INSTRUCTION MANUAL

Serial Number _____

188C ADAPTOR

for the

4014 SERIES TERMINALS

CM 020-0250-00

Tektronix, Inc. • P.O. Box 500 • Beaverton, Oregon 97077 • Phone 644-0161 • Cables: Tektronix

061-1370-00

ISSUED: 1276TB

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

188C Adaptor for 4014-Series Terminals
CM 020-0250-00

GENERAL INFORMATION

The 188C Adaptor replaces the T DATA Driver and R DATA Receiver with a 188C level driver and receiver. This modification, which allows the user to choose between inverted or noninverted levels, consists of a circuit board and the hardware needed for its installation. The Adaptor board is mounted by the user on either the Standard or the Optional Data Communications Interface board.

Further information concerning the Data Communications boards is available in the corresponding instruction manuals:

Standard D.C. Interface: P.N. 070-1458-00
Optional D.C. Interface: P.N. 070-1379-00

All data in this manual supercedes any conflicting data found in the standard instruction manuals.

I. INSTRUCTIONS FOR INSTALLING 188C ADAPTOR BOARD: Standard Data Communication Interface 021-0065-00

To install the 188C Adaptor, refer to the following instructions and see Figure 1. (Circled and squared numbers below match the corresponding circled and squared numbers in Figure 1.)

WARNING

Before removing or installing Circuit Cards, turn power OFF.

Remove the following components:

- [A] R30
- [B] R32
- [C] Q19
- [D] R35
- [E] R10
- [F] R17
- [G] R18

Strip 1/8" insulation from each of the following wires of the supplied ribbon cable and solder as follows:

1. Solder 9-1 (wht/brn) wire to bottom pad of R30 as shown in Figure 1.
2. Solder 9-2 (wht/red) wire to bottom pad of R35 as shown in Figure 1.
3. Solder 9-3 (wht/org) wire to top pad of R10 (removed earlier) as shown in Figure 1.
4. Solder 9-4 (wht/yel) wire to top pad of R18 (removed earlier) as shown in Figure 1.
5. Solder 9-5 (wht/grn) wire to bottom of R20 (+15V) as shown in Fig. 1.
6. Solder 9-6 (wht/blu) wire to bottom pad (-15V) of R18 (removed earlier) as shown in Figure 1.
7. Solder 9-N (white) wire to top pad of R35 (+5V) as shown in Fig. 1.
8. Solder 9-Ø (wht/blk) wire to anode end (GND) of CR31 as shown in Figure 1.

Cut off unused wires (9-7 wht/vio and 9-8 wht/gry) at harmonica connector.

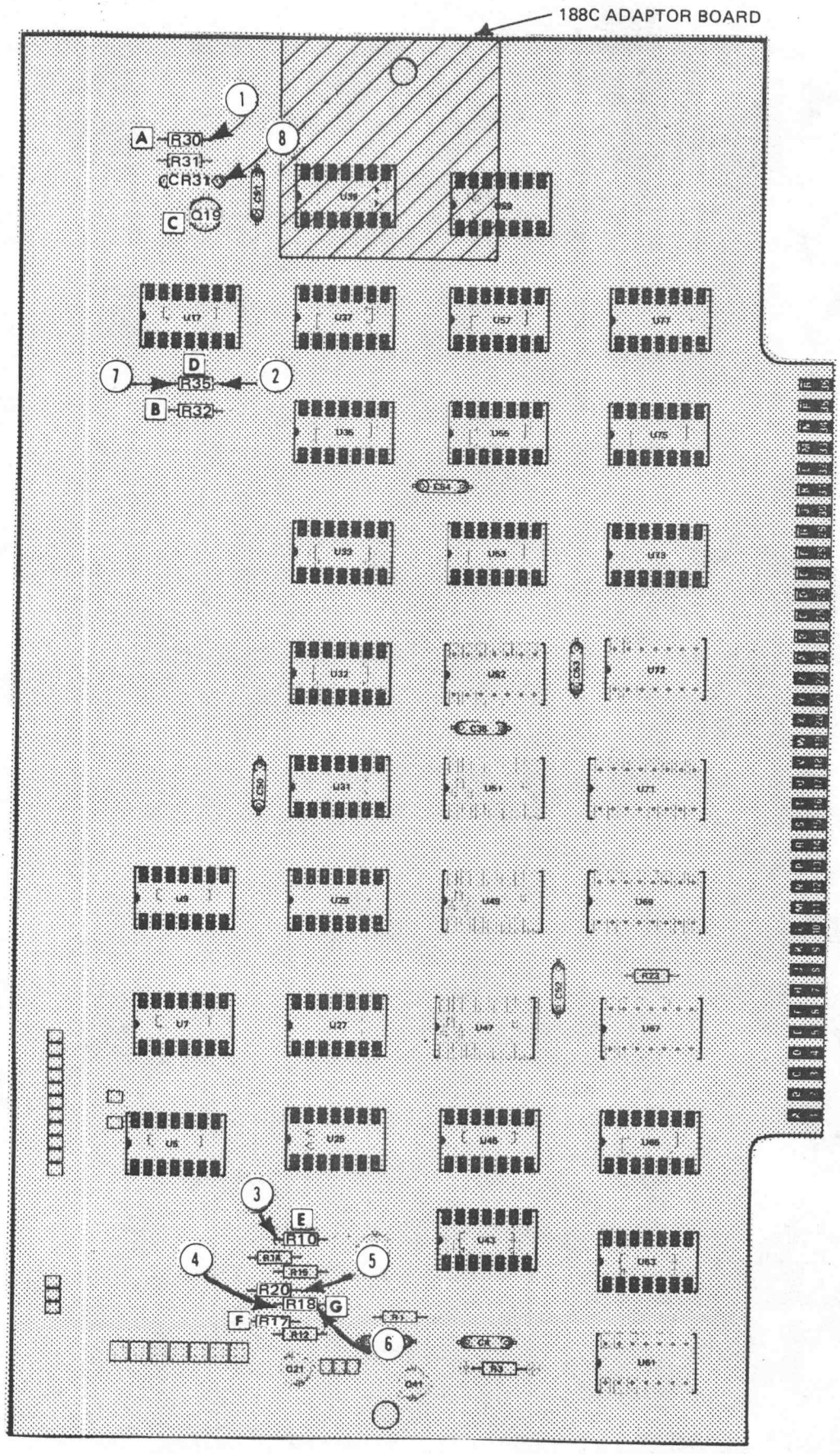


FIGURE 1. MODIFIED COMPONENT LOCATIONS FOR STANDARD DATA COMMUNICATIONS INTERFACE (670-1730-XX).

I. INSTRUCTIONS FOR INSTALLING 188C ADAPTOR BOARD: Standard Data Communication Interface 021-0065-00 (cont.)

The Adaptor board should be placed near U59 and U39 on the Data Communication board. Align tooling holes of the two boards so the J1 connector on the Adaptor board is facing toward the edge board connector of the Data Communications board. Using the washers and spacer provided to separate one board from the other, attach the two boards with the screws provided as illustrated in Figure 2. Plug the harmonica connector into J1 on the Adaptor board, and reinstall the modified Interface card into the Terminal.

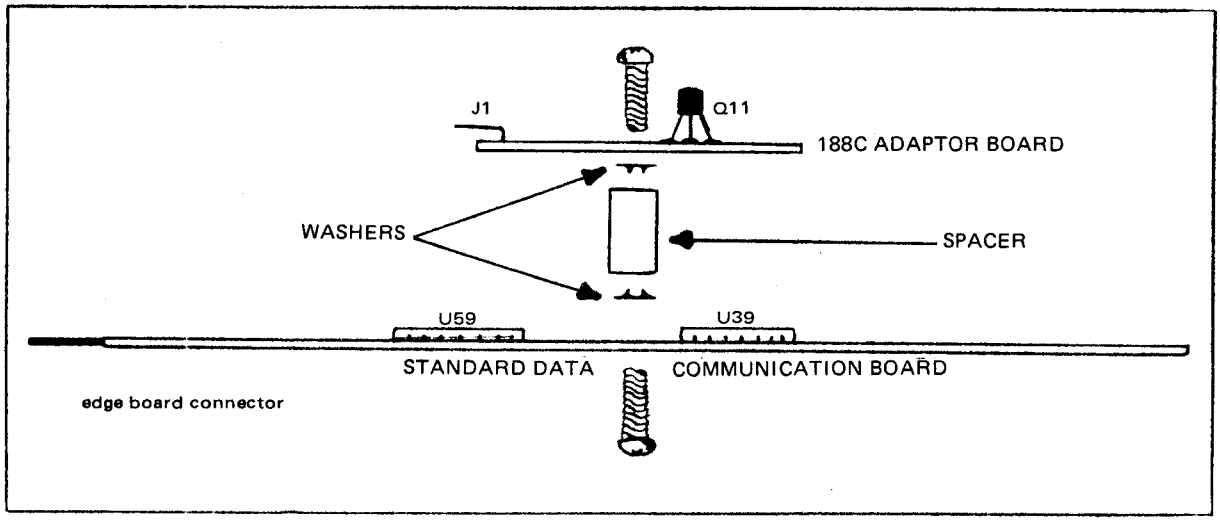


FIGURE 2. PLACEMENT OF 188C ADAPTOR ON STANDARD DATA COMMUNICATION BOARD.

II. INSTRUCTIONS FOR INSTALLING 188C ADAPTOR BOARD: Optional Data Communication Interface 021-0074-00

To install the 188C Adaptor, refer to the following instructions, and see Figure 3. (Circled numbers below match the corresponding numbers in Figure 3.)

WARNING

Before removing or installing Circuit Cards, turn power OFF.

(1) Cut the run at U56, pin 10.
(2) Cut the run at U16, pin 7.
(3) Lift pin 6 of U26.
(4) Lift pin 11 of U26.

Strip 1/8" insulation from each of the following wires of the supplied ribbon cable and solder as follows:

(5) Solder 9-3 (wht/org) wire to U56, pin 10.
(6) Solder 9-4 (wht/yel) wire to J375, pin 3.
(7) Solder 9-1 (wht/brn) wire to the side of C35 shown in Figure 3.
(8) Solder 9-2 (wht/red) wire to U66, pin 12.
(9) Solder 9-5 (wht/grn) wire to VR79, cathode end (+15V) as shown in Figure 2.
(10) Solder 9-6 (wht/blu) wire to VR78, anode end (-15V) as shown in Figure 2.
(11) Solder 9-N (white) wire to pin 14, U77 (+5V).
(12) Solder 9-Ø (wht/blk) wire to pin 7, U77 (GND).

Cut off unused wires (9-7 wht/vio and 9-8 wht/gry) at harmonica connector.

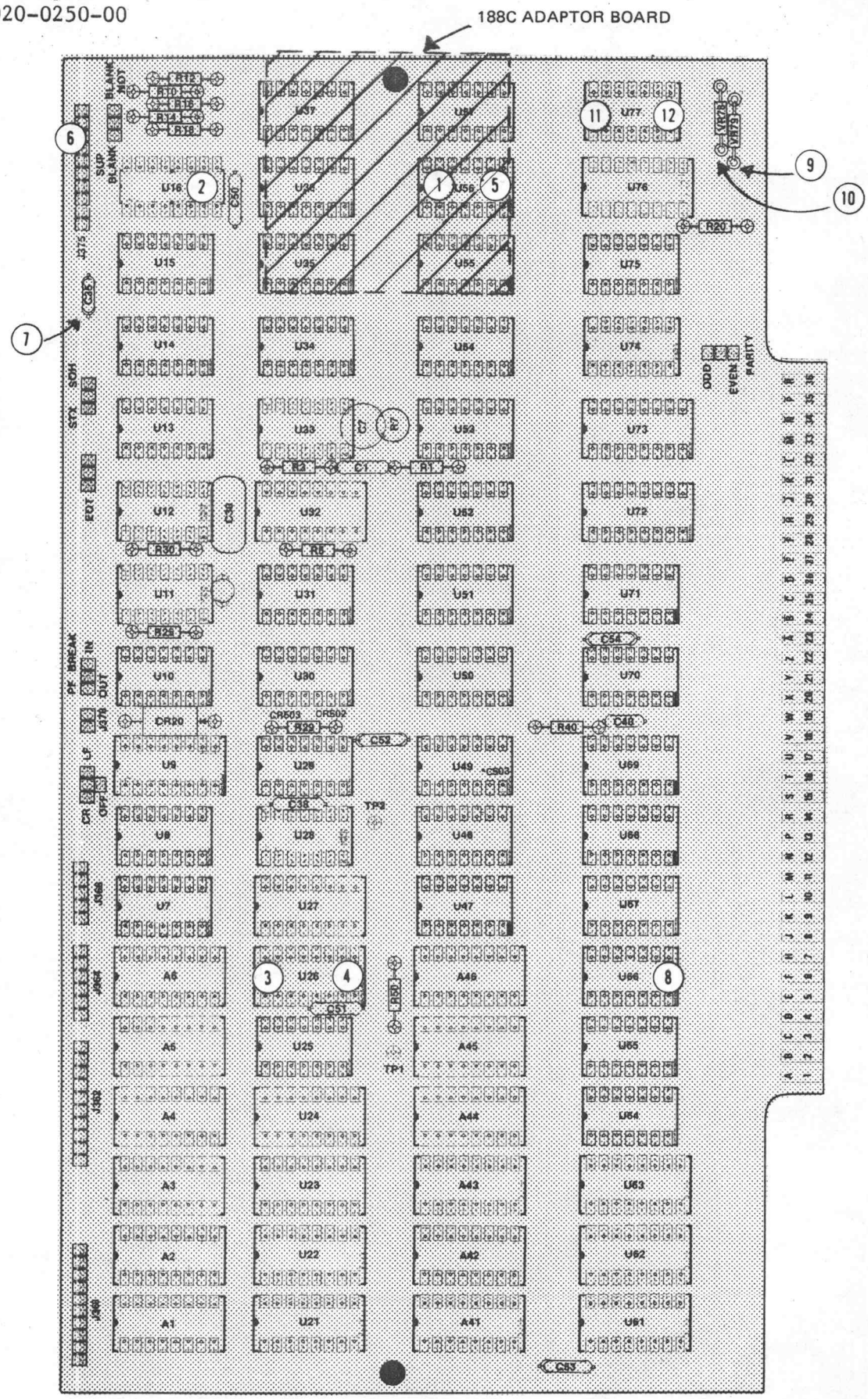


FIGURE 3. MODIFIED COMPONENT LOCATIONS FOR OPTIONAL DATA COMMUNICATIONS INTERFACE (670-2194-XX)

II. INSTRUCTIONS FOR INSTALLING 188C ADAPTOR BOARD: Optional Data Communication Interface (cont.)

The Adaptor board should be placed near U57 on the Data Communications board. Align tooling holes of the two boards so the J1 connector on the Adaptor board is facing toward the edge board connector of the Data Communications board. Using the washers and spacer provided to separate one board from the other, attach the two with the screws provided as illustrated in Figure 4. Plug the harmonica connector into J1 on the Adaptor board, and reinstall the modified Interface card into the Terminal.

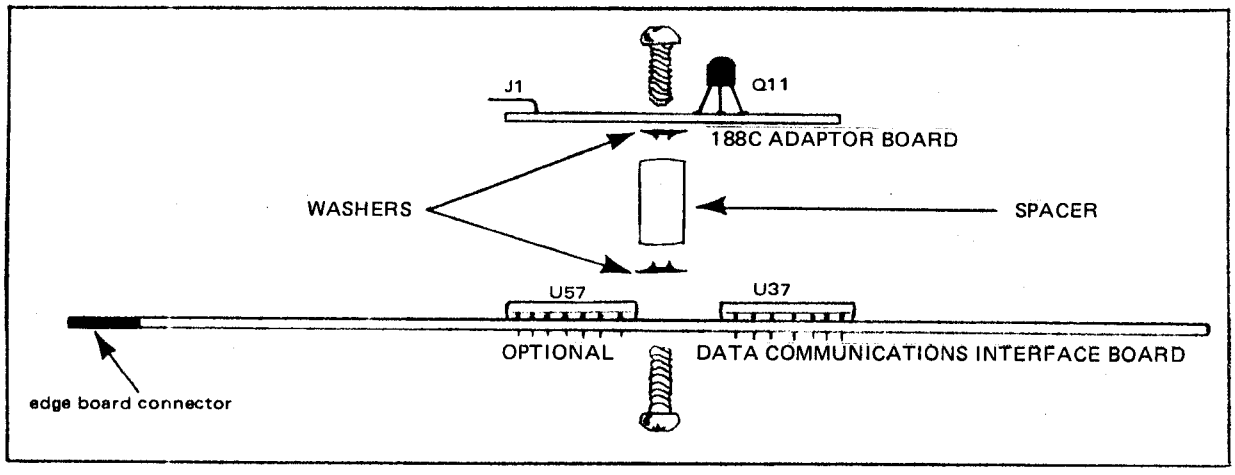
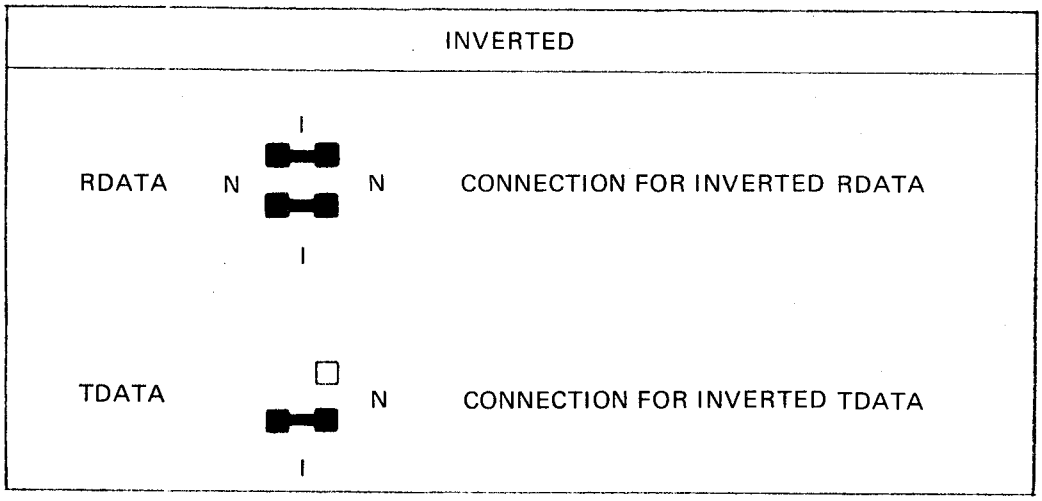


FIGURE 4. PLACEMENT OF 188C ADAPTOR BOARD ON DATA COMMUNICATIONS BOARD.

STRAP OPTIONS

The 188C Adaptor board contains 3 straps which may be set as the user chooses. They allow for inverted and noninverted R and T Data. Normal operational settings for 188C levels is strapped at "inverted" as shown in Figure 5.



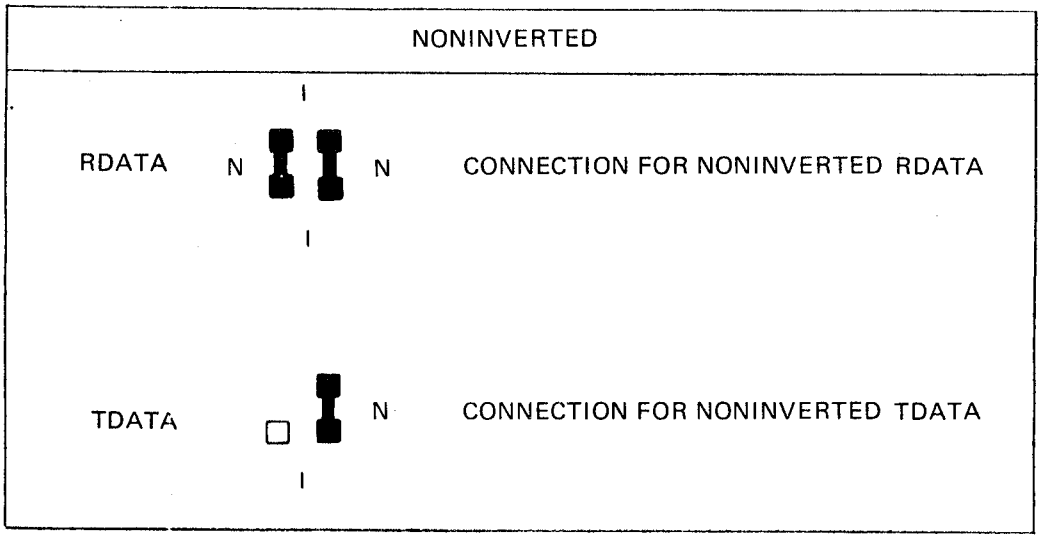


FIGURE 5. STRAPPING INFORMATION

CIRCUIT DESCRIPTION

The 188C Adaptor board provides capability for receiving and transmitting data conforming to the MIL STD 188C levels.

U2A is a 188C Line Receiver that converts the ± 6 volt levels to TTL levels. CR2 provides a clamp so that U2 output will not go above 5.3 volts. The RDATA strapping on U2A input provides for accepting either inverted (I) or non-inverted (N) data from the transmitting source. For non-inverted RDATA, both jumpers must be at the "N" position, and for inverted RDATA, both jumpers must be at the "I" position (See Figure 1).

U1A provides a TTL to Line Driver function with VR2 and VR3 providing a clamp to the 188C ±6 volt levels. Strapping at U2A, pin 2 input provides for either inverted (I) or non-inverted (N) TDATA out. For non-inverted data out, TDATA jumper should be at "N" position and for inverted TDATA, the jumper should be at the "I" position (See Figure 1).

Power Supply inputs will accommodate various available voltages. If +12 volts is available, it should be supplied via pin 7. If +12 volts is not available, +15 volts should be connected to pin 5 which is dropped across VR4 to supply +12 volts. When -12 volts is available, it should be connected to pin 8. When not available, -15 volts should be supplied via pin 6 which is dropped across VR5 to supply -12 volts. The unused supply pins should be left open.

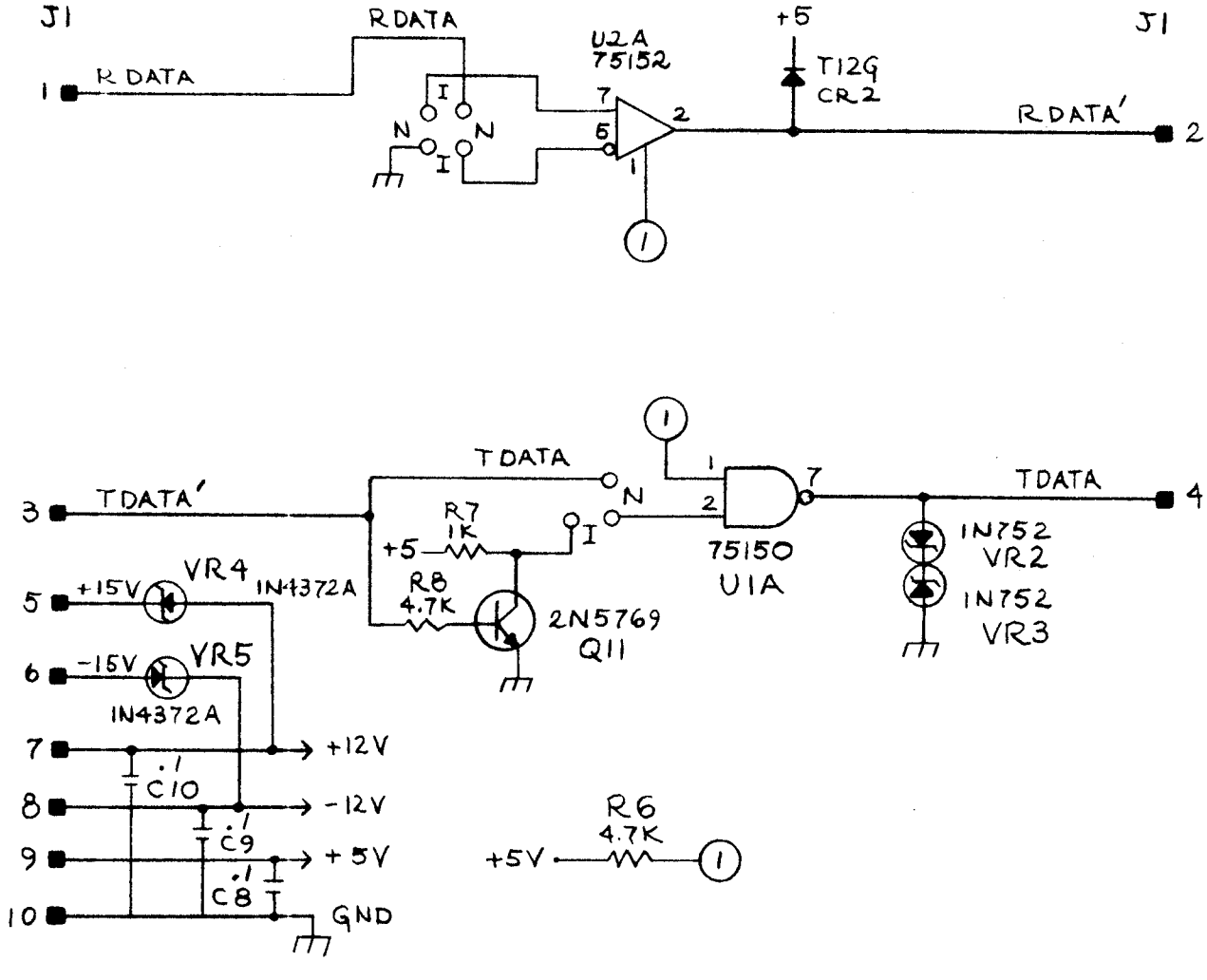
PARTS LIST

The following list includes the parts which make up the 188C Adaptor board and the hardware used for mounting it. The Adaptor board is placed on either the Standard or the Optional Data Communications Interface board as described in this manual. When this modification is performed, the Interface board numbers change as follows:

Standard: 670-1730-XX changes to CM 670-1730-50
Optional: 670-2194-XX changes to CM 670-2194-52

The modified board should be labelled with the new part number when complete.

Quantity or Circ. No.	Description	Part Number
1	Spacer	129-0222-00
1	Housing	352-0168-01
1	188C Adaptor Board	CM 670-5079-00
2	Contact, Electrical	131-1493-00
7	Berg Sockets	136-0252-04
Q15	Transistor, 2N5769	151-0424-00
CR2	Diode, T12G	152-0008-00
VR2, VR3	Diode, 5.6volt Zener, IN752A	152-0175-00
VR4, VR5	Diode, 3 volt Zener, IN4372A	152-0278-00
U1	I.C. 75150	156-0139-01
U2	I.C. 75152	156-0934-01
C8, C9, C10	Capacitor, .1µf	281-0775-00
R7	Resistor, ¼W 5% 1K	315-0102-00
R6, R8	Resistor, ¼W 5% 4.7K	315-0472-00



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