Radio Shack TRS-80 PT-210
Portable Data Terminal
Operation Manual
Cat no. 76-1001

Contents

Introduction

intro

The PT-210 is a portable data terminal that links you to a "host" computer which may be either hundreds of miles away or in the same room.

To communicate with a Host that is some distance away, connect the PT-210 to a telephone through the Terminal's built-in acoustic coupler. Or you can install the optional/extra PT-210 RS-232C Interface (Radio Shack Catalog Number 76-1002) and connect the terminal to a direct connect modem such as the TRS-80 Modem I (26-1172), the auto-dial/answer Modem II (26-1173), or the high-speed, direct-connect DC-1200 Modem (76-1005).

With the RS-232C Interface installed, you can also connect the PT-210 to a host computer directly.

The PT-210 communicates with the host computer in ASCII code through a standard keyboard. For "hard-copy" output, the PT-210 uses an ultra-silent, thermal printer.

Other special features of the PT-210 include a:

- 53-key keyboard that can be reconfigured to a 13-key numeric pad and which conforms to standard data terminal keyboard format.
- Thermal printer which uses 8 1/2" thermal paper for "hard-copy" output.
- Selectable baud rate and parity.

whatis

1 What is a Data Terminal?

There are three parts to a terminal:

- The Keyboard, where you enter data.
- The Printer, where the data is displayed in visible form.
- The Input/Output Channel, where the Terminal communicates with the Computer.

When you connect a PT-210 to a power source and set the Power Switch to ON, nothing really happens unless the Terminal is connected to a "Host" computer. The Host is the controlling computer. Consequently, the operations and capabilities of your Data terminals are limited only by the limitations of the Host Computer – your Terminal can only do what the Host lets it do and no more! For instance, your PT-210 cannot store programs or data itself, but it can access information stored by the Host System.

Note that different Host Systems do not operate the same. In fact, they may even recognize keys differently. If you press a key on the Terminal when it is connected to one Host, the reaction may be totally different than when you press the same Terminal key when it is connected to a different Host! In other words, the specific operation of your PT-210 depends upon the Host that is in control. Consequently, good Data Terminals (like the PT-210) must be designed to operate with a variety of different Hosts.

Where is the Host Computer?

The Host computer may be located near the PT-210 (directly connected through the optional RS-232C Interface), or it may be hundreds of miles away and connected to your Terminal via the built-in acoustic coupler (or a modem) and telephone lines.

Can a PT-210 Communicate with Another PT-210?

Yes, two PT-210's can communicate (e.g., you and another PT-210 user can "talk" by typing on the keyboard), but that's all they can do. They can't process or store any information unless they're connected to a Host.

description

2 Description of the PT-210

Before you begin using the PT-210, it's important that you become familiar with it. This section will describe the PT-210 and it's special function keys. However, remember the description of a particular key (e.g., what it does) may differ from Host to Host.

1. **Top Cover.** Be sure this Cover is closed and latched before you move the PT-210. You'll have to open the Cover to gain access to the Acoustic Coupler but close it again to gain access to the Rear Compartment.
2. **Acoustic Coupler.** Place the phone headset into this modem (phone cord to the left) once you've dialed the Host by telephone and it has "answered" the call.
3. **Print Head.** The Print Head moves to the left and right as printing occurs. Do not print without paper in the PT-210. Use only Radio Shack Thermal Paper (76-1003) which is compatible with your Terminal.
4. **Keyboard.** The standard, typewriter-styled Keyboard can be "switched over" for 13-key applications (See Figures 4 and 5.)
5. **Numeric Switch.** Set this Switch to ON when you want to re-define the keyboard for 13-key use.
6. **POWER On Indicator.** This red Indicator will light up when the PT-210 is properly connected and the Power Switch is set to ON.
7. **CARRIER Indicator.** Thsi green indicator will illuminate when you've established communication with the Host.
8. **ERROR Indicator.** This red Indicator will light up when a parity (odd or even) error is detected. You will have to reset the Terminal by turning the Power OFF, then back ON.
9. **Communications Protocol Panel.** Before beginning communications with a Host, set these switches to select baud rate (SPEED), duplex (HALF or FULL), and mode (ON-LINE or OFF-LINE).
10. **PAPER ADVANCE Key.** When you need to advance the paper, press this Key.

Note that the Top Cover must be closed before you can gain access to the Rear Compartment. This compartment is also used to store the Power Cord.

1. **PARITY Switch.** Set this Switch to EVEN, ODD, or NONE (no parity).
2. **RS-232C Connector.** This Connector is an optional/extra item that allows you to connect the Terminal to a direct-connect modem or directly to a Host Computer. See **Appendix B** for specific details on installing and using the RS-232C option, including setting the COMM/TERM and RS232C/Modem Switches.

rs232

3. **POWER ON/OFF Switch.** Set this Switch to ON before using the PT-210. After Switching Power OFF, wait at least 5 seconds before switching power on again.
4. **Print Contrast Switch.** If printing is too light, turn this Switch clockwise. If printing is too dark, turn the Switch counterclockwise. (Requires a small, phillips-head screwdriver.)
5. **Paper Compartment.**

1. **Power Cord Connector.** Before connecting the supplied Power Cord to the Terminal, gently pull out on the protector to gain access to the Power Cord connector.

The keyboard (Which is patterned after a standard typewriter keyboard) can also be used as convenient 13-key numeric entry. In the normal operations mode, all keys are used normally. In Numeric Mode, 13 of the keys print numerals on symbols and the other keys are inactive.

The 13-key pad is activated when the NUMERIC Switch is set to ON. When this Switch is set to ON, only the keys with the small numbers in the upper-left corners are recognized. These keys are arranged like a standard 10-key pad. Note that the `5` (e.g., the letter K key) has a small, raised dot on its surface so you can find it easily.

When the NUMERIC Switch is set to ON, `SPACEBAR` is redefined as the zero (0) key. (That is, instead of pressing `0` to send a zero, press `SPACEBAR`).

`CTRL`
This is the "control" key. Holding `CTRL` down while pressing any other key will send a special message to the Host. For example, CONTROL G is the "Bell." To ring the bell (e.g., sound the PT-210 buzzer), press `CTRL` and `G` at the same time.

Note that if you press a key-combination (such as `CTRL A`, the ASCII code sent to the Host is differnet from pressing `A` by itself. For a complete description of the ASCII codes sent by the PT-210, see **Appendix** A.

`BACK SPACE`
Pressing this key will backspace the Print Head (e.g., it moves the Print Head one space to the left so a character may be re-typed. The second character will overstrike the first.

`RUB OUT`
This is the delete key which is used to delete the character just sent. It sends ASCII the 127 to the Host and will echo ± to the PT-210.

`BREAK`
This key generally means "interrupt." Pressing `BREAK` sends "continuous space" to the Host.

`RETURN` This key is similar to the typewriter's carriage return and tells the Host to accept the data typed since the last carriage return. This sends ASCII 13 (CTRL-M) to the Host and is the Carriage Return. Most Host Computers will echo both a Carriage Return and a Line Feed (ASCII 10) when this character is received.

`ESC` When you press `ESC`, the next key you press with have a special meaning. This enables the Keyboard to be used as a bank of switches to perform operations such as turning printers off and on. The `ESC` key sends ASCII 127 to the Host.

`LINE FEED` Pressing this key usually causes the Host to move down one line without returning it to the left margin. This key sends ASCII 10 to the Host.

Caution: Do not press any printable character keys unless paper is loaded. Damage to the printhead and platen could result.

3 Setting-Up the PT-210

setup

Before using the PT-210, place the Terminal on a level, solid surface and be sure the paper is properly loaded.

Connecting the PT-210 to a Power Source

The Power Cord is stored in the Rear Compartment. To connect the PT-210 to a power source:

1. Remove the cap which covers the power connector on the rear of the PT-210.
2. Insert the appropriate ends of the Power Cord into the connector.
3. Connect the other end of the Cord to a 115VAC, 60Hz wall-outlet or approved power strip (such as the Radio Shack Plug-In Power Strip, 61-2610, or Automatic Power Controller, (26-1429).

Electrical requirements for the PT-210 are listed in the Specifications section of this manual and on the Terminal itself.

Paper Loading

Do not use any paper except paper which is included with the PT-210. When you need to order more paper, request Catalog Number 76-1003 from your Radio Shack Computer Center or Computer Department.

Before loading the paper, remove the wrapper from the paper roll. If the end of the paper is not squarely at right angles to the feed direction, cut it square with scissors (or cut the corners at an angle to make paper feeding easier. See **Figure 6**).

To Load Paper into the PT-210:

1. Open the Rear Compartment Cover and set the paper in the Paper Compartment.
2. Set the POWER ON/OFF Switch to ON.
3. Feed the paper over the Tension Roller (1) and down through the Paper Slot (2) and Platen (3) until it appears behind the plastic window.

   The paper will not slide behind the Print Head because the Head is pressed against the Platen.
4. Press `PAPER ADV` until the paper feeds behind the Print Head and out from under the plastic window.

Connecting the PT-210 to a Host Computer

There are several ways to connect the PT-210 to a Host Computer. For details on making the connections, see the section of this manual entitled **Using the PT-210**.

4 Using the PT-210

usage

Set the POWER Switch to ON. The red POWER Indicator will illuminate and the Print Head will move to the left margin.

If the Print Head is already at the left margin, it will not move. If the Host is sending a Cursor (e.g., an indicator that tells you the current position the host is using), it will be printed although you probably won't be able to see the Cursor until the Print Head moves.

Setting the Communication Protocol Switches

Before beginning communications, the communication protocol (e.g., baud, parity, etc.) between the Host and your PT-210 must watch. Find out what protocol the Host is using, then set the PT-210 accordingly (or vice versa).

Three protocl switches on the PT-210 are located on the Communcations Protocol Panel on the Keyboard. They are:

- SPEED Switch which selects either 110 or 300 baud.
- DUPLEX Switch which selects either HALF or FULL Duplex.
- MODE Switch which selects the Transmission Mode (ON-LINE or OFF-LINE).

The other Protocol Switch (PARITY Select) is located inside the Rear Compartment.

PARITY Select Switch

The PARITY Select Switch is located on the left-side of the Paper Holder in the Rear Compartment. You can set this Switch to:

- EVEN Parity.
- ODD Parity.
- NONE (No Parity).

This Switch determines whether or not the PT-210 will send a parity bit with the transmitted word. It also activates parity checking when the PT-210 is receiving characters.

If a parity error occurs, the red ERROR Indicator comes on and backward question mark (ʔ) will be printed.

If NONE (No Parity) is selected, parity is not sent or checked and the ERROR Indicator will not illuminate under any conditions.

BAUD Select Switch

The PT-210 is designed to communicate at either 110 or 300 baud ("bits per second"). Find out the baud rate of the Host System, then set this switch to:

- 110.
- 300.

When the PT-210 is set to 110 baud, the Printer will operate at 10 characters per second; if set to 300 baud, the Printer will print at 30 characters per second.

DUPLEX Select Switch

The PT-210 can operate in two duplex modes:

- Full.
- Half.

If the Host computer "echos" every character it receives from the PT-210, then set this Switch to FULL. You will see the received character and know that it was correctly received and echoed by the Host Computer.

If the Host Computer does not echo characters, you must select HALF Duplex to see what you are typing. In HALF Duplex Mode, the PT-210 (rather than the Host) prints the characters on the paper.

If you set the PT-210 to Half Duplex and the Host is echoing the character, you will see two of each character on the Paper – one character will be from the PT-210 and the other echoed from the Host.

If this happens and you want to see only one character, simply set the Switch to FULL.

MODE Select (OFF-LINE or ON-LINE)

This Switch must be set to ON-LINE before you can begin communication with the Host System.

If this Switch is set to OFF-LINE, two things can happen:

- The Self-Test can be performed.
- The PT-210 can be disconnected from the telephone line and used like a portable typewriter.

It's a good idea to run the Self-Test before establishing communications with a Host Computer. To run the self-test:

- Set the MODE Switch to HALF.
- Set the SPEED Switch to 300.
- While pressing the `REPT` key, set the Power Switch to ON.

The PT-210 should begin printing its entire character set and will continue until you set the Power Switch to OFF.

To use the PT-210 as a portable typewriter, set the MODE Switch to OFF-LINE and the NUMERIC Switch to OFF. Then simply type on the keyboard like would would a normal typewriter. However, to perform a carriage return, you'll need to press `RETURN` (to return the Print Head to the left margin) and `LINE FEED` (to advance to the next line).

Using the PT-210 with a Host Computer

You can connect the PT-210 to a Host Computer via the built-in acoustic coupler or via the optional RS-232C Interface. For details on using the PT-210 optional RS-232C Interface, see **Appendix B**.

In either instance, you'll have to set the Switches on the Communication Protocol Panel to match the Host. This must be done before you begin communications with the Host.

1. Set all the Switches as specified by the Host Computer. The MODE Switch should be set to the ON-LINE position.
2. Dial the telephone number of the Host Computer.
3. The Host will answer the phone and send a high-pitched tone. This is the Answer Carrier.
4. When you hear the Answer Carrier, immediately place the phone handset into the rubber acoustic cups (with the cord on the left).
5. The green CARRIER Indicator should illuminate.
6. Begin the log-on procedure the host requires. Each Host will have its own requirements.
7. If the green light goes out, you have "lost carrier". This means that the Host has hung up. You will have to start over at Step #2.

To disconnect from the Host, follow the Host's procedures for signing off.

If you have repeated errors on power-up because of outside noise interference, set the MODE Switch to OFF-LINE before dialing the telephone number of the Host Computer. Set the Switch to ON-LINE after placing the handset into the acoustic cups.

5 Care and Maintenance

care

Your PT-210 is a reliable device which should provide you with years of trouble-free service. Howver, the first thing to do in case of trouble is to see if the trouble is in the PT-210 or in the System.

The red Power on Indicator does not illuminate.

- Is the outlet "live"?
- Are you connected to a suitable source?
- Are the connections firmly made?

Incorrect or missing data through the acoustic coupler.

- Are the MODE, DUPLEX and SPEED Switches set correctly?
- Is the Host Computer on-line and sending a carrier tone?
- Is the telephone handset seated firmly into the rubber cups, with the Transmitter (the part you speak into) to the left?

Extra character and missing characters.

- This is caused by noise on the phone line, someone picking up an extension phone, "Call Waiting" indicators, a PBX operator testing your line, etc.

The Printer does not print.

- Has some small object fallen inside the mechanism, causing it to jam?
- Do you need to adjust the printing Contrast?

Communication using the RS-232C Interface has problems.

- Is the RS-232C cable to the interface unit installed correctly?
- Are the RS232C/MODEM and COMM/TERM switches on the Interface Unit set correctly?

Hints and Tips . . .

- Be sure the parameters are correct for your System.
- Be sure to use the correct baud rate for the Host modem.
- Be sure the Host Computer has its RS-232C channel properly configured.

6 Specifications

specs

Control	
Communication Method	Start-Stop Asynchronous
Speed	110 Baud (11 bit character)
	300 Baud (10 bit character)
Communication Mode	Full/Half Duplex
Line Buffer	48 characters (receive)

Printer	
Method	5 × 7 dot-matrix Thermal
Paper	Radio Shack 76-1003 8 1/2" (100 ft.)
Character Set	71 Printable 2.7mm × 2.0mm Characters.
Carriage Return Time	< 0.80 seconds (OFF LINE)
	< 0.86 seconds (ON LINE)
Line Feed Time	< 0.03 seconds (continuous step)
	< 0.05 seconds (single step)
Acoustic Coupler	Bell System 103A Equivalent
Mode	Originate
RS-232C Interface	Radio Shack 76-1002
Power Requirements	105-135 VAC (75 watts) 60 Hz
Temperature Range	50° to 95°F (10° to 35°C)
Humidity Range	10% to 80% relative non-condensing
Size	1.57" × 14.6" × 4.9" (40.0cm × 37.2cm × 12.5)
Weight	15.0 lbs (6.8 kg)

Appendices

Appendix A The ASCII Character Set

ascii

The PT-210 will output and receive all 128 ASCII codes. The following is a list of these codes and the keys used to produce them.

Dec	Hex	Oct	Key
0	00	000	CTRL 0
1	01	001	CTRL A
2	02	002	CTRL B
3	03	003	CTRL C
4	04	004	CTRL D
5	05	005	CTRL E
6	06	006	CTRL F
7	07	007	CTRL G
8	08	010	CTRL H
9	09	011	CTRL I
10	0A	012	LINE FEED
11	0B	013	CTRL K
12	0C	014	CTRL L
13	0D	015	RETURN
14	0E	016	CTRL N
15	0F	017	CTRL O
16	10	020	CTRL P
17	11	021	CTRL Q
18	12	022	CTRL R
19	13	023	CTRL S
20	14	024	CTRL T
21	15	025	CTRL U
22	16	026	CTRL V
23	17	027	CTRL W
24	18	030	CTRL X

Dec	Hex	Oct	Key
64	40	100	@
65	41	101	A
66	42	102	B
67	43	103	C
68	44	104	D
69	45	105	E
70	46	106	F
71	47	107	G
72	48	110	H
73	49	111	I
74	4A	112	J
75	4B	113	K
76	4C	114	L
77	4D	115	M
78	4E	116	N
79	4F	117	O
80	50	120	P
81	51	121	Q
82	52	122	R
83	53	123	S
84	54	124	T
85	55	125	U
86	56	126	V
87	57	127	W
88	58	130	X

Dec	Hex	Oct	Key
25	19	031	CTRL Y
26	1A	032	CTRL Z
27	1B	033	ESCAPE
28	1C	034	CTRL ,
29	1D	035	CTRL -
30	1E	036	CTRL .
31	1F	037	CTRL /
32	20	040	SPACE
33	21	041	!
34	22	042	”
35	23	043	#
36	24	044	$
37	25	045	%
38	26	046	&
39	27	047	’
40	28	050	(
41	29	051	)
42	2A	052	*
43	2B	053	+
44	2C	054	,
45	2D	055	-
46	2E	056	.
47	2F	057	/
48	30	060	0
49	31	061	1
50	32	062	2
51	33	063	3
52	34	064	4
53	35	065	5
54	36	066	6
55	37	067	7
56	38	070	8
57	39	071	9
58	3A	072	:
59	3B	073	;
60	3C	074	<
61	3D	075	=
62	3E	076	>
63	3F	077	?

Dec	Hex	Oct	Key
89	59	131	Y
90	5A	132	Z
91	5B	133	[
92	5C	134	/
93	5D	135	]
94	5E	136	˜
95	5F	137	_
96	60	140	’
97	61	141	a
98	62	142	b
99	63	143	c
100	64	144	d
101	65	145	e
102	66	146	f
103	67	147	g
104	68	150	h
105	69	151	i
106	6A	152	j
107	6B	153	k
108	6C	154	l
109	6D	155	m
110	6E	156	n
111	6F	157	o
112	70	160	p
113	71	161	q
114	72	162	r
115	73	163	s
116	74	164	t
117	75	165	u
118	76	166	v
119	77	167	w
120	78	170	x
121	79	171	y
122	7A	172	z
123	7B	173	[
124	7C	174	:
125	7D	175	]
126	7E	176	˜
127	7F	177	RUB OUT

Note: Lower case letters are translated to uppercase equivalents when received by the terminal.

Control Codes

The PT-210 will transmit all 128 ASCII characters, and it recognizes four ASCII Control Codes.

Control Code	Explanation
CTRL-G (ASCII 7)	Beeps the "bell" in the PT-210.
CTRL-H (ASCH 8)	Backspace. Move the Cursor one column to the left.
CTRL-J (ASCII 10)	Line Feed. Advances the paper one line vertically. The Cursor does not return to the left margin.
CTRL-M (ASCII 13)	Carriage Return. The Cursor moves to the left margin. A Line Feed daes not occur.

Printing on the next line requires both a CTRL-M and a CTRL-J to be sent to the PT-210 by the Host.

Appendix B RS-232C Interface (Optional/Extra)

rs232

Installing the RS-232C Interface Board

Before installing the RS-232C Interface kit, be sure the PT-210 power is OFF.

1. Remove the lid which covers the RS-232C Interface slot in the rear of the PT-210.
2. Carefully insert the RS-232C Interface Card into the grooves on the sides of the hole. The Card will only go in one way.
3. Slide the card down the grooves until the plug seats firmly into the jack at the bottom. The DB-25 jack will protrude from the top of the hole. See Figure 8.

Using the RS-232C Interface

The RS-232C Interface connector has two switches:

- RS-232C/MODEM Select.
- COMM/TERM Select.

Before changing the switches, be sure the PT-210 Power is off.

If you are using the PT-210 built in acoustic coupler to communicate with a Host, the RS-232C/MODEM Select must be set to MODEM (e.g., in the "up" position). In cases such as this, the setting of the COMM/TERM Select doesn't matter.

However, when you connect the PT-210 to an external device via the RS-232C Interface, set the RS-232C/MODEM Select to RS-232C (e.g., the "down" position). In this case, the setting of the COMM/TERM Select is very important.

- If the Host is a TRS-80 Modem II, III, 16, or DT-1, set the PT-210 COMM/TERM Select to COMM (e.g., it must be in the "down" position).
- If the PT-210 is connected to an external Modem (such as the TRS-80 Modem I, II, or DC-1200), set the PT-210's COMM/TERM Select to TERM.
- If the Host is a non-Radio Shack Computer, set the PT-210 COMM/TERM Select to TERM (e.g., it must be in the "up" position).

Data Transmission and the PT-210 RS-232C

When the PT-210 is directly-connected to a Host Computer and the COMM/TERM Select is set to TERM, data is sent to the Host via Pin #2 and received via Pin #3.

When the PT-210 is direct-connected to a Host and the COMM/TERM Select is set to COMM, data is sent to the host via pin #3 and received via Pin #2.

When the PT-210 is connected to an external modem, the PT-210 acts as the terminal and data is sent via Pin #2 and received via Pin #3.

Note: When the PT-210 RS-232C/MODEM Switch is set to RS-232C, the setting of the DUPLEX Switch has no effect on communications.

Using the RS-232C to Connect the PT-210 to a Modem

1. Connect a RS-232C Cable (26-1408) from the RS-232C Jack on the PT-210 to the RS-232C Jack on the modem.
2. Connect the modem to the telphone line, following the instructions in the modem operating manual.
3. Set the MODE Switch on the PT-210 to ON-LINE.
4. Set the MODEM/RS-232C Switch to RS-232C (press down).
5. Set the COMM/TERM Switch to TERM (up position).

See the modem operation manual for more details.

Using the RS-232C Interface for Direct Connection

If you connect the PT-210 to the Host Computer directly, the Terminal and the Host are usually located in the same room or building.

The RS-232C Interface provides standard signals and can be used to connect the PT-210 to any on-site computer terminal facility. This includes the TRS-80 Model 16. If the Host is a TRS-80 Model II or 16, bu sure to insert a Terminator Plug into any unsused Serial Channels.

For direct connection, connect the PT-210 to the Host with a DB-25 RS-232C cable (26-1408).

1. Connect one end of the cable to the RS-232C Interface Jack on the PT-210.
2. Connect the other end of the cable to the Serial Channel on the Host System.

Follow the instructions from the Host System.

RS-232C Interface Specifications

Method: Asynchronous, serial by bit, serial by character.

Code: ASCII, 11 bits per character including parity, start, and two stop bits at 110 baud, 10 bits per character, one stop bit at 300 baud.

Parity: Odd, even, or none.

Standard RS-232C Interface

Signal	**Function**	**Pin #**
PG	Protective Ground	1
TD	Transmit Data	2
RD	Receive Data	3
RTS	Request to Send	4
CTS	Clear to Send	5
DSR	Data Set Ready	6
SG	Signal Ground	7
CD	Carrier Detect	8
DTR	Data Terminal Ready	20

Appendix C Glossary

glossary

ASCII – American Standard Code for Information Interchange.

Baud Rate – Rate data is being sent between a Terminal and a Host. Approximately equal to "bits per second".

Bell – The buzzer in the PT-210.

Carriage Return – Returns Cursor to column one of the same line.

Column – Horizontal spaces. The PT-210 uses 80 columns.

Default – The value a switch or parameter takes on if you do not specify a value.

Echo – The Host sends the character it just received immediately back to the PT-210. The returned character may or may not be printed.

Enabled – Turned on. Permitted to function.

Even Parity – The number of bits in a character is counted. If the result is odd, the parity bit is set. Then the number of bits set will be even - hence even parity. On the receive end, the number of bits in the word is counted. The result is compared with the parity bit and if the result is odd and the parity bit is not set then the computer knows that an error has occurred.

Full Duplex – Characters typed by the PT-210 are echoed by the Host system.

Half Duplex – Characters typed on the PT-210 are not echoed by the Host system. The PT-210 will print each character in this mode.

Line Feed – This moves the cursor down one line without returning it to the left margin.

Odd Parity – Each time a character is sent, a parity bit is sent too. If the number of bits sent in the character is even, then the parity bit is set, resulting in an odd number - hence odd parity.

When received, the number of bits in the character is again counted and if an even number results, then the parity bit must be set. If the parity bit is not set and the number of characters is even, then computer knows that an error in transmission has occurred.

Parity – An error checking system.

Serial – Data arrives one bit at a time through a single wire and 7 or 8 bits, set in a unique combination of voltage levels, define a character.

Appendix D Schematic Diagrams

schematics

Appendix E Important Information

info

"This equipment generates and uses 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 and television reception. It has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television receoption, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Relocate the computer with respect to the receiver.
- Move the computer away from the receiver.
- Plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

'How to Identify and Resolve Radio-TV interference Problems'. This booklet is available from the US Government Printing Office, Washington, D.C., 20402, Stock No. 004-000-00345-4"

This document was prepared by manually transcribing the original manual and formatting it with LaTeX. Misspellings, grammar errors, and odd capitalization have been corrected. Some diagrams have been redrawn in lieu of using photocopies. Photographs, when possible, are newly taken and formatted to look like the original photographs. Page numbering has changed. Section numbering has not changed. Otherwise, this reproduction contains the exact same information as the original document.

All this was done in the interest of preserving vintage computer equipment and the documentation thereof. No profit was made from producing this document.

Visit the TeX Users Group website at http://www.tug.org/ for information on the TeX typesetting system invented by Donald Knuth.

RADIO SHACK, A DIVISION OF TANDY CORPORATION

U.S.A.: FORT WORTH, TEXAS 76102
CANADA: BARRIE, ONTARIO L4M 4W5

TANDY CORPORATION

AUSTRALIA
280-316 VICTORIA ROAD
RYDALMERE, N.S.W 2116

BELGIUM
PARC INDUSTRIEL DE NANINNE
5140 NANINNE

U.K.
BILSTON ROAD WEDNESBURY
WEST MIDLANDS WS10 7JN

9A2

Printed in Japan
80553900A