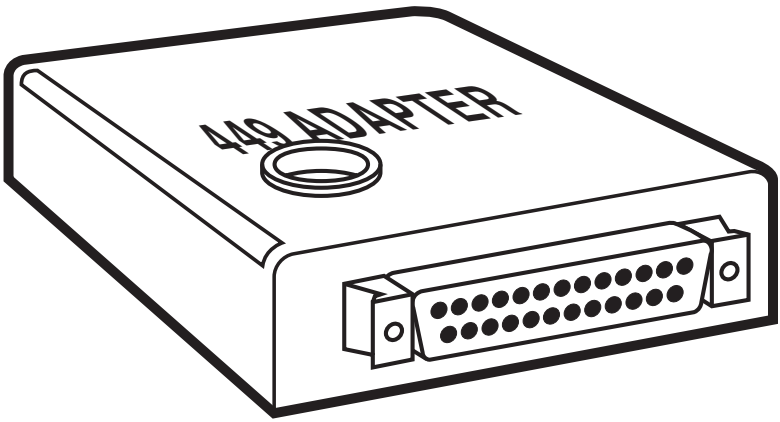
BLACK BOX®
NETWORK SERVICES

MAY 1993
IC505A
IC506A

RS-449 Interface Adapter



CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
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FEDERAL COMMUNICATIONS COMMISSION
AND
INDUSTRY CANADA
RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio-frequency energy, and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.

2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.

3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.

4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..

6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.

7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

    A: El cable de poder o el contacto ha sido dañado; u

    B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

    C: El aparato ha sido expuesto a la lluvia; o

    D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

    E: El aparato ha sido tirado o su cubierta ha sido dañada.

TRADEMARKS USED IN THIS MANUAL

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

1. Specifications

Enclosure — Metal

Interface — RS-232 and RS-449

Connectors — IC505A: (1) DB25 serial, female, and (1) DB37 parallel, male;
IC505A: (1) DB25 parallel, male and (1) DB37 serial, female

Models — IC505A: RS-232 configured as DTE and RS-449 configured as DCE;
IC506A: RS-232 configured as DCE and RS-449 configured as DTE

Power — None required

Size — 0.9"H x 3.1"W x 3.4"D (2.3 x 7.9 x 8.6 cm)

Weight — 0.3 lb. (0.1 kg)

2. Introduction

The RS-449 Interface Adapter connects an RS-232 interface to an RS-449 interface. The Adapter adheres to the electrical, mechanical, and functional EIA recommended standards for interconnection between interface circuits using RS-449 and RS-232.

The RS-449 Interface Adapter is available in two models. The IC505A configures the RS-232 interface as DTE (Data Terminal Equipment), and the RS-449 interface as DCE (Data Communications Equipment). See Figure 2-1 for a typical application.

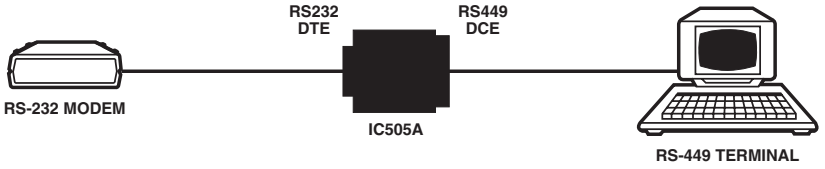

Figure 2-1. Typical Application of the IC505A.

The IC506A configures the RS-232 interface as DCE and the RS-449 interface as DTE. See Figure 2-2 for a typical application.

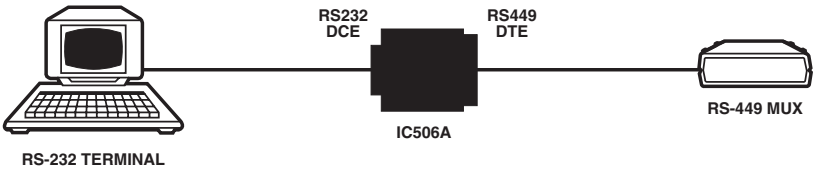

Figure 2-2. Typical Application of the IC506A.

3. Switches and Jumpers

The Adapter is equipped with a two-position DIP switch. See Table 3-1 for the function of the DIP switch. See Figure 3-1 for the circuit diagram of the IC505A and Figure 3-2 for the circuit diagram of the IC506A.

Table 3-1. DIP Switch Functions

SWITCH POSITION 1	FUNCTION
Open	No connection.
Closed	Connects Pin 2 of the RS-449 interface to Pin 23 of the RS-232 interface.
SWITCH POSITION 2	**FUNCTION**
Open	No connection.
Closed	Connects Pin 16 of the RS-449 interface to Pin 23 of the RS-232 interface.
NOTE Do not close SW1 and SW2 at the same time. This sets the Adapter to an invalid function.	

NOTE

An external ground lead can connect to the Adapter by means of a male spade lug connection on the exterior of the unit.

NOTE

There is also a jumper for a shielded ground connection, which is accessed through a hole on the side of the unit.

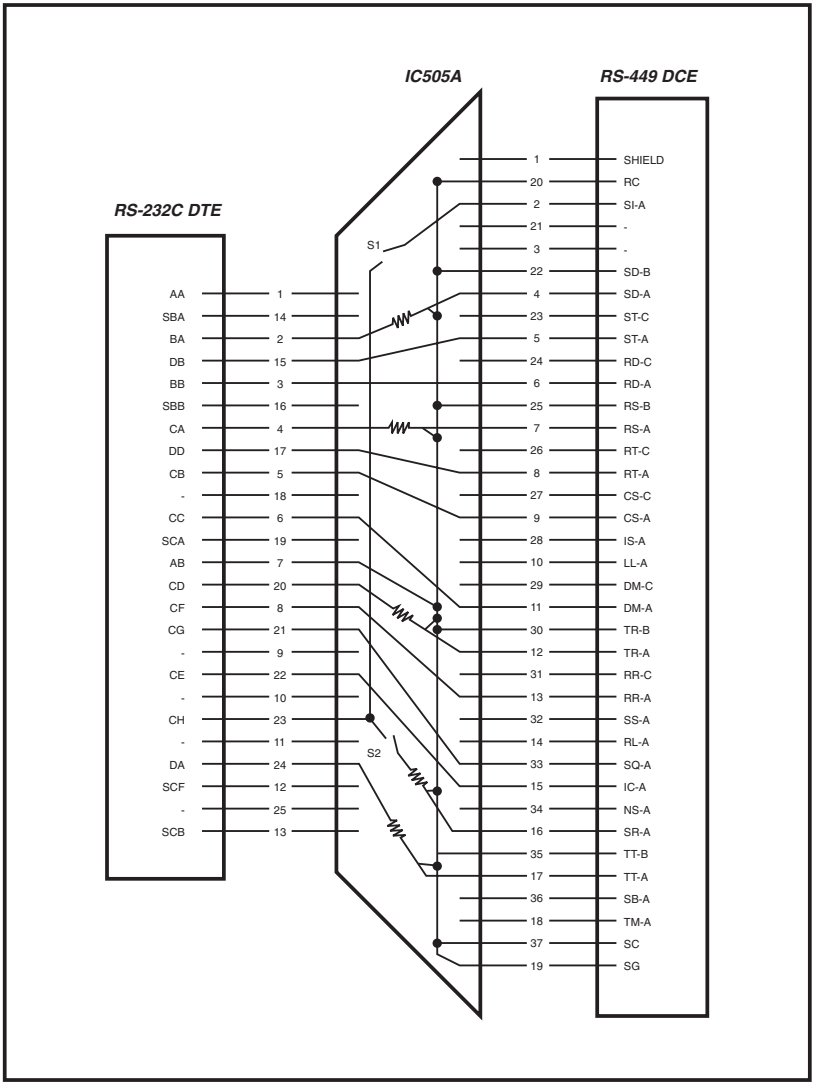

Figure 3-1. IC505A Circuit Diagram.

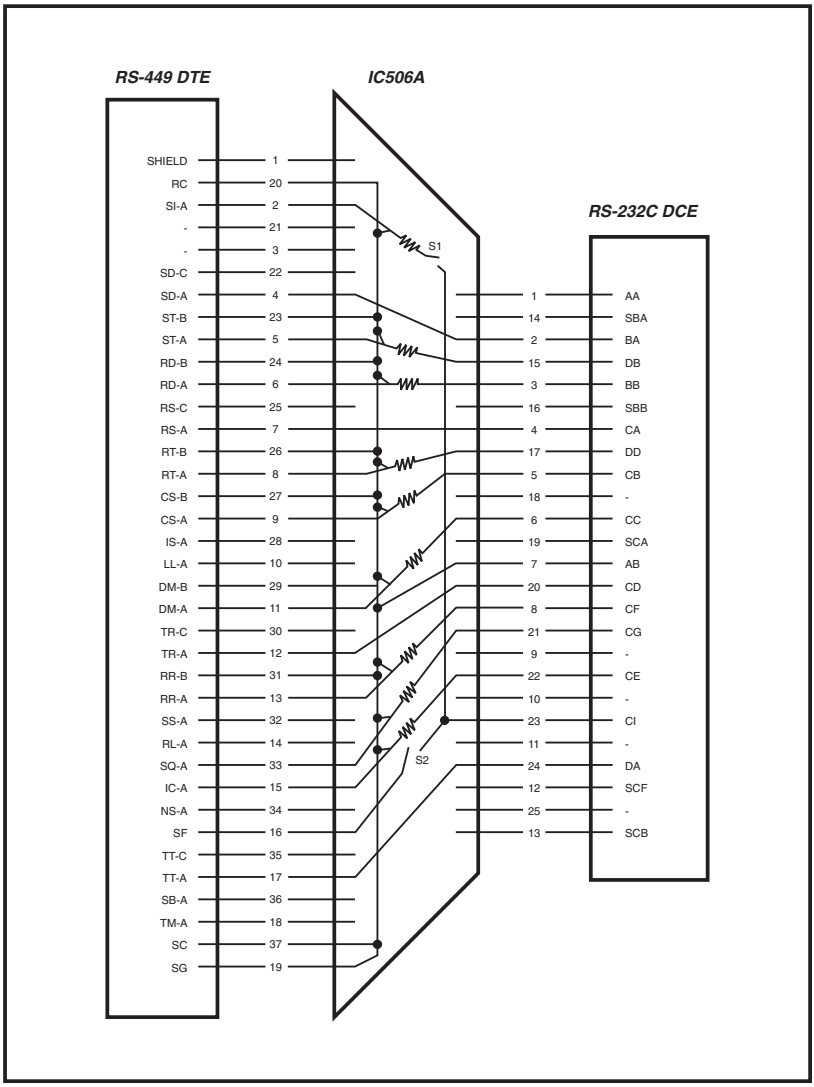

Figure 3-2. IC505A Circuit Diagram.

Two jumper posts are provides to allow Pin 1 (frame ground) of each interface to be connected together. A jumper shunt is not provided. Use a suitable shunt or a length of wire and solder these posts together.

A separate eye terminal is also connected to Pin 1. You can connect the cable shield to this terminal if required. When installing the RS-449 Interface Adapter in a system, it is recommended that the maximum cable distance from the RS-449 device to the RS-232 device be no more than ten feet. The RS-449 voltage levels are significantly lower than the RS-232 voltages. A cable distance greater than ten feet could reduce the voltage level to a value where the RS-232 receiver would not detect the signal.

4. Interface Pinning

Table 4-1 gives the RS-449 interface pinning. Table 4-2 gives the RS-232 interface pinning.

Table 4-1. RS-449 Interface Pinning.

PIN	CIRCUIT	DESCRIPTION	SIGNAL TYPE	DIRECTION
1	—	Shield	Ground	
2	SI (A)	Signal Rate Indicator (A)	Control	From DCE
3		Not defined		
4	SD(A)	Send Data	Data	To DCE
5	ST (A)	Send Timing (A)	Timing	From DCE
6	RD (A)	Receive Data (A)	Data	From DCE
7	RS (A)	Request to Send (A)	Control	To DCE
8	RT (A)	Receive Timing (A)	Timing	From DCE
9	CS (A)	Clear To Send (A)	Control	From DCE
10	LL	Local Loopback	Test	To DCE
11	DM (A)	Data Mode (A)	Control	From DCE
12	TR (A)	Terminal Ready (A)	Control	To DCE
13	RR (A)	Receiver Ready (A)	Control	From DCE
14	RL	Remote Loopback	Control	To DCE
15	IC	Incoming Call	Control	From DCE
16	SF SR	Select Frequency or Signal Rate Selector	Control Control	From DCE To DCE

Table 4-1 (continued). RS-449 Interface Pinning.

PIN	CIRCUIT	DESCRIPTION	SIGNAL TYPE	DIRECTION
17	TT (A)	Terminal Timing (A)	Timing	To DCE
18	TM	Test Mode	Control	From DCE
19	SG	Signal Ground	Ground	
20	RC	Receive Common	Ground	
21		Not defined		
22	SD (B)	Transmit Data (B)	Data	To DCE
23	ST (B)	Send Timing (B)	Timing	From DCE
24	RD (B)	Receive Data (B)	Data	From DCE
25	RS (B)	Request to Send (B)	Control	To DCE
26	RT (B)	Receive Timing (B)	Timing	From DCE
27	CS (B)	Clear To Send (B)	Control	From DCE
28	IS	Terminal In Service	Control	To DCE
29	DM (B)	Data Mode (B)	Control	From DCE
30	TR (B)	Terminal Ready (B)	Control	To DCE
31	RR (B)	Receiver Ready (B)	Control	From DCE
32	SS	Select Standby	Control	To DCE
33	SQ	Signal Quality	Control	From DCE
34	NS	New Signal	Control	To DCE
35	TT (B)	Terminal Timing (B)	Timing	To DCE
36	SB	Standby Indicator	Control	From DCE
37	SC	Send Common	Ground	

Table 4-2. RS-232 Interface Pinning.

PIN	CIRCUIT	DESCRIPTION	SIGNAL TYPE	DIRECTION
1	AA	Protective Ground	Ground	
2	BA	Transmitted Data	Data	To DCE
3	bb	Receive Data	Data	From DCE
4	CA	Request To Send	Control	To DCE
5	DB	Clear To Send	Control	From DCE
6	CC	Data Set Ready	Control	From DCE
7	AB	Signal Ground	Ground	
8	CF	Data Carrier Detect	Control	From DCE
9	—	+ DC Test Voltage		
10	—	- DC Test Voltage		
11	—	Unassigned		
12	SCF	Secondary Data Carrier Detect	Control	From DCE
13	SCB	Secondary Clear To Send	Control	From DCE
14	SBA	Secondary Transmit Data	Data	To DCE
15	DB	Transmit Signal Element Timing (DCE)	Timing	From DCE
16	SBB	Secondary Receive Data	Data	From DCE
17	DD	Receiver Signal Element Timing	Timing	From DCE
18	—	Local Loopback	Test	To DCE

Table 4-2 (continued). RS-232 Interface Pinning.

PIN	CIRCUIT	DESCRIPTION	SIGNAL TYPE	DIRECTION
19	SCA	Secondary Request To Send	Control	To DCE
20	CD	Data Terminal Ready	Control	To DCE
21	CG	Signal Quality Detector	Control	From DCE
22	CE	Ring Indicator	Control	From DCE
23	CH or CI	Data Signal Rate Selector (DTE) Data Signal Rate Selector (DCE)	Control Control	To DCE From DCE
24	DA	Transmitter Signal Element Timing (DTE)	Timing	To DCE
25	—	Test Mode/No Signal		

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