

**Instruction Sheet**

**SIGNALMAN<sup>TM</sup> MARK III  
MODEM**

**For Use With  
TI-99/4A Accessories Interface**

 **ANCHOR AUTOMATION, INC.**

6624 Valjean Avenue  
Van Nuys, CA 91406  
(818) 997-6493

## INTRODUCTION

Congratulations on your purchase of the Signalman, designed for use with your TI-99/4A Accessories RS-232C Interface. You have wisely chosen a modem incorporating the latest state-of-the-art technology to enhance the use of your computer. The Signalman is easily connected and has been designed with the user in mind. Features which simplify installation and operation are a 9-volt internal battery supply, automatic selection of Answer or Originate mode, and an exclusive audible Carrier Detect signal. With unneeded cables eliminated and no LEDs to watch, installation can be anywhere ... out of the way and out of sight.

The Signalman connects directly to any modular telephone wall outlet and telephone base.

The Signalman is a 300-baud (bps), frequency shift-keyed modulator-demodulator, Bell 103 compatible, and registered by the Federal Communications Commission under Part 68 for direct connection to the telephone network. It simultaneously sends and receives serial digital data, automatically switching to Originate or Answer mode as the need arises.

## TELEPHONE CO. NOTIFICATION

Before connecting the Signalman modem to the telephone network, you must provide the local telephone company with the following information:

- Your telephone number
- The modem FCC Registration Number: B4V8N2-68331-KX-N
- The Ringer Equivalence Number: 0.0B
- The USOC jack required for connection: RJ-11

You will also find this information on the label on the bottom of your modem.

The telephone company may make changes in its technical operation and procedures. If such changes could affect the proper operation of the modem, the telephone company is required to give notice of the change.

## OPERATING SWITCH AND JACKS

The function of the switch and jacks on the modem is as follows:

DATA/VOICE (ON/OFF) Switch	- Allows manual selection of Voice mode or Data mode; turns battery on in DATA (ON) position for modem power.
TELCO Jack	- Connects the modem to the telephone wall outlet.
TELSET Jack	- Connects the modem to the base of the telephone.
9V DC Jack	- Connects to an optional 9V DC adapter (available at your dealer), which is connected to a 115V AC outlet. The modem is normally powered by the 9-volt battery, but this jack allows the use of outside power through the adapter.

**WARNING:** Use only optional 9V DC adapter supplied by Anchor Automation.

## INSTALLATION

The Signalman comes complete with attached cable and connector, and a telephone cord with plugs. To install the modem, refer to figure 1 and follow these easy steps:

1. Install 9-volt battery (not supplied); use Eveready No. 1222 or equivalent NEDA 1604D-type.
2. Disconnect the telephone cord at the base of the telephone, and plug it into the modem jack marked TELCO.
3. Connect the supplied telephone cord to the base of the telephone and the modem jack marked TELSET.
4. Connect the cable from the modem to Port 1 or Port 2 of your TI-99/4A Accessories Interface.
5. Check installation by setting DATA/VOICE switch to VOICE; your telephone should work normally. If it doesn't, check to be sure you properly connected the telephone cords.
6. Continue check by setting DATA/VOICE switch to DATA; the modem should emit a steady audible tone. If it doesn't, modem isn't receiving power. Check battery and connections.
7. Avoid battery drain. When not in use, set DATA/VOICE switch to VOICE (OFF) to turn battery power off.

## OPERATION

A data communications link requires that one station transmit and receive in the Originate mode and the other receive and transmit in the Answer mode. Your Signalman automatically selects the proper mode, eliminating any confusion at either end of the data link. Establish the data link as follows:

1. Set DATA/VOICE switch to VOICE.
2. Lift the telephone handset and dial the number of the computer system you wish to communicate with. When the remote system answers you should hear a carrier tone from its modem.
3. As soon as you hear the carrier tone, set the DATA/VOICE switch to DATA. You'll hear a tone from your modem until it locks onto the remote carrier. This is the audible Carrier Detect signal. If the Carrier Detect signal doesn't stop after a few seconds, the other modem's carrier level may be too low. Hang up and redial.
4. When the tone ends, place the handset back onto the cradle. You're now ready to communicate. If you have difficulty communicating, check your computer and software user manuals to be sure you are operating properly.
5. When you've finished, set the DATA/VOICE switch to VOICE to return the telephone to its normal operation.

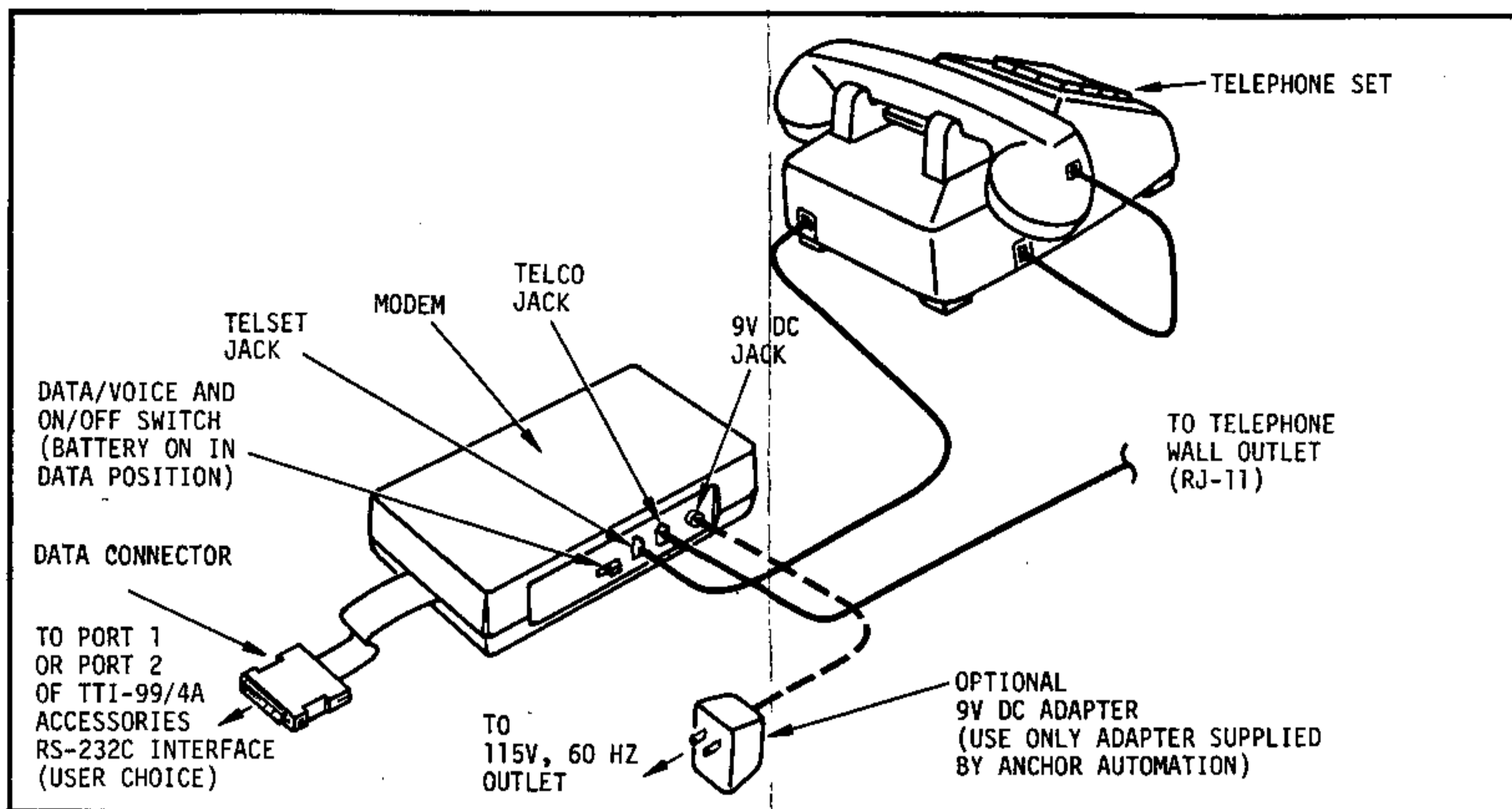


Figure 1. Typical Installation

#### NOTICE TO USER

This equipment generates and uses radio frequency energy, and if not installed and used in strict accordance with the installation and operating instructions contained in this Instruction Sheet, may cause interference with radio and television reception.

The Signalman has been type-tested and found to comply with the limits for a Class B computing device in accordance with the specifications of Subpart J of Part 15 FCC Rules, which are designed to provide reasonable protection against radio and television interference in a residential installation.

However, there is no guarantee that interference will not occur in your particular installation. If this modem does cause interference with radio or television reception, which you can check by simply turning the modem on and off, you are encouraged to try one or more of these corrective measures:

- Reorient the receiving antenna.
- Move the modem away from the receiver.
- Plug your computer system into a different outlet so that the receiver is on a different branch circuit.

If necessary, consult the dealer who sold you this modem or an experienced radio/television technician for additional suggestions. You might also find a booklet prepared by the FCC helpful. Entitled "How to Identify and Resolve Radio TV Interference Problems", it is available from:

U. S. Government Printing Office  
Washington, D. C. 20402  
(Stock Number 004-000-00345-4)

#### MAINTENANCE

The Signalman has a 'Low Battery' detector which warns when the battery nears the end of its useful life. When battery power is low, the modem will emit an audio tone which beeps at one-second intervals. When this occurs, disconnect the modem from the telephone and replace the battery with an Eveready No. 1222 or equivalent NEDA 1604D-type.

#### INTERFACE SIGNALS

Pin	Signal	Circuit	Description	Source
1	GND	AA	Protective Ground	Ground
7	GND	AB	Signal Ground	Ground
2	RXD	BB	Received Data from Modem (DCE) to Terminal or Computer (DTE)	Modem
3	TXD	BA	Transmit Data from Terminal or Computer (DTE) to Modem (DCE)	Terminal or Computer
5*	CTS	CB	Clear to Send	Modem
8*	DCD	CF	Data Carrier Detect	Modem
20*	DTR	CD	Data Terminal Ready	Modem

\* These pins are connected together within the modem for use with certain software protocols.

## SPECIFICATIONS

Data Interface	TI RS-232C compatible		
Data Format	Serial, binary, asynchronous		
Operate Mode	Manual dial, automatic mode select		
Data Rate	0 to 300 bps, full duplex		
Modulation	Frequency shift-keyed (FSK)		
Line Interface	FCC Part 68 Direct Connect		
Transmit Frequency	ORIG	ANSR	
	MARK	1270 Hz	2225 Hz
	SPACE	1070 Hz	2025 Hz
Transmit Frequency Accuracy	±0.01%		
Transmit Level	-12 dBm typical		
Receive Frequency	ORIG	ANSR	
	MARK	2225 Hz	1270 Hz
	SPACE	2025 Hz	1070 Hz
Receive Frequency Tolerance	±0.5%		
Carrier Detect Threshold	-44 dBm typical		
Carrier Detect Delay	250 ms		
Switch and Jacks	DATA/VOICE (ON/OFF) select switch Modular TELCO jack Modular TELSET jack 9V DC optional power jack		
Power Requirement	9V DC, 90mW; battery or adapter Recommended battery: Eveready No. 1222 or equivalent NEDA 1604D-type		
	WARNING: Use only optional 9V DC adapter supplied by Anchor Automation		
Size	21 cm x 11.1 cm x 3.5 cm (8.25 in. x 4.375 in. x 1.375 in.)		
Weight	423 gm (15 oz) with battery installed		
Operating Environment	0 to 50 °C (32 to 122.6 °F) 95% RH noncondensing		

## LIMITED WARRANTY

Anchor Automation Inc. warrants equipment manufactured and sold by it to be free from defects in material and workmanship and to meet applicable specifications under normal use and service for a period of one (1) year after sale to the original owner. If any equipment or parts not covered by another manufacturer's warranty are deemed by Anchor Automation to have been defective originally, or if these parts or equipment are found to have become defective under normal usage rather than misuse, negligence or accident, Anchor Automation will repair or replace them without charge.

This warranty shall not apply to equipment or parts which are normally consumed in operation, nor to equipment which, in the opinion of Anchor Automation, has been repaired or altered outside the Anchor Automation plant in any way so as to affect its reliability or stability. Also not covered: equipment which has been subjected to misuse, negligence or accident; or which has been altered, defaced or has had the serial number removed.

Anchor Automation Inc. does not assume any liability for consequential damages and, in any event, the company's liability shall not exceed the purchase price.

## SERVICE

If you believe the modem itself is malfunctioning, disconnect it until the source of the problem is discovered. A malfunctioning modem may cause effects on public telephone lines outside the permissible operating specifications of FCC Part 68.

In the event of equipment failure, all repairs shall be performed by Anchor Automation Inc. or by an authorized agent of Anchor Automation Inc. It is the equipment user's responsibility to report the need for service.

Do not return any item without instructions from Anchor Automation Inc. Call (818) 997-6493, ask for the Service Department and report the problem or malfunction. Give the model number, type and serial number of the equipment. On receipt of this information, Anchor Automation Inc. will provide service instructions.