

TC-644 RS-422/TTL TRANSLATOR CARD

FUNCTIONAL DESCRIPTION

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The TC-644 is a bi-directional TTL to RS-422 level translator interface, used to transmit and receive data in RS-422 (differential 5 volt) levels over twisted pair shielded cable. RS-422 is used for common-mode noise rejection for long cables and/or high speed data transfer. In all Triad RS-422 systems, the data RECEIVER is optically isolated to eliminate noise, ground loops, signal offsets, etc. Thus a common ground between I/O frames or the computer is not required (and should not be used).

Four DB-9F connectors are provided for the RS-422 input and output pairs. A second RS-422 transmitter (driver) is provided that can be jumper-strapped to provide a handshake/level output (driven by the DSR output of the respective UART), or as a second transmit data pair with identical data for each port.

A dual 13 (26 pin) IDC header connector is used to connect the TC-644 to a TC-3518 Multi-Port Serial card via the TC-636 Backplane Assembly. The header can be installed in one of two positions on the TC-644, allowing the card to use either channels 1-4 (lower position) or channels 5-8 (upper position) of the TC-3518 Serial card.

Power is provided via a six pin .1" KK molex style connector. Only +5 VDC and common are used.

The TC-644 is electrically and mechanically interchangeable with the TC-642 RS-232 level translator, with the exception of the signal data levels and P1-P4 peripheral port connector pin assignments. Thus, either or both interface modules can be used for up to eight serial ports per TC-3518 Communications Interface.

The interface is designed to mount directly to the back panel of a 19" x 5.25" (three rack unit) card frame.

Physical Dimensions:

4.5" x 2.5" printed circuit board assembly

Power Requirements:

+5V @ 100 MA.

Related Documents:

(included)

DATA PIN ASSIGNMENTS

J1: Connector which interfaces to the TC-3518 (8 Channel Serial Communications card) via the TC-636 Backplane. This is a 13 * 2 header and special attention should be noted in that in a configuration where two TC-644s are installed (i.e. CTU) this connector will be offset in its installed location on the circuit board. The second TC-644 in which J1 is offset will be referenced as a TC-644b.

TC-644a J1 Ports 1 - 4

- Pin 1. Connects to pin 1 (TX1 Input) of U2a (26LS31)
- Pin 2. Connects to pin 1 (TX2 Input) of U5a (26LS31)
- Pin 3. Connects to pin 2 (RX1 Output) of U1a (74HC04)
- Pin 4. Connects to pin 6 (RX2 Output) of U1c (74HC04)
- Pin 5. Connects to pin 1 (HS1) of JP2 (3 pin jumper)
- Pin 6. Connects to pin 1 (HS2) of JP4 (3 pin jumper)
- Pin 7. Connects to pin 9 (TX3 Input) of U2c (26LS31)
- Pin 8. Connects to pin 9 (TX4 Input) of U5c (26LS31)
- Pin 9. Connects to pin 4 (RX3 Output) of U1b (74HC04)
- Pin 10. Connects to pin 8 (RX4 Output) of U1d (74HC04)
- Pin 11. Connects to pin 1 (HS3) of JP3 (3 pin jumper)
- Pin 12. Connects to pin 1 (HS4) of JP5 (3 pin jumper)
- Pin 24. Connects to ground

TC-644b J1 Ports 5 - 8

- Pin 13. Connects to pin 1 (TX1 Input) of U2a (26LS31)
- Pin 14. Connects to pin 1 (TX2 Input) of U5a (26LS31)
- Pin 15. Connects to pin 2 (RX1 Output) of U1a (74HC04)
- Pin 16. Connects to pin 6 (RX2 Output) of U1c (74HC04)
- Pin 17. Connects to pin 1 (HS1) of JP2 (3 pin jumper)
- Pin 18. Connects to pin 1 (HS2) of JP4 (3 pin jumper)
- Pin 19. Connects to pin 9 (TX3 Input) of U2c (26LS31)
- Pin 20. Connects to pin 9 (TX4 Input) of U5c (26LS31)
- Pin 21. Connects to pin 4 (RX3 Output) of U1b (74HC04)
- Pin 22. Connects to pin 8 (RX4 Output) of U1d (74HC04)
- Pin 23. Connects to pin 1 (HS3) of JP3 (3 pin jumper)
- Pin 24. Connects to pin 1 (HS4) of JP5 (3 pin jumper)

JUMPER OPTIONS

JP2: Is used to either select the TXB output signal, which can either be a handshake output, or a duplicate of the TXA output data.

- Pin 1. Connects to J1 (HS1 from the TC-3518)
- Pin 2. Connects to pin 7 (TXB Input) of U2b (26LS31)
- Pin 3. Connects to pin 1 (TXA Input) of U2a (26LS31)

JP3: Is used to either select the TXB output signal, which can either be a handshake output, or a duplicate of the TXA output data.

- Pin 1. Connects to J1 (HS3 from the TC-3518)
- Pin 2. Connects to pin 15 (TXB Input) of U2d (26LS31)
- Pin 3. Connects to pin 9 (TXA Input) of U2c (26LS31)

JP4: Is used to either select the TXB output signal, which can either be a handshake output, or a duplicate of the TXA output data.

- Pin 1. Connects to J1 (HS2 from the TC-3518)
- Pin 2. Connects to pin 7 (TXB Input) of U5b (26LS31)
- Pin 3. Connects to pin 1 (TXA Input) of U5a (26LS31)

JP5: Is used to either select the TXB output signal, which can either be a handshake output, or a duplicate of the TXA output data.

- Pin 1. Connects to J1 (HS4 from the TC-3518)
- Pin 2. Connects to pin 15 (TXB Input) of U5d (26LS31)
- Pin 3. Connects to pin 9 (TXA Input) of U5c (26LS31)

Standard configuration is to jumper pin 2 to 3 on JP2, JP3, JP4, and JP5, although the TXB outputs are not used in standard configurations.

JP6: Power Connector

- Pin 1. +5 VDC
- Pin 2. Ground
- Pin 3. N/C
- Pin 4. N/C
- Pin 5. N/C
- Pin 6. N/C

I/O PORTS

P1 Pin Assignment	DB9F Mounted on reverse side of strip card
Pin 1.	Connects to Frame Ground
Pin 2. RX+	Connects to pin 2 (I+) of U3 Receiver
Pin 3. TXa+	Connects to pin 2 (+ Out) of U2a (26LS31)
Pin 4. TXb+	Connects to pin 6 (+ Out) of U2b (26LS31)
Pin 5.	N/C
Pin 6. RX-	Connects to pin 3 (I-) of U3 via R2 47 ohm
Pin 7. TXa-	Connects to pin 3 (- Out) of U2a (26LS31)
Pin 8. TXb-	Connects to pin 5 (- Out) of U2b (26LS31)
Pin 9.	Connects to Ground

P2 Pin Assignment	DB9F Mounted on reverse side of strip card
Pin 1.	Connects to Frame Ground
Pin 2. RX+	Connects to pin 2 (I+) of U4 Receiver
Pin 3. TXa+	Connects to pin 10 (+ Out) of U2c (26LS31)
Pin 4. TXb+	Connects to pin 14 (+ Out) of U2d (26LS31)
Pin 5.	N/C
Pin 6. RX-	Connects to pin 3 (I-) of U4 via R4 47 ohm
Pin 7. TXa-	Connects to pin 11 (- Out) of U2c (26LS31)
Pin 8. TXb-	Connects to pin 13 (- Out) of U2d (26LS31)
Pin 9.	Connects to Ground

P3 Pin Assignment	DB9F Mounted on reverse side of strip card
Pin 1.	Connects to Frame Ground
Pin 2. RX+	Connects to pin 2 (I+) of U6 Receiver
Pin 3. TXa+	Connects to pin 2 (+ Out) of U5a (26LS31)
Pin 4. TXb+	Connects to pin 6 (+ Out) of U5b (26LS31)
Pin 5.	N/C
Pin 6. RX-	Connects to pin 3 (I-) of U6 via R6 47 ohm
Pin 7. TXa-	Connects to pin 3 (- Out) of U5a (26LS31)
Pin 8. TXb-	Connects to pin 5 (- Out) of U5b (26LS31)
Pin 9.	Connects to Ground

P4 Pin Assignment	DB9F Mounted on reverse side of strip card
Pin 1.	Connects to Frame Ground
Pin 2. RX+	Connects to pin 2 (I+) of U7 Receiver
Pin 3. TXa+	Connects to pin 10 (+ Out) of U5a (26LS31)
Pin 4. TXb+	Connects to pin 14 (+ Out) of U5d (26LS31)
Pin 5.	N/C
Pin 6. RX-	Connects to pin 3 (I-) of U7 via R8 47 ohm
Pin 7. TXa-	Connects to pin 11 (- Out) of U5c (26LS31)
Pin 8. TXb-	Connects to pin 13 (- Out) of U5d (26LS31)
Pin 9.	Connects to Ground

Note that this is a "standard" pin assignment for all Triad RS-422 ports. A cross ("null modem") connection should be made between RX and TX data lines to interconnect devices. TX+ goes to RX+, TX- to RX-, etc. The auxiliary port (TXb) is not normally used.