

Współpraca różnych typów interfejsów

Parameter	RS-232	RS-422	RS-423	RS-485
Maximum Driver Output Level	$\pm 25V$ No Load $\pm 15V$ 7 k Ω Load	$\pm 10V$ No Load $\pm 6V$ Diff.	$\pm 6V$ No Load	$\pm 6V$ No Load $\pm 6V$ Diff.
Minimum Driver Output Level	$\pm 5V$ 3 k Ω Load	$\pm 2V$ 100 Ω Load	$\pm 3.6V$ 450 Ω Load	$\pm 1.5V$ 54 Ω Load
Standard Driver Load	3 k Ω –7 k Ω 5 k Ω Typical	100 Ω	> 4 k Ω Typical 450 Ω Minimum	54 Ω
Receiver Input Voltage Range	$\pm 15V$	$\pm 10V$	$\pm 10V$	$\pm 10V$
Receiver Thresholds	$\pm 3V$ + 1.5V Typical	$\pm 0.2V$	$\pm 0.2V$	$\pm 0.2V$
Receiver Input Impedance	3 k Ω –7 k Ω 5 k Ω Typical	≥ 4 k Ω	≥ 4 k Ω	$\sim > 12$ k Ω
MODE	Single Ended	Differential	Single Ended	Differential

REFERENCES

EIA/TIA Standard EIA/TIA-232-E, Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange, EIA/TIA, Washington, D.C.

TIA/EIA Standard TIA/EIA-422-B, Electrical Characteristics of Balanced Voltage Digital Interface Circuits, TIA, Washington, D.C.

TIA/EIA Standard TIA/EIA-423-B, Electrical Characteristics of Unbalanced Voltage Digital Interface Circuits, TIA, Washington, D.C.

EIA Standard EIA RS-485, Standard for Electrical Characteristics of Generators and Receivers for use in a Balanced Digital Multipoint Systems, EIA, Washington, D.C.

Application Note #216, Summary of Well Known Interface Standards, Interface Databook, National Semiconductor, Santa Clara, CA

Application Note #759, Comparing EIA-485 and EIA-422-A Line Drivers and receivers in Multipoint Applications, Interface Databook, National Semiconductor, Santa Clara, CA

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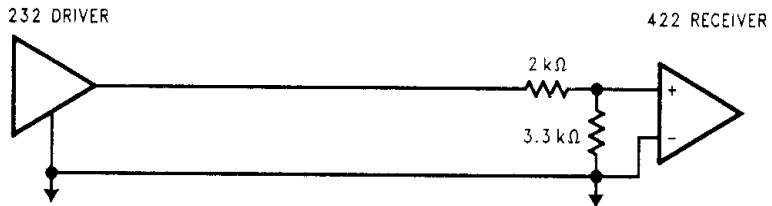


FIGURE 1. RS-232 to RS-422

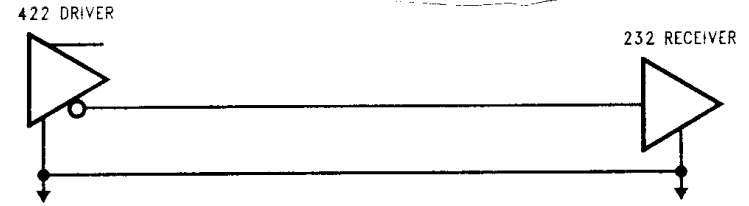


FIGURE 4. RS-422 to RS-232—Direct Connection

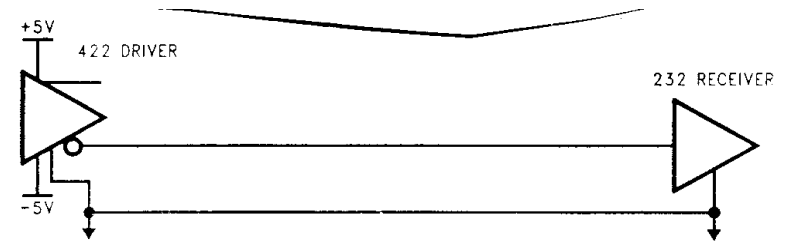
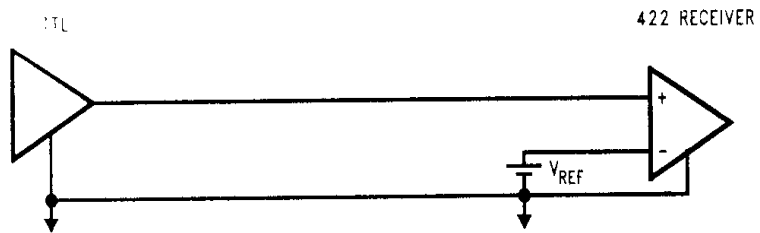


FIGURE 5. RS-422 to RS-232

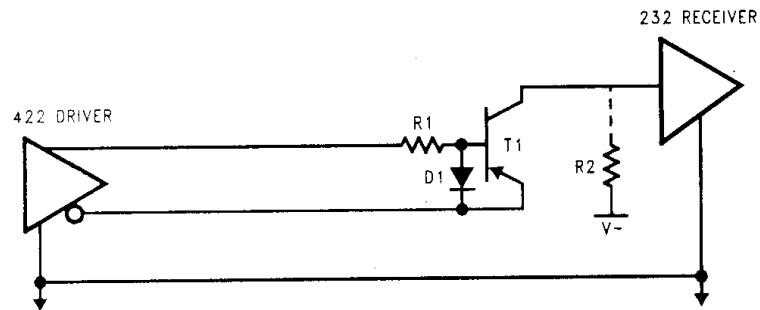


FIGURE 3. RS-422 to RS-232—with Active Device

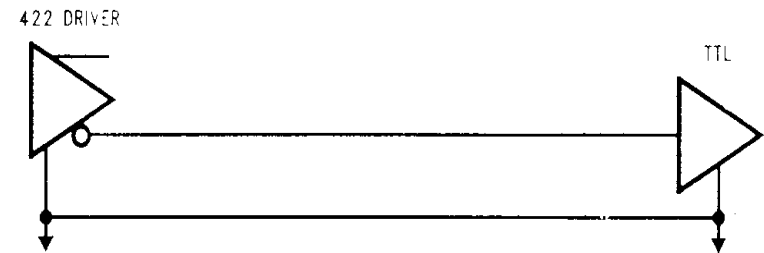


FIGURE 6. RS-422 to TTL

Współpraca różnych typów interfejsów

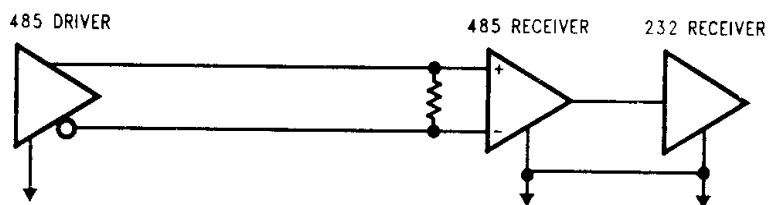


FIGURE 7. RS-485 to TTL

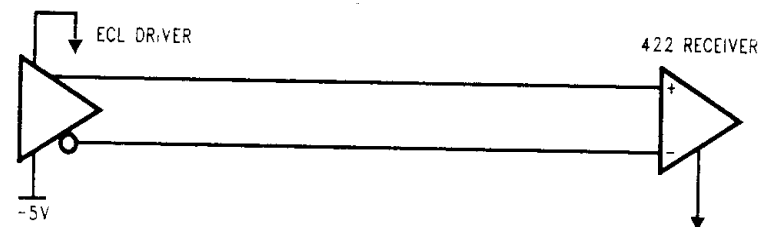


FIGURE 10. ECL to RS-422



FIGURE 8. TTL to RS-232

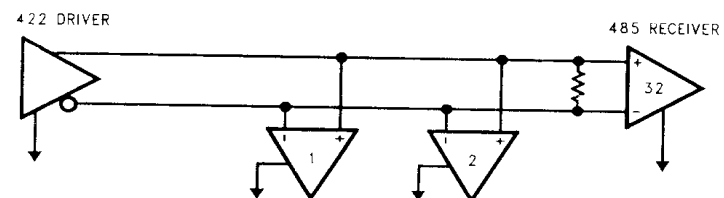


FIGURE 11. RS-422 to RS-485

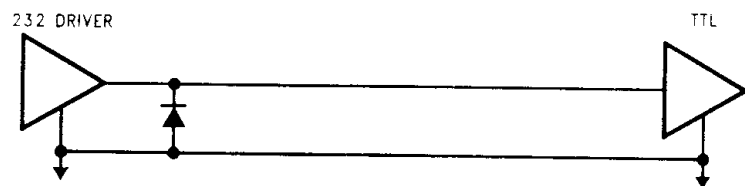


FIGURE 9. RS-232 to TTL

Dopasowanie linii

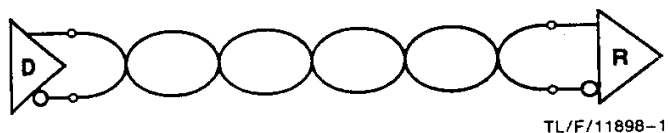


FIGURE 1. Unterminated Configuration

TL/F/11898-1



FIGURE 3. Series Termination Configuration

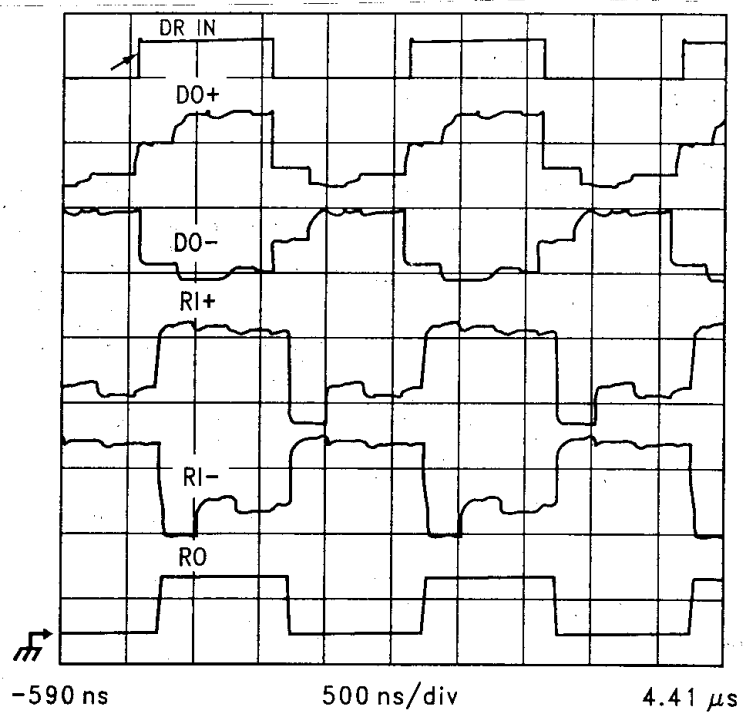


FIGURE 2. Unterminated Waveforms

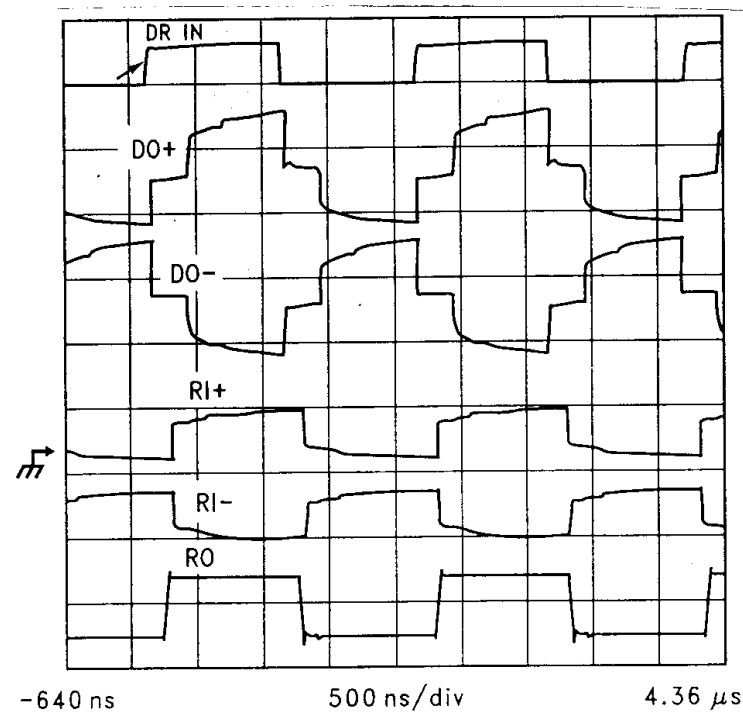


FIGURE 4. Series Termination Waveforms

Dopasowanie linii

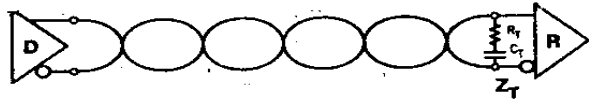


FIGURE 7. AC Termination Configuration

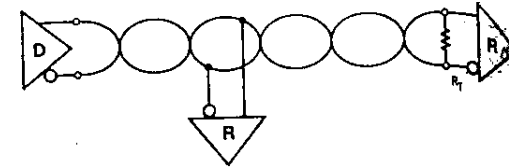


FIGURE 5. Parallel Termination Configuration

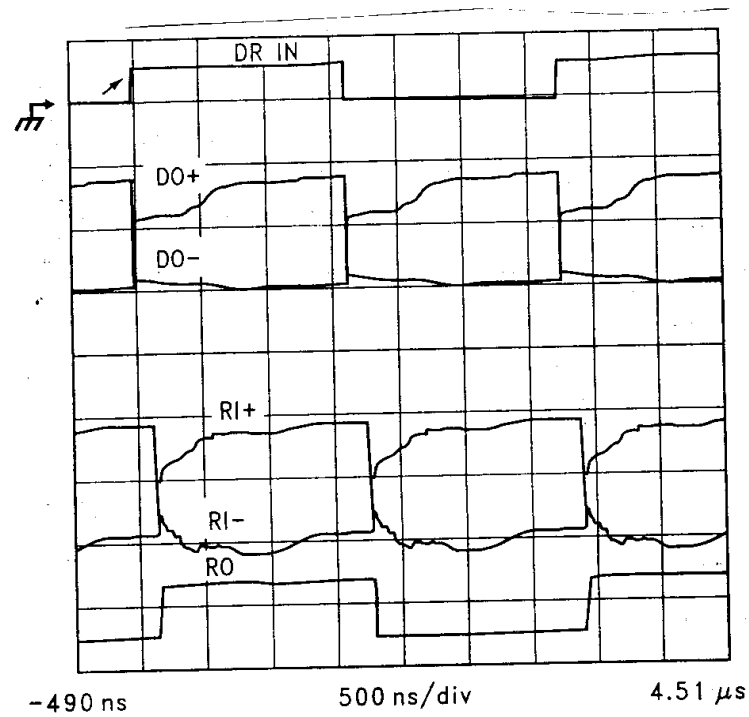


FIGURE 8. AC Termination Waveforms

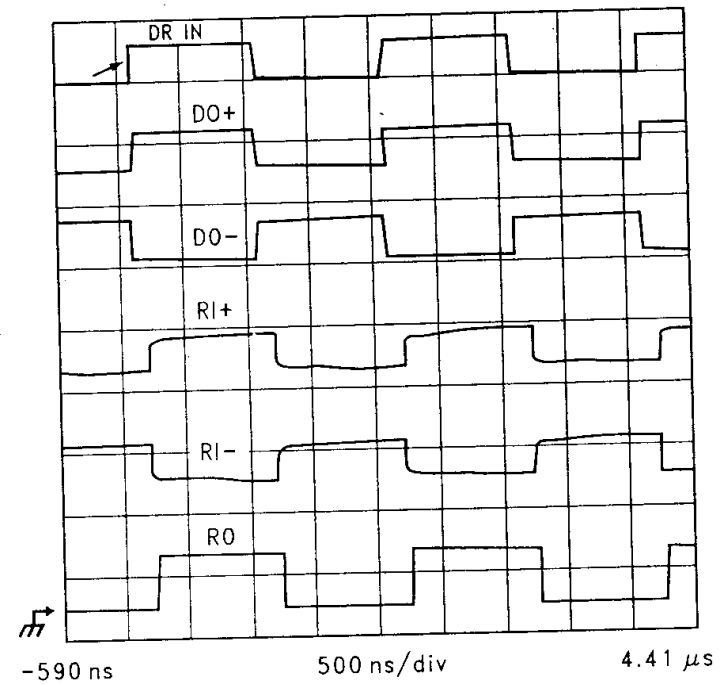


FIGURE 6. Parallel Termination Waveforms

Dopasowanie linii

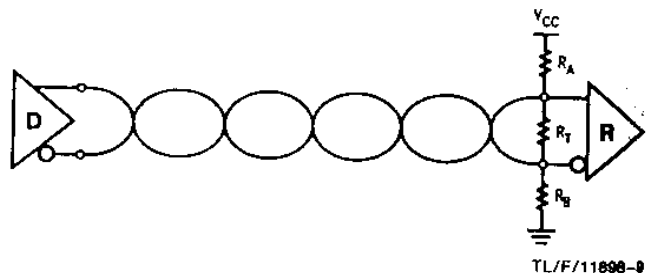


FIGURE 9. Power Termination Configuration

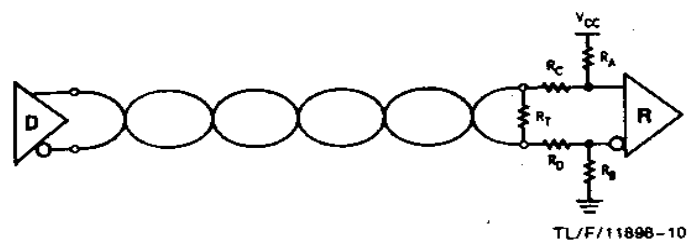


FIGURE 10. Alternate Failsafe Termination Configuration

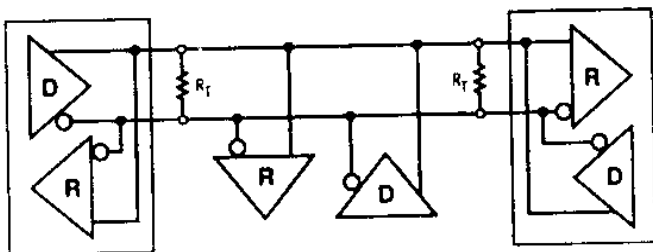


FIGURE 11. BI-Directional Termination Configuration

TABLE I. Termination Summary

Termination	Signal Quality	Data Rate	Comments
Unterminated	Poor	Low	Low Power
Series	Good	Low	Low Power
Parallel	Excellent	High	Single Resistor
AC	Good	Med.	Ideal for use on control lines
Power	Excellent	High	Failsafe bias for idle line
Alt. Failsafe	Excellent	High	Failsafe for open, shorted, and idle lines
Bi-Directional	Excellent	High	Ideal for bidirectional half duplex operation

Wtyki interfejsów szeregowych

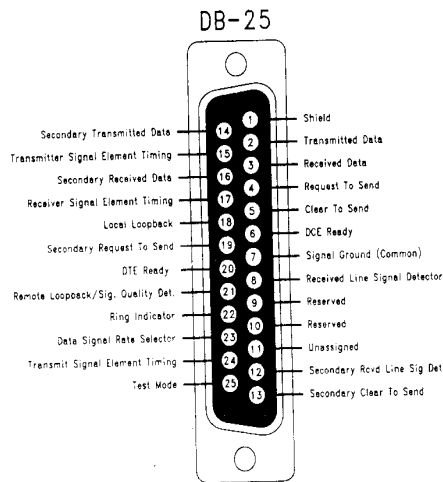


FIGURE 1. RS-232C DB-25

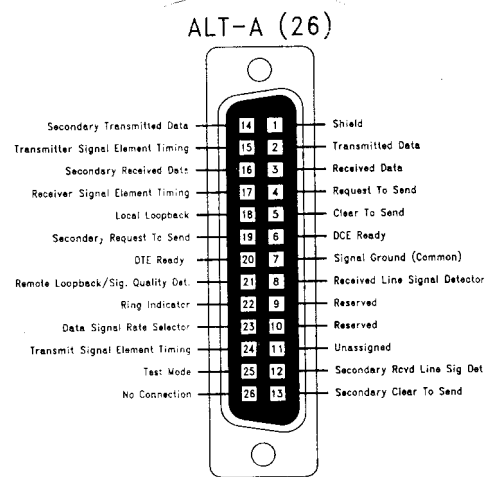


FIGURE 2. RS-232C ALT-A

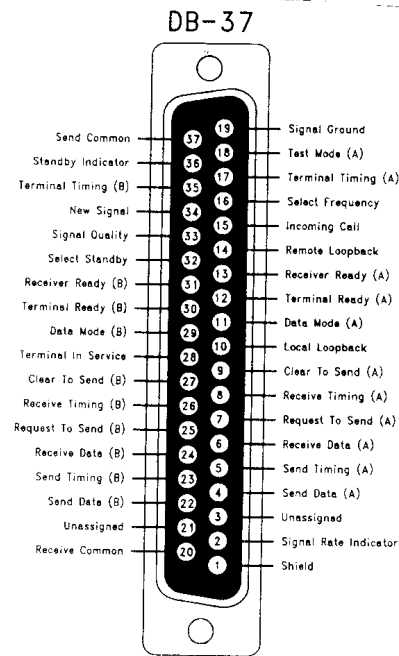
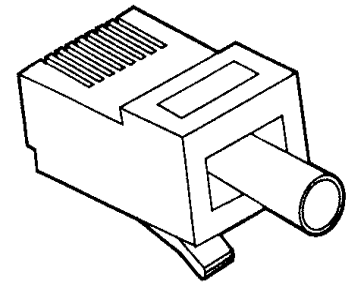


FIGURE 3. RS-449 DB-37



Plug

- 1 Ring Indicator
- 2 Received Line Signal Detector
- 3 DTE Ready
- 4 Signal Common
- 5 Received Data
- 6 Transmitted Data
- 7 Clear To Send
- 8 Request to Send/Ready for Receiving

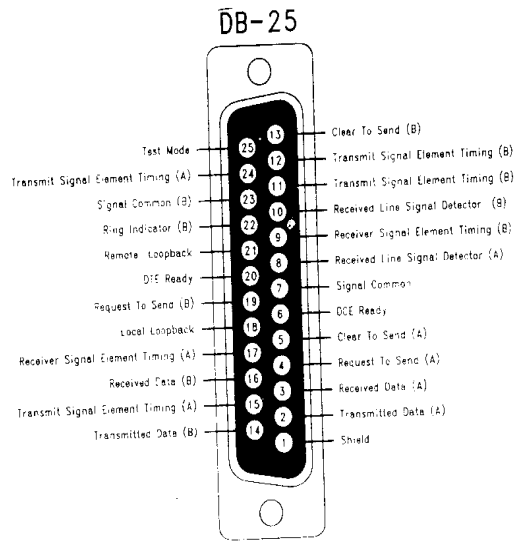


FIGURE 5. EIA/TIA-530-A DB-25

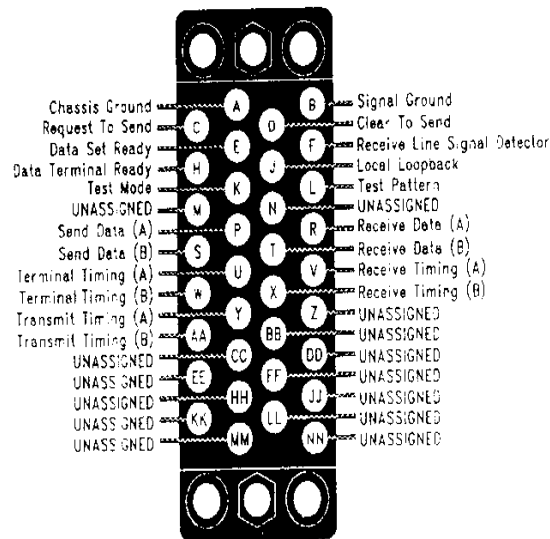


FIGURE 8. CCITT V.35

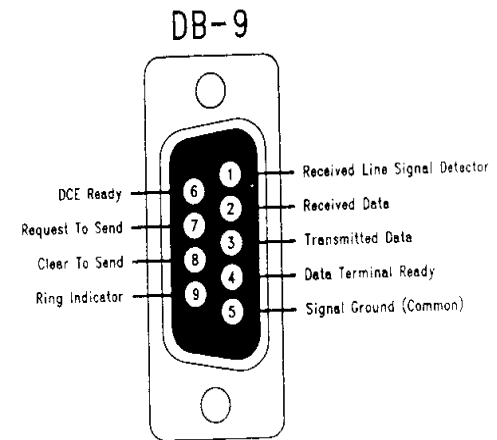


FIGURE 7. EIA/TIA-574 DB-9