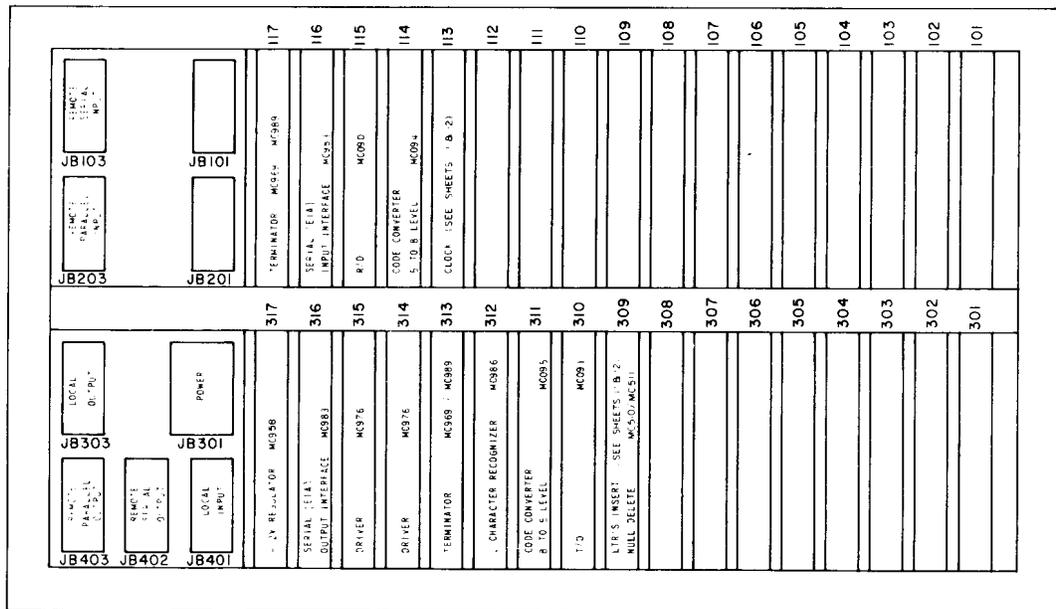

Figure 10 - CDIF802 Interface Module

MC986

5.27   Remove TP322986 (MC986) circuit card 3-character recognizer from module connector location ZB312 (Figures 7 and 10). Program the card for X and Y positions and the message ending characters (such as EOT and/or ETX — refer to system requirement). Programming screws are provided to code characters for mark (M) or space (S) on bit levels B1 through B8.

5.28   See the following examples for coding (refer to 5.07 for additional coding information):

(a)   To detect character EOT in row X, programming screws will remain in upper position (S) for bits 1, 2, 4, 5, 6, and 7; programming screws for bits 3 and 8 will be moved to lower position (M).

(b)   To detect character ETX in row Y, programming screws will remain in upper position (S) for bits 3, 4, 5, 6, 7, and 8; programming screws for bits 1 and 2 will be moved to lower position (M).

5.29   To initiate a letters feed-out cycle to the 5-level receive device, program row Z for Null character (all bit levels spacing).

Program screws remain in upper position (S). Replace card to its respective location in module.

MC090

5.30   Remove TP322090 (MC090) circuit card from module connector location ZB115; install programming screw in option A (Figure 11).

5.31   With option A programmed, the receiving distributor synchronizes both start and stop bits of the serial data input before it provides character available interface signaling. Do not use option A with synchronous operation. Reinsert MC090 to its respective receptacle.

MC094

5.32   Remove TP322094 (MC094) circuit card Baudot to ASCII code converter from its location (ZB114) in the module (Figures 10 and 12). Four options (W and Y, X, Z, and T) are available for customer selection. Only one option may be used at a time, except for option T (parity) which can be used as one option or may be used with any of the other options. Install program screws to enable option; remove screws to disable option.

5.33   The code converter options are as follows:
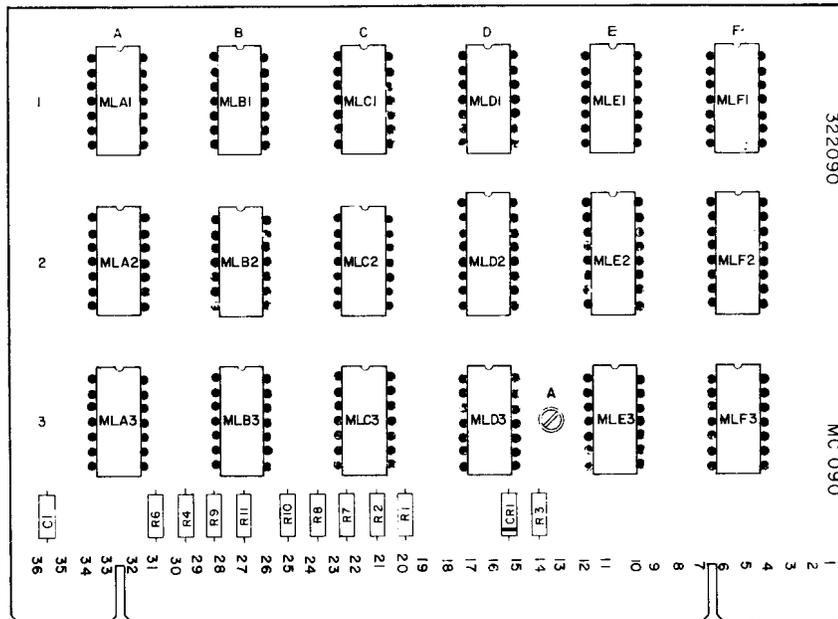
Figure 11 - MC090 Receiving Distributor/Regenerator

(a) Option W — ASCII Shift-In code is generated on receipt of Letters character.

Option Y — ASCII Shift-Out code is generated on receipt of Figures character.

These options are used together.

(b) Option X — ASCII Shift-In code is generated on receipt of Figures character.

This option cannot be used when W and Y are used.

(c) Option Z — Provides internal letters shift on receipt of Space character.

This option cannot be used if W and Y, or X is used.

(d) Option T — Transmits even character parity or 8th bit marking.

This option may be used with any of the preceding options.

5.34   Options W and Y are used where 5- to 7-level ASCII code conversions (8th bit used for parity) are required. Sensing 5-level Letters or Figures code at logic input results in Shift-In (W) or Shift-Out (Y) code generation on receipt of Letters or Figures characters at the logic input.

5.35   Option X is used as a second method of insuring character count when indiscriminate use of Shift-Out (SO) character would have a harmful effect to system operation. With this option programmed, a Figures character at the logic input will be transmitted to a Shift-In (SI) character at the logic output. A Letters character at the input conditions the converter for letters and generates a Delete character at the logic output.

5.36   Option Z is used to keep code converter logic in synchronism with 5-level teletypewriter equipment. Receipt of a Baudot Space character at the logic input causes an internal logic unshift from figures to letters (if the equipment was in figures operation).

STRAP (2 Places)
(Straps Must Be on Circuit Card)
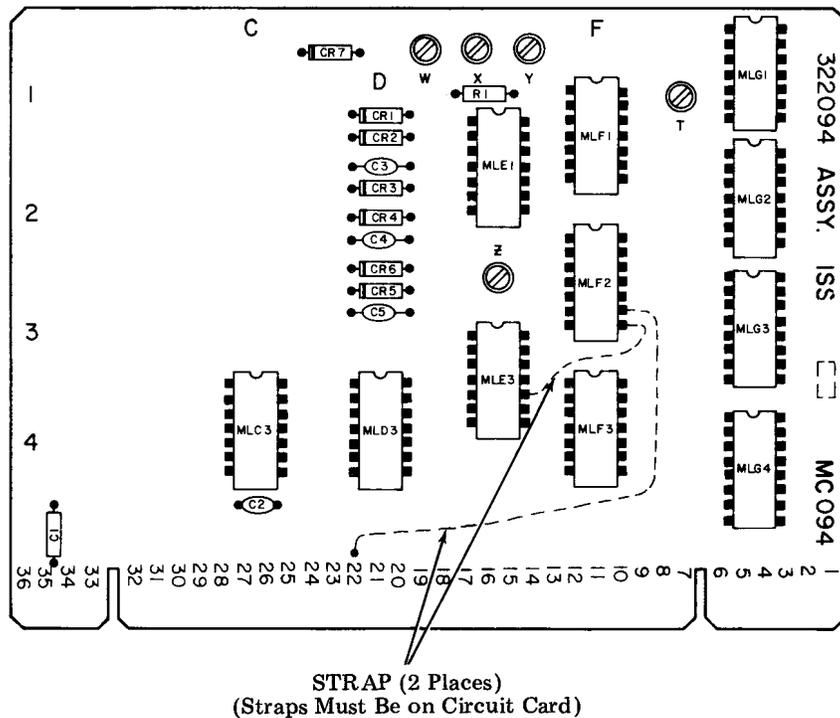
Figure 12 - MC094 Baudot to ASCII Code Converter

5.37   Option T, when programmed, transmits even vertical parity for the 8th-bit level at the converter output. When option is disabled, the 8th bit is constantly marking.

MC095

5.38   Remove the TP322095 ASCII to Baudot code converter circuit card from module location ZB311 (Figures 8 and 10). Three operating options are available for selection. Option A and C, B, and D are explained in 5.10 through 5.14.

5.39   Program the option required by installing a program screw in the option screw hole. When programming is completed, reinsert MC095 in its proper location.

MC091

5.40   Remove TP322091 (MC091) circuit card transmitter distributor from module location ZB310 (Figures 10 and 13). The following programming instructions are for CDIF802/BB arrangement only. Programming instructions in 5.41 cover all other module arrangements.

    (a)   If EIA signal sensitive receive circuits (connected through JB402) operate using 5-level Baudot 7-bit code (consisting of

1 start bit, 5 data bits, and 1 stop bit) at 100 words per minute (wpm), disable option A by removing program screw from option A screw hole.

    (b)   If the EIA signal sensitive receive circuits operate using 5-level Baudot 7.5-bit code (consisting of 1 start bit, 5 data bits, and 1-1/2 stop bits) at 100 wpm, enable option A by installing program screw in option A screw hole.

5.41   All other CDIF802 module arrangements (AL, AC, AD, or BX) are programmed with option A program screw removed. When option A is enabled, a half-bit time delay on the last bit transmitted from distributor is not required for arrangements using 8-level ASCII code at 10 or 11 bits to the EIA output connector JB402. Reinsert MC091 in its proper location.

    Note: When option A is disabled, grounding pin 25 allows a 7-bit code to be transmitted. When option is enabled, grounding pin 25 allows a 7.5-bit code to be transmitted (64 x bit clock mode).

JB303 Local Output

5.42   The PTI buffer set or CRT display set that interfaces to the JB303 (Figure 9) module connector should have an MC969 (Figure

Figure 13 - MC091 Transmitter Distributor

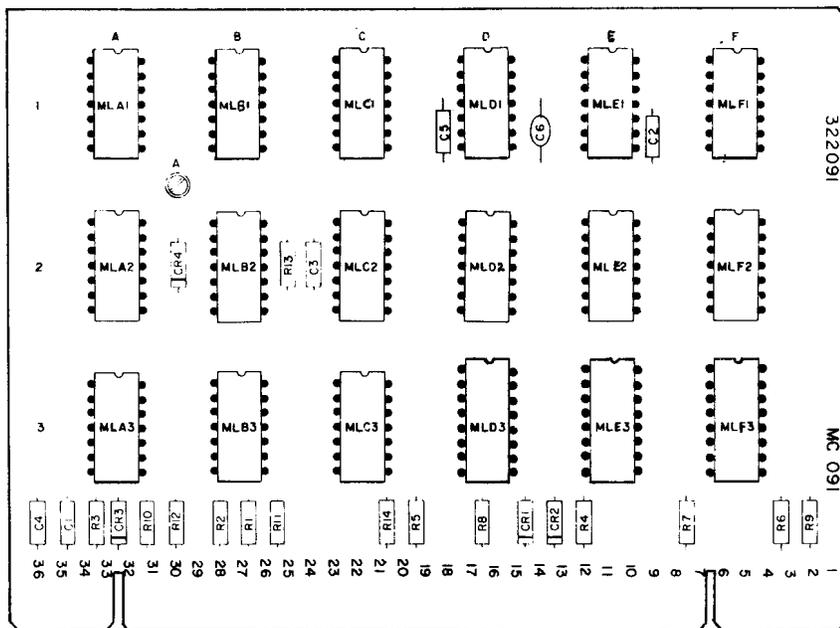6) PTI signal terminator to interface the receive connector. Locate and program the appropriate MC969 terminator in the receive equipment for option A (option A not identified; only option B is identified).

Factory-Installed Wiring Options

5.43 The following information is for reference only; it contains various factory-installed wiring options for different module arrangements (Table A). The module arrangements listed in the left-hand column coincide with the vertical columns, reading across horizontally. The vertical columns list the wired options (A through U) and are coded with an X where the option is used.

5.44 A vertical column with no X indicates the option is not required and wiring is not installed. Option A through U functions are described in 5.45 and the required point-to-point wiring for each option is listed in 5.46.

5.45 Factory-installed option wiring functions as listed in Table A columns A through U are described as follows:

OPTION CODE	DESCRIPTION
A	Strapping to Eliminate 5- to 8-Level Code Conversion
B	Strapping to Eliminate 8- to 5-Level Code Conversion

OPTION CODE	DESCRIPTION
C	Provide 7.7 5-Unit Code for Receiving Distributor (RD)
D	Provide 10-Unit Code for RD
E	Provide 11-Unit Code for RD
F	Provide 75-Baud Clock for RD
H	Provide 150-Baud Clock for RD
K	Provide 10-Unit Code for Transmitter Distributor (TD)
L	Provide 11-Unit Code for TD
N	Provide 110-Baud Clock for TD
P	Provide 150-Baud Clock for TD
Q	Provide 110-Baud Clock for TD When Using Dual Speed Clock
R	Provide 110-Baud Clock for RD When Using Dual Speed Clock
S	Enable Sender Selectable for EIA Output Without Data Set Clock
T	Strap DSR to DTR When Using EIA Output Without Data Set
U	Provide 1200-Baud Clock for TD

TABLE A

CDIF802 FACTORY-INSTALLED WIRED OPTIONS

MODULE ARRANGEMENTS	WIRED OPTIONS															
	A	B	C	D	E	F	H	K	L	N	P	Q	R	S	T	U
CDIF802/AL	X	X							X	X				X	X	
CDIF802/BB		X	X			X		X			X			X	X	
CDIF802/AC	X	X			X			X			X		X	X	X	
CDIF802/AD	X	X		X			X		X			X		X	X	
CDIF802/BX	X	X						X						X		X

5.46   Factory-installed options shown in Table A and described in previous paragraphs, are shown in the following tables. All point-to-point wiring must be completed to install an option.

OPTION A   STRAP

FROM	TO
XZB114-1	XZB114-11
XZB114-2	XZB114-12
XZB114-3	XZB114-13
XZB114-4	XZB114-14
XZB114-5	XZB114-15
XZB114-6	XZB114-16
XZB114-7	XZB114-17
XZB114-8	XZB114-18
XZB114-21	XZB114-22
XZB114-23	XZB114-24

OPTION B   STRAP

FROM	TO
XZB311-1	XZB311-11
XZB311-2	XZB311-12
XZB311-3	XZB311-13
XZB311-4	XZB311-14
XZB311-5	XZB311-15
XZB311-6	XZB311-16
XZB311-7	XZB311-17
XZB311-8	XZB311-18
XZB311-21	XZB311-22
XZB311-23	XZB311-24

OPTION C   STRAP

FROM	TO
XZB115-25	XZB115-36

OPTION D   STRAP

FROM	TO
XZB115-26	XZB115-36

OPTION E   STRAP

FROM	TO
XZB115-27	XZB115-36

OPTION F   STRAP

FROM	TO
XZB113-14	XZB115-20

OPTION H   STRAP

FROM	TO
XZB113-13	XZB115-20

OPTION K   STRAP

FROM	TO
XZB310-26	XZB310-36

OPTION L   STRAP

FROM	TO
XZB310-27	XZB310-36

OPTION N   STRAP

FROM	TO
XZB113-12	XZB310-20

OPTION P | STRAP

FROM	TO
XZB113-13	XZB310-20

OPTION Q | STRAP

FROM	TO
XZB113-2	XZB310-20

OPTION R | STRAP

FROM	TO
XZB113-2	XZB115-20

OPTION S | STRAP

FROM	TO
XZB316-19	XZB316-36

OPTION T | STRAP

FROM	TO
XZB316-4	XZB316-7

OPTION U | STRAP

FROM	TO
XZB113-2	XZB310-20

CDIF803

General

5.47   The CDIF803 module is divided into transmit and receive sections. The transmit section accepts 5- or 8-level parallel data and control signals, and transmits 5- or 8-level parallel or serial data and control signals to a remote receiver. The transmit section also has capabilities for converting 8-level signals to 5-level, and a transmitter distributor to convert parallel signals to serial.

5.48   The receive section can accept up to four inputs of 8-level parallel data and control signals, and transmit to a local receiver. As soon as an input message is completed from one source, the module polls the other inputs for further traffic.

5.49   Data and control signals must be PTI compatible. That means the data signals are at a high state for space and a low state for mark. Control functions are at a high state for on and a low state for off.

5.50   Signals mentioned in the previous paragraphs are not voltage sensitive so voltage levels cannot be defined. Maximum current flow in the high state should be 20 mA nominal; in the low state less than 3 mA should be detected.

5.51   A parallel input from a remote transmitting terminal should be located within 1000-cable feet. Output to a remote receiving terminal should be transmitted to a PTI compatible terminator within 1000-cable feet. The signaling is similar to that described in the preceding paragraph.

MC969

5.52   Remove the five TP322969 (MC969) PTI terminator circuit cards from module connector locations ZB114, ZB115, ZB116, ZB117, and ZB313 (Figures 6 and 14). Install program screw in option A (unidentified; only option B is identified). Reinsert all five programmed cards in their respective receptacles.

MC986

5.53   Remove the TP322986 (MC986) 3-character recognizer from module connector location ZB110 (Figures 7 and 14). Refer to 5.06 and 5.07 for programming information. Reinsert MC986 in its respective module receptacle.

MC091

5.54   Remove the TP322091 (MC091) transmitter distributor from module connector ZB310 (Figures 13 and 14). Remove program screw from option A. Refer to 5.41 for programming information. Reinsert MC091 in its proper module connector location.
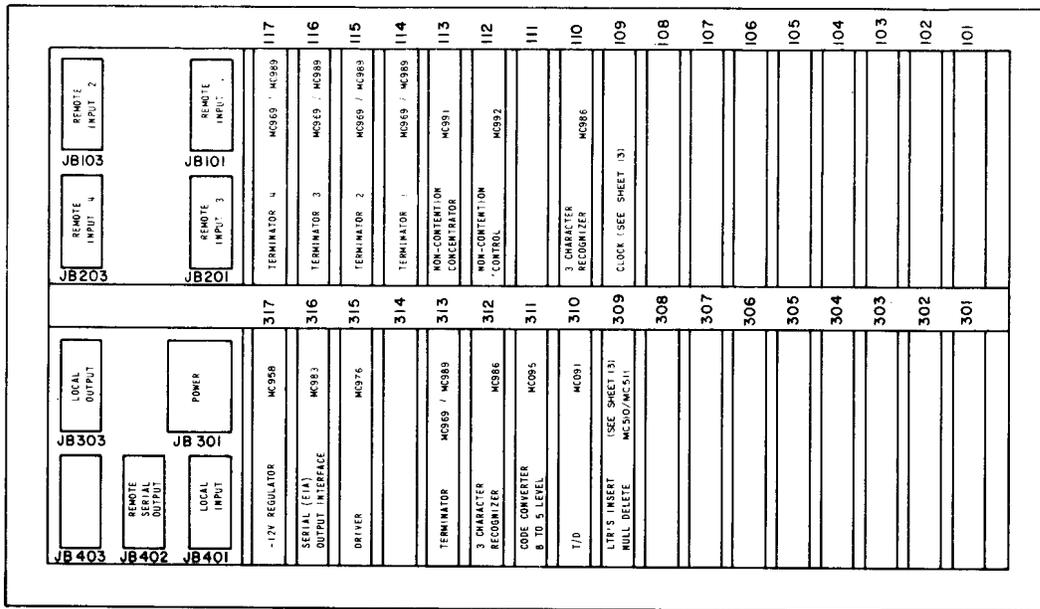
Figure 14 - CDIF803 Interface Module

JB303 Local Output

5.55   The PTI buffer set or CDT display set that interfaces to the JB303 (Figure 9) module connector should have an MC969 (Figure 6) PTI signal terminator to interface its receive connector. Locate and program the appropriate MC969 terminator in the receive equipment for option B (location B identified; A unidentified).

Factory-Installed Wiring Options

5.56   The following information is for reference only; it contains various factory-installed wiring options for different module arrangements (Table B). The module arrangements listed in the left-hand column coincide with the vertical columns reading across horizontally. The vertical columns list the wired options (A through J) and are coded with an X where the option is used.

5.57   A vertical column with no X indicates the option is not required and wiring is not installed. Option A through J functions are described in 5.58 and the required point-to-point wiring for each option is listed in 5.59.

5.58   Factory-installed option wiring functions as listed in Table B are described as follows:

OPTION CODE	DESCRIPTION
A	Strapping to Eliminate 8- to 5-Level Code Conversion
C	Provide 10-Unit Code for TD
D	Provide 11-Unit Code for TD
F	Provide 110-Baud Clock for TD
G	Provide 150-Baud Clock for TD
H	Strap DSR to DTR When Using EIA Output Without Data Set
J	Enable SS When Using EIA Output Without Data Set

TABLE B

CDIF803 FACTORY-INSTALLED WIRED OPTIONS

MODULE ARRANGEMENTS	WIRED OPTIONS						
	A	C	D	F	G	H	J
CDIF803/BG	X		X	X		X	X
CDIF803/BH						X	X
CDIF803/BJ	X	X				X	X	X

5.59   Factory-installed options shown in Table B and described in previous paragraphs are shown in the following tables. All point-to-point wiring must be completed to install an option.

OPTION A   STRAP

FROM	TO
XZB311-1	XZB311-11
XZB311-2	XZB311-12
XZB311-3	XZB311-13
XZB311-4	XZB311-14
XZB311-5	XZB311-15
XZB311-6	XZB311-16
XZB311-7	XZB311-17
XZB311-8	XZB311-18
XZB311-21	XZB311-22
XZB311-23	XZB311-24

OPTION C   STRAP

FROM	TO
XZB310-26	XZB310-36

OPTION D   STRAP

FROM	TO
XZB310-27	XZB310-36

OPTION F   STRAP

FROM	TO
XZB310-20	XZB109-12

OPTION G   STRAP

FROM	TO
XZB310-20	XZB109-13

OPTION H   STRAP

FROM	TO
XZB316-4	XZB316-7

OPTION J   STRAP

FROM	TO
XZB316-19	XZB316-36

CDIF805

General

5.60   The CDIF805 module (Figure 15) contains transmit and receive sections. The transmit section accepts 8-level parallel data and control signals, and transmits 8-level serial data and control signals to a remote receiver. This section has a transmitter distributor to convert parallel signals to serial.

5.61   The receive section of the module accepts 8-level serial input signals, and transmits 8-level parallel data and control signals to a local receiver. This section also converts serial signals to parallel through a receiving distributor.

5.62   Serial input and output signaling conforms to EIA Standard RS-232-B. Parallel input and output data and control signals must be PTI compatible. Data signals are at a high state for space and a low state for mark; control signals are at a high state for on and a low state for off.

5.63   These data and control signals are not voltage sensitive, so voltage levels cannot be defined. Maximum current flow in the space or on condition should be 20 mA. Current flow in the mark or off condition should be less than 3 mA.

Figure 15 - CDIF805 Interface Module

MC969

5.64   Remove TP322969 (MC969) circuit card from module connector location ZB313 (Figures 6 and 15). Install program screw into option A (unidentified; only option B is identified). Reinsert MC969 in its proper connector.

MC986

5.65   Remove and program TP322986 (MC986), module connector location ZB312 (Figures 7 and 15), according to programming information in 5.06 and 5.07. Reinsert MC986 in its proper connector.

MC090

5.66   Remove and program TP322090 (MC090), module connector location ZB115 (Figures 11 and 15), according to programming information in 5.30 and 5.31. Reinsert MC090 in its proper connector.

MC091

5.67   Remove and program TP322091 (MC091), module connector location ZB310 (Figures 13 and 15), according to programming information in 5.40 and 5.41. Reinsert MC091 in its proper connector.

MC970

5.68   Parallel data input to the CDT set passes through vertical parity circuit card TP322970 (MC970). This card detects even or odd parity characters and can generate any ASCII character as an overwrite character upon detection of a parity error, an output signal indicating detection of a parity error, or generation of even or odd parity.

5.69   Remove and program TP322970 (MC970), vertical parity detect/generate circuit card, module connector location ZB314 (Figures 15 and 16). When using MC970 for parity detection, the inputs should be eight parallel data leads plus control signal character available (CA).

5.70   To detect parity, install program screw in option B and remove program screw from option A (options A and B should never be programmed together as damage to circuit components may result). Install program screw in D to detect even parity, or install program screw in E to detect odd parity.

5.71   Install program screw in option C as an additional option during parity detection. The overwrite character may be generated rather than allow parity errored characters to be passed to the receiving equipment.
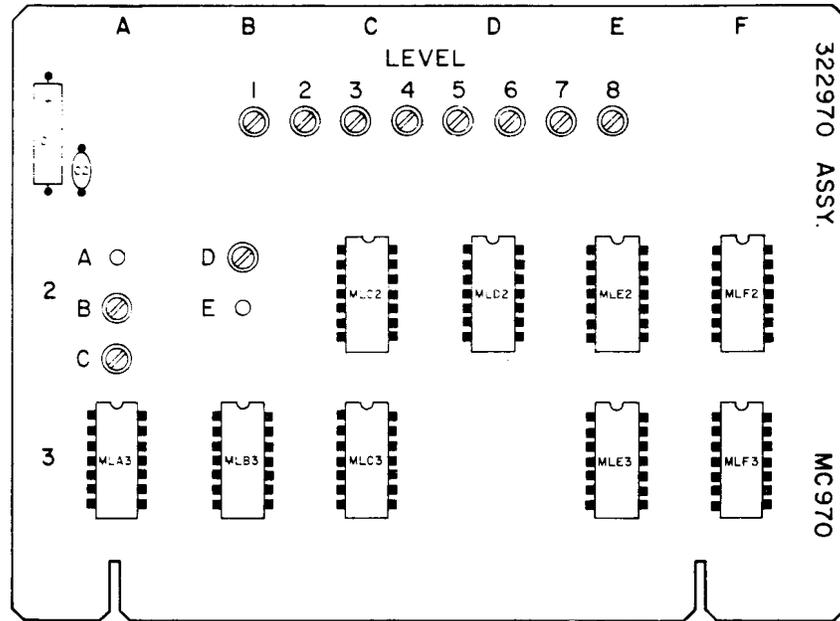
Figure 16 - MC970 Vertical Parity Detect/Generate

5.72 For parity generation, install program screw in option A, and remove program screw from option B. Select even (option D) or odd (E) parity by installing program screw in one of the options (do not program D and E together as damage to circuit components may result). Remove program screw from option C.

5.73 To send an overwrite character (option C) to the receive equipment on a detected parity error, install program screw in option C. Select the customer preferred overwrite character from ASCII code chart (Figure 17).

5.74 Program bit level screws (1 through 8) for each of the overwrite character bit levels. Remove program screw for mark, or install screw for space. Reinsert MC970 into its proper connector.

JB303 Local Output

5.75 Refer to 5.55 for information to program receiver equipment connecting to JB303.

Factory-Installed Wiring Options

5.76 The following information is for reference only; it contains various factory-installed wiring options for different module arrangements (Table C).

5.77 The module arrangements listed in the left-hand column coincide with the vertical columns reading across horizontally. The vertical columns list the wired options (B through J) and are coded with an X where the option is used.

5.78 A vertical column with no X indicates the option is not required and wiring is not installed. Options B through J functions are described in 5.79 and the required point-to-point wiring for each option is listed in 5.80.

5.79 Factory-installed option wiring functions as listed in Table C columns B through J are described as follows:

OPTION CODE	DESCRIPTION
B	Provide 10-Unit Code for TD
C	Provide 11-Unit Code for TD
D	Provide 10-Unit Code for RD
E	Provide 11-Unit Code for RD
F	Provide 1200-Baud Clock for TD
G	Provide 110-Baud Clock for TD

CONTROL
FUNCTIONS
NONTYPING

NONTYPING
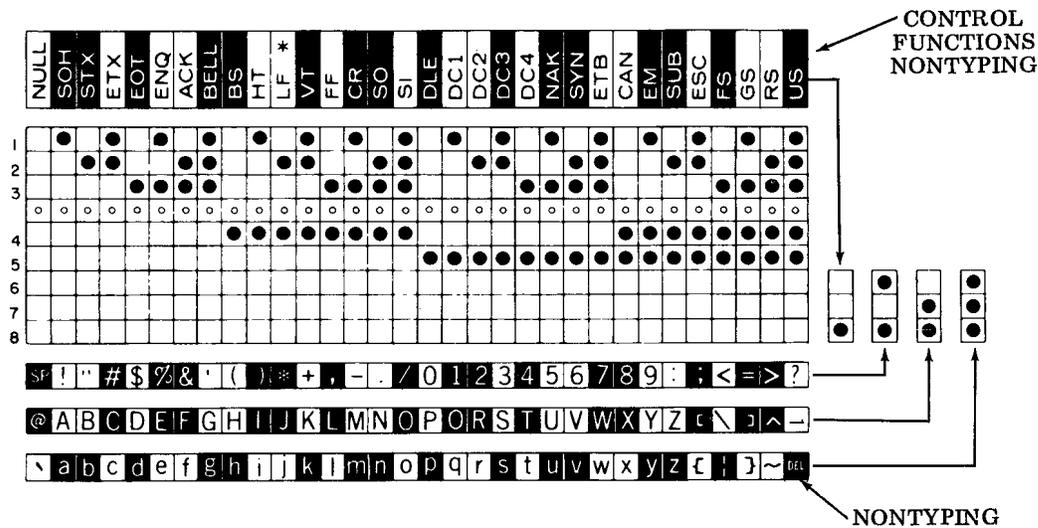
* Where appropriate, this character may have the meaning "NEW LINE" (NL).

● Mark to obtain even parity, the characters and functions shown with shaded backgrounds have 8th bit marking.

Note: Upon receiving code combinations for \ through ~ , monocase equipment such as Models 33 and 35 print respective characters @ through ∧ .

Figure 17 - 7-Level American National Standard Code for Information Interchange (ASCII) With 8th-Level Parity Bit

OPTION CODE	DESCRIPTION
H	Provide 1200-Baud Clock for RD
J	Provide 110-Baud Clock for RD.

TABLE C

CDIF805 FACTORY-INSTALLED
WIRED OPTIONS

MODULE ARRANGEMENTS	WIRED OPTIONS							
	B	C	D	E	F	G	H	J
CDIF805/BM	X		X		X		X	
CDIF805/BK		X		X		X		X

5.80   Factory-installed options shown in Table C and described in previous paragraphs are shown as follows. All point-to-point wiring must be completed to install option.

OPTION B   STRAP

FROM	TO
XZB310-26	XZB310-36

OPTION C   STRAP

FROM	TO
XZB310-27	XZB310-36

OPTION D   STRAP

FROM	TO
XZB115-26	XZB110-36

OPTION E   STRAP

FROM	TO
XZB115-27	XZB115-36

OPTION F   STRAP

FROM	TO
XZB113-2	XZB310-20

OPTION G   STRAP

FROM	TO
XZB113-12	XZB310-20

OPTION H   STRAP

FROM	TO
XZB113-2	XZB115-20

OPTION J   STRAP

FROM	TO
XZB113-12	XZB115-20

CDIF806 AND CDIF816

General

5.81   The CDIF806 module (Figure 18) and CDIF816 (Figure 19) provides interfacing between various sending and receiving equipment and terminals using a Communications Display Terminal (CDT).

5.82   Due to the similarity and function of CDIF806 and CDIF816, the following information will apply to both modules unless otherwise specified.

5.83   The interface modules are divided into two sections: receive and transmit. The receive section interfaces with a 5-level parallel signal input, performs code conversion, character substitution, and provides 8-level parallel signal output. The transmit section interfaces with
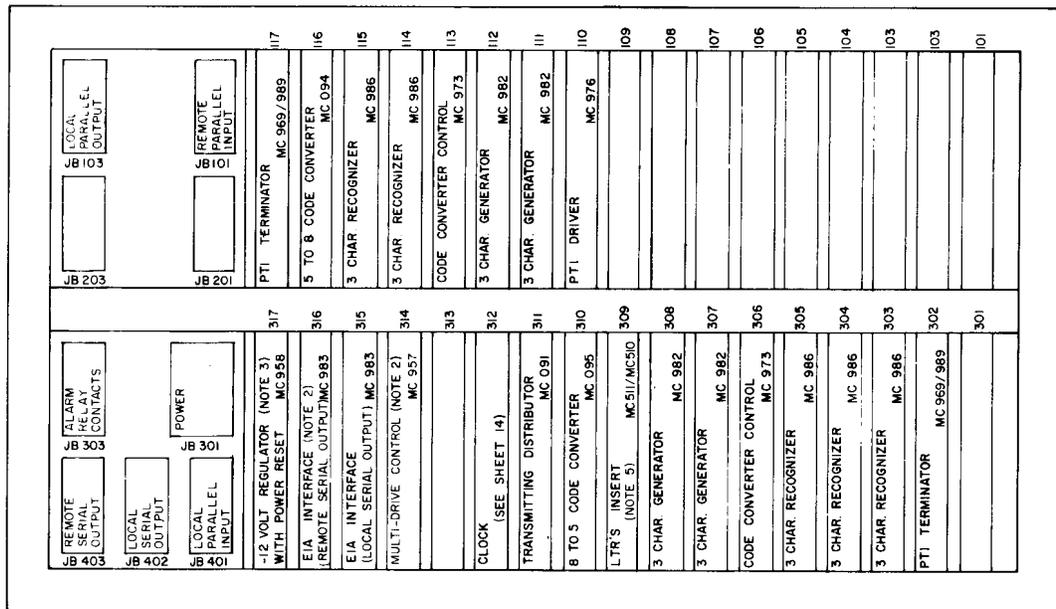

Figure 18 - CDIF806 Interface Module

8-level single or dual 8- or 5-level serial EIA outputs. Table D shows the input and output levels for the various CDIF806 codes.

5.84   Parallel signaling is on a Parallel Terminal Interface (PTI) basis. Serial output signaling conforms to EIA Standard RS-232-B.

Receive Section

MC969

5.85   Remove the two TP322969 (MC969) circuit cards from module connector locations ZB302 and ZB117 (Figures 6, 18 and 19). Install program screw in option A (unidentified), and reinsert card in connector location ZB302. Install program screw in option B on the remaining card, and reinsert card in connector location ZB117.

MC094

5.86   If the module has a 5-level (Baudot) input, remove TP322094 (MC094) circuit card from module connector ZB116. Program the card according to instructions in 5.32 and 5.33 (see Figures 12 and 18). Reinsert circuit card in its proper connector location.

MC986

5.87   The TP322986 (MC986) circuit cards (Figures 7, 18, and 19) may be programmed to recognize up to six different 8-level character codes generated by the 5- to 8-level code converter. When a character is recognized by the MC986, an output is generated to the MC982 character generator and MC973 code control circuit cards.

5.88   The MC986 output inhibits the MC973 output and activates the MC982 character generator. MC982 (5.93) may be programmed and can generate up to six different ASCII characters (or special message delimiter codes). Figure 20 illustrates the preceding sequence.

5.89   The Baudot code has 32 programmable code addresses that do not include message delimiter equivalents for ASCII. To generate an ASCII EOT character from a 5-level input code, program row X screws 3 and 8 for marking (see 5.06 and 5.07 for programming procedure). Program the remaining rows (Y and Z) to recognize one of the ASCII characters listed

TABLE D

CDIF806 AND CDIF816 CODES

MODULE	RECEIVE SECTION		TRANSMIT SECTION	
	Input	Output	Input	Output
CDIF806/BN CDIF816/DA	5-Level Parallel	8-Level Parallel	8-Level Parallel	(2) 8-Level Serial 150 Baud
CDIF806/BP CDIF816/DB	5-Level Parallel	8-Level Parallel	8-Level Parallel	(2) 8-Level Serial 110 Baud
CDIF806/BQ CDIF816/DC	5-Level Parallel	8-Level Parallel	8-Level Parallel	(1) 5-Level Serial 75 Baud
CDIF806/BS CDIF816/DE	5-Level Parallel	8-Level Parallel	None	None
CDIF806/BT CDIF816/DF	None	None	8-Level Parallel	(2) 8-Level Serial 150 Baud
CDIF806/BU CDIF816/DG	None	None	8-Level Parallel	(2) 8-Level Serial 110 Baud
CDIF806/BV CDIF816/DH	None	None	8-Level Parallel	(1) 5-Level Serial 75 Baud

in the Baudot to ASCII code conversion table shown in the following paragraph, if required.

Note: Row Z is not programmed in CDIF816, card location ZB106 (MC986) (Figure 21).

5.90 The following list of Baudot characters and their ASCII character equivalents are shown for convenience to help determine what Baudot to ASCII character may be programmed on the MC986 cards that generate a programmed message delimiter.

BAUDOT — ITA2 A.V. INPUT	ASCII — 1967 OUTPUT
! (FIGS. F)	!
” (FIGS. Z)	”
# (FIGS. H)	#
$ (FIGS. D)	$
& (FIGS. G)	&

BAUDOT — ITA2 A.V. INPUT	ASCII — 1967 OUTPUT
' (FIGS. J)	'
((FIGS. K)	(
) (FIGS. L)	)
BELL (FIGS. S)	BEL
? (FIGS. B)	?
' (FIGS. N)	'
- (FIGS. A)	-
. (FIGS. M)	.
/ (FIGS. X)	/
∅ (FIGS. P)	∅
: (FIGS. C)	:
; (FIGS. V)	;

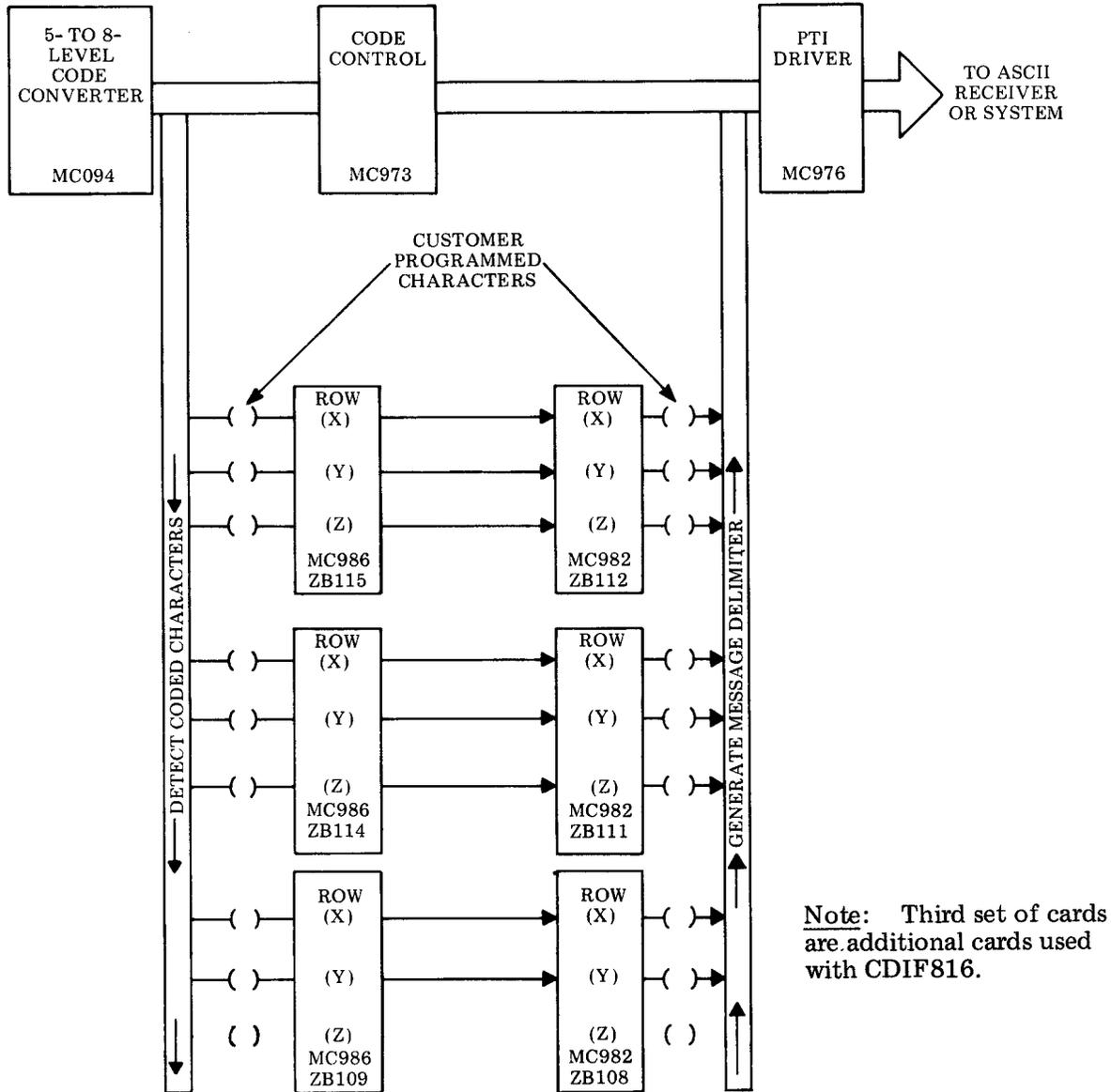Figure 19 - CDIF816 Interface Module

Figure 20 - CDIF806 and CDIF816 Receive Section 5- to 8-Code Converter

5.91   Program circuit cards from connectors ZB114 and ZB115 (CDIF806 and CDIF816), and ZB109 and ZB106 (CDIF816) rows X, Y, and Z to recognize up to six ASCII characters. For a permanent reference of the programmed cards, record the characters in the empty parentheses opposite the identified circuit cards shown in Figure 20. ASCII code information can be found in Figure 17.

5.92   To detect the ASCII number sign (#) in row X, program the upper level (S) screws for bits 3, 4, 5, and 7; and the lower level

for bits 1, 2, 6, and 8. Complete the programming and reinsert the cards in their proper connectors.

MC982

5.93   Remove the TP322982 (MC982) circuit cards from connector positions ZB111 and ZB112 (CDIF806 and CDIF816), and ZB107 and ZB108 on CDIF816 (Figures 18, 19, and 22). Program bit levels in rows X, Y, and Z on each card for generation of up to three message delimiter characters.
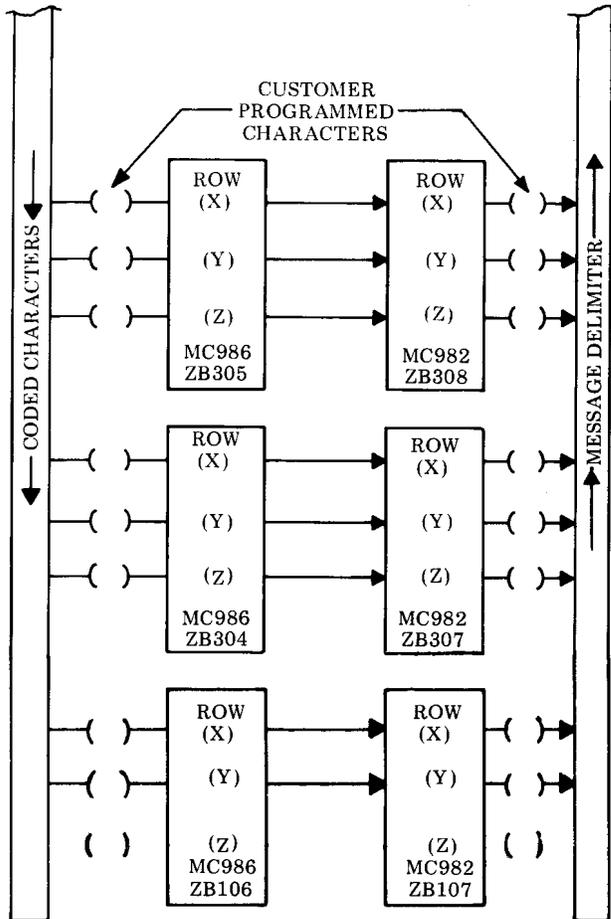
Figure 21 - CDIF806 and CDIF816 Transmit
Section 8- to 5-Code Converter
With Character Substitution

Note: Row Z is not programmed in
CDIF816, card location ZB107 and ZB108
(MC982) (Figures 20 and 21).

5.94   Removing a program screw from a bit
        level (X, Y, or Z) places that level in a
space condition. Leaving the screw in its installed
position (tight against screw hole), the bit level
remains in a marking condition. As an example,
to program bit level X for EOT character, leave
program screws installed for bits 3 and 8, and
remove screws in 1, 2, 4, 5, 6, and 7.

5.95   If code conversion from 8- to 5-level is
        used, program MC986 in ZB303,
MC095 in ZB310, and MC982 in ZB307 and
ZB308 according to the following paragraphs. If
8- to 5-code conversion is not provided, continue
programming procedure with MC091 in ZB311,
5.104.

MC986

5.96   Remove TP322986 (MC986) from
        ZB303 (Figures 7, 18, and 19). To
program row X for ETX, remove program screws
from bits 1 and 2 in upper level (S), and leave
screws installed for bits 3 through 8. Install
program screws in lower level (M) for bits 1 and
2.

5.97   To program row Y for EOT, remove
        program screws from bits 3 and 8 in
upper level (S), and leave screws installed for bits
1, 2, 4, 5, 6, and 7. Install program screws in
lower level (M) for bits 3 and 8. Program row Z
for Null coding by leaving all program screws
installed in upper row (S). Reinsert MC986 in
ZB303.

Note: Row Z is not programmed in
CDIF816, card location ZB106 and ZB109
(MC986) (Figures 20 and 21).

5.98   With programming completed, 60
        Letters characters (feedout) will be
generated to the EIA output whenever ETX or
EOT codes are detected. Whenever Null char-
acters are recognized, a Letters code will be
delivered to the 5-level receivers. Null detect and
letters substitution is approximately two Null
codes received to one Letters code generated at
150 baud, or three Null codes received to one
Letters code generated at 110 baud.

5.99   Remove two TP322986 (MC986)
        circuit cards from ZB304 and ZB305
(Figures 7, 18, and 19). Program the circuit cards
to recognize up to six different ASCII characters.
For convenience, a permanent reference of the
programmed cards may be made by recording the
characters in the empty parentheses opposite the
identified circuit cards shown in Figure 21. ASCII
code information can be found in Figure 17.

MC095

5.100   Remove TP322095 (MC095) circuit
        card from ZB310 (Figures 8, 18, and
19). Program circuit card according to instruc-
tions and information in 5.10 through 5.14.

MC982

5.101   Remove TP322982 (MC982) circuit
        cards from ZB307 and ZB308 (Figures
18, 19, and 22). For convenience, a permanent
reference of the programmed cards may be made
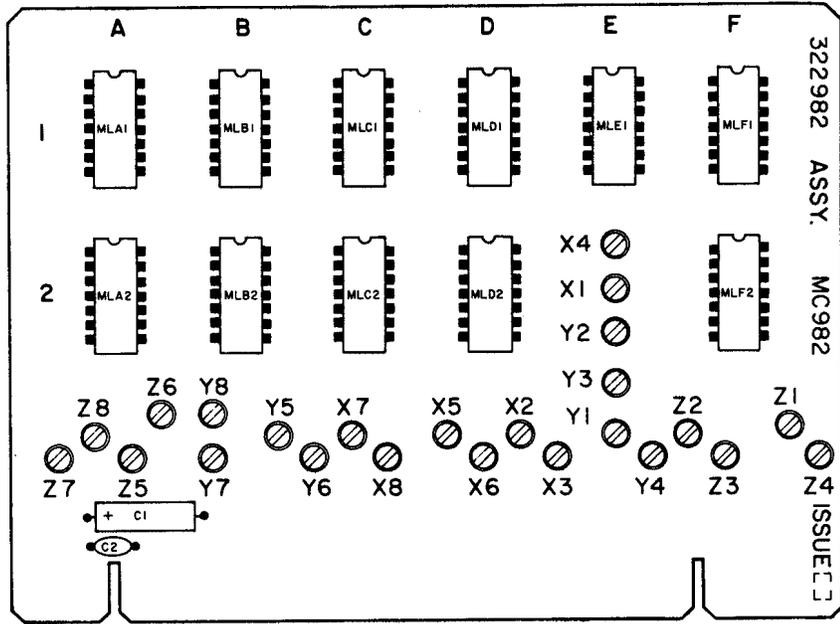by recording the character in the empty paren-

Figure 22 - MC982 3-Character Generator

theses opposite the identified circuit cards shown in Figure 21. ASCII code information can be found in Figure 17.

5.102   Program cards as necessary for system operation. Refer to 5.94 for coding instructions. When both cards are coded, observe code relationship between character recognizer detector (MC986) circuit X, Y, or Z and character generator (MC982) circuit X, Y, or Z in Figure 24.

5.103   Reinsert both cards in their proper module locations. If coding is properly performed, the recognized character in MC986, row X will generate the coded character in MC982 row X.

MC091

5.104   Remove TP322091 (MC091) circuit card from ZB311 (Figures 13, 18, and 19). Refer to 5.40 (a) or (b) for coding instructions and program MC091 according to requirement of the receive equipment connected at JB402 and JB403. Reinsert MC091 in its proper module location.

MC957

5.105   Remove TP322957 multidrive control circuit card (MC957) from module location ZB314 (Figures 18, 19, and 23). Three

options are provided for programming the alarm detection circuit. If the program screw is installed in any one of these options, the following conditions will occur:

(a)   REMOTE ONLY — this conditions alarm circuit to monitor the module remote serial output at JB403.

(b)   LOCAL ONLY — conditions alarm circuit to monitor local serial output at JB402.

(c)   LOCAL AND REMOTE — both JB402 and JB403 data channels are monitored.

5.106   After one of the options is installed and an alarm is detected at the receiver through one of the monitor circuits, the receiver clear-to-send goes off while module selectable signal is on. The sender is stopped and the alarm relay on MC957 is activated.

5.107   The alarm relay has a set of contacts for connecting to a Telco alarm device. Figure 24 shows the contacts in their normal inoperable condition (NO — normally open, NC — normally closed, and C — common). Telco wiring connects to JB303, relay contacts are limited to the electrical ratings listed in the following paragraph.
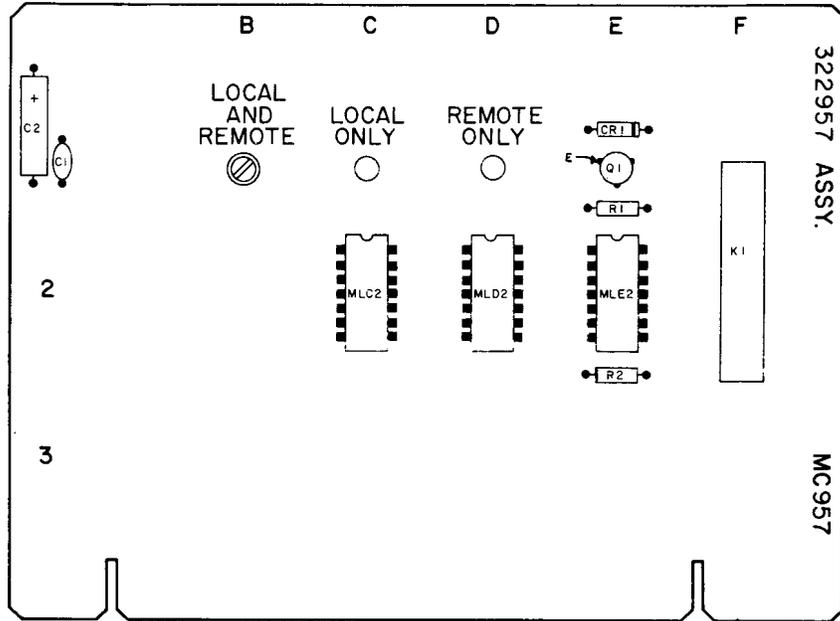
Figure 23 - MC957 Multidrive Control

5.108 Alarm relay contacts are designed as a single-pole, single-throw transfer type electrical switch. Relay contacts are rated at 4 volt-amperes (160 volts maximum at 250 milliamperes maximum). Reinsert MC957 in its proper module location.
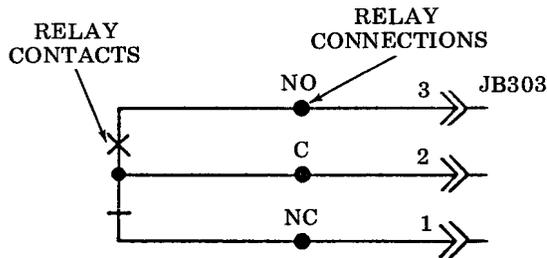

Figure 24 - Alarm Circuit Connections

Factory-Installed Wiring Options

5.109 The following information is for reference only; it contains various factory-installed wiring options for different module arrangements (Table E). Module arrangements listed in the left-hand column coincide with the vertical columns, reading across horizontally. Vertical columns list the wired options (A through H) and are coded with an X where the option is used.

5.110 A vertical column with no X indicates the option is not required and wiring is not installed. Options A through H functions are described in 5.111, and the required point-to-point wiring for each option is listed in 5.112.

5.111 Factory-installed option wiring functions as listed in Table E columns A through H are described as follows:

OPTION CODE	DESCRIPTION
A	Strapping to Eliminate 8-Level to 5-Level Code Conversion and the Associated Code Converter Control
B	Provide 150-Baud Clock for TD
C	Provide 110-Baud Clock for TD
D	Provide 75-Baud Clock for TD
F	Enable 11-Unit Code for TD
G	Enable 10-Unit Code for TD
H	Enable 7.75-Unit Code for TD

5.112 Factory-installed options shown in Table E and described in previous paragraphs are shown in the following tables as

TABLE E

CDIF806 AND CDIF816 FACTORY-INSTALLED WIRED OPTIONS

MODULE ARRANGEMENTS	WIRED OPTIONS						
	A	B	C	D	F	G	H
CDIF806/BN and CDIF816/DA	X	X				X	
CDIF806/BP and CDIF816/DB	X		X		X		
CDIF806/BQ and CDIF816/DC				X			X
CDIF806/BS and CDIF816/DE							
CDIF806/BT and CDIF816/DF	X	X				X	
CDIF806/BU and CDIF816/DG	X		X		X		
CDIF806/BV and CDIF816/DH				X			X

point-to-point wiring. Each end must be completed to install an option.

OPTION A   STRAP

FROM	TO
XZB306-1	XZB306-11
XZB306-2	XZB306-12
XZB306-3	XZB306-13
XZB306-4	XZB306-14
XZB306-5	XZB306-15
XZB306-6	XZB306-16
XZB306-7	XZB306-17
XZB306-8	XZB306-18
XZB306-9	XZB306-10
XZB310-1	XZB310-11
XZB310-2	XZB310-12
XZB310-3	XZB310-13
XZB310-4	XZB310-14

OPTION A   STRAP
(Cont)

FROM	TO
XZB310-5	XZB310-15
XZB310-6	XZB310-16
XZB310-7	XZB310-17
XZB310-8	XZB310-18
XZB310-21	XZB310-22
XZB310-23	XZB310-24

OPTION B   STRAP

FROM	TO
XZB312-13	XZB311-20

OPTION C   STRAP

FROM	TO
XZB312-12	XZB311-20

OPTION D STRAP

FROM	TO
XZB312-14	XZB311-20

OPTION F STRAP

FROM	TO
XZB311-27	XZB311-36

OPTION G STRAP

| FROM	TO
XZB311-26	XZB311-36

OPTION H STRAP

FROM	TO
XZB311-25	XZB311-36

6. CABLING

6.01 Refer to the block diagram in WDP for location of input and output cable connectors. Use the TP335611 cable assembly for all cabling between CDT modules. See Figure 25 for block diagram of interface cabling.

6.02 All external inputs and all outputs from the interface module should be connected by Telco supplied cables interfacing with a TP335600 connector assembly that is supplied with the interface module.

6.03 Interconnecting PTI signal cables to the interface module is limited to a maximum of 1000-cable feet. EIA (serial) signal cables between modules must not exceed 50-cable feet to conform to EIA Standard (RS-232-C) interfacing specifications.
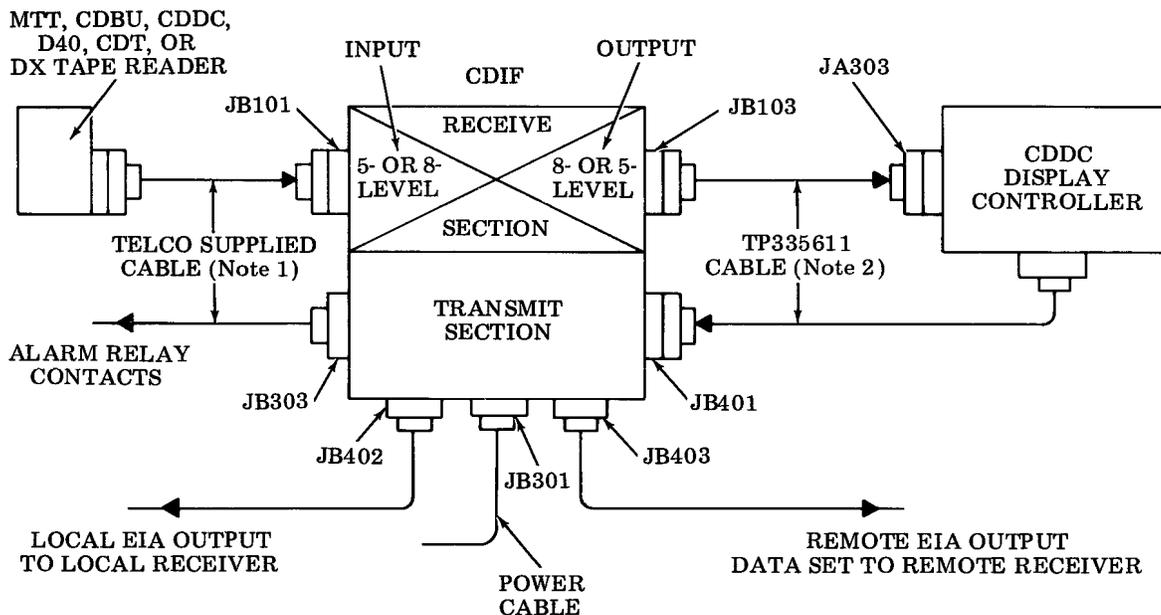
Note 1: If a CDIF is installed in a CDT set, TP335611 interconnect cable may be used in place of Telco supplied cable.

Note 2: When CDIF is factory installed in CDT or Buffer Interface Set, TP335600 connector assembly is furnished. If CDIF is ordered separately, no connector is furnished.

Figure 25 - Block Diagram of Interface Cabling