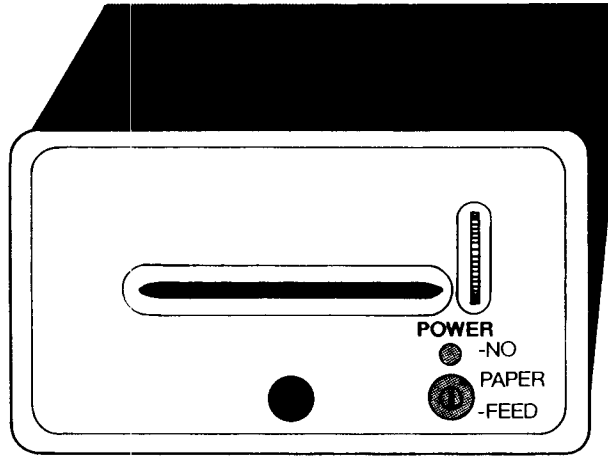


® RD4220

® 40-Column Thermal Printer



Operator's Manual
M1451/0492

Table of Contents

SECTION	PAGE
SECTION 1 INTRODUCTION	1
1.1 Description	1
1.2 Available Models	1
SECTION 2 INSTALLATION	2
2.1 Unpacking and Inspection	2
2.2 Panel Mounting	3
2.3 RS-232 Interface Cable Suggestion	4
2.4 Parallel Interface Cable Suggestion	4
SECTION 3 OPERATOR INFORMATION	5
3.1 Turn on and Self Test	5
3.2 Paper Loading	6
3.2.1 Journal Take-Up (RD4220E Only)	6
SECTION 4 INTERFACE SPECIFICATIONS	7
4.1 Serial Interface	7
4.1.1 Serial Interface Baud Rate Settings	8
4.1.2 Serial Interface Settings (RD4220E)	9
4.2 Parallel Interface	10
4.3 Jumper Designations	10
4.3.1 Interface Board Jumper Designations	10
4.3.2 Main Board Jumper Designations	11
4.4 Flow Control	12
SECTION 5 PROGRAMMING INFORMATION	13
5.1 General	13
5.2 Printable Characters	13
5.3 Graphics Mode	14
5.4 Text Mode /Data Mode	15
5.5 Real Time Clock (RD4220E Only)	15
5.6 Auto Time & Date	15
5.7 Non-Volatile Message (RD4220E Only)	15
5.8 International Character Sets	16
5.9 Control Codes and Escape Sequences	16
5.10 Test Program	17
5.11 Print Sample	18
SECTION 6 MAINTENANCE	19
6.1 Introduction	19
6.2 Required Tools and Supplies	19
6.3 Cleaning	19
6.4 Maintenance Chart	19
SECTION 7 SPECIFICATIONS	20
SECTION 8 ACCESSORIES	21

IBM and Proprinter are trademarks of International Business Machines, Inc.

SECTION 1 INTRODUCTION

1.1 Description

This manual contains installation, operating and maintenance procedures for the OMEGA RD4220 series of low cost miniature thermal printers. The series includes the models RD4220 and RD4220E. These printers are microprocessor controlled to provide a wide range of printing capabilities. The RD4220 printers are small size and of a rugged design, which makes them ideal for mobile use. In their standard configuration, they may be powered from any AC or DC power source between 8 and 30 volts. A 115 VAC power supply is included with the unit, a 230 VAC power supply can be ordered as an option.

The RD4220 printers utilize a thermal print head to print 40 columns of dot matrix characters. International character sets are supported by the printers. All of the models in the series can be ordered with an RS-232/20 mA, 485/20 mA serial data interface or a parallel data interface. The serial interface supports data rates of 50 to 19200 baud. The parallel interface is a Centronics type which is compatible with the parallel printer ports on most personal computers. The RS-232 interface is standard.

1.2 Available Models

The following models are available from OMEGA.

PART NUMBER	DESCRIPTION
RD4220E	40-Column thermal printer with a real time clock, paper low indication, non-volatile memory, and journal take-up.
RD4220	40-Column thermal printer <u>without</u> the above listed standard features.

SECTION 2 INSTALLATION

2.1 Unpacking and Inspection

Remove the packing list and verify that all equipment has been received. If there are any questions about the shipment, please call the OMEGA Customer Service Department at 1-800-622-2378 or (203) 359-1660.

Upon receipt of the shipment, inspect the container and equipment for any signs of damage. Take particular note of any evidence of rough handling in transit. Immediately report any damage to the shipping agent.

NOTE: The carrier will not honor any claims unless all shipping material is saved for their examination. After examining and removing the contents, save packing material and carton in the event reshipment is necessary.

Your packing box should include the following items:

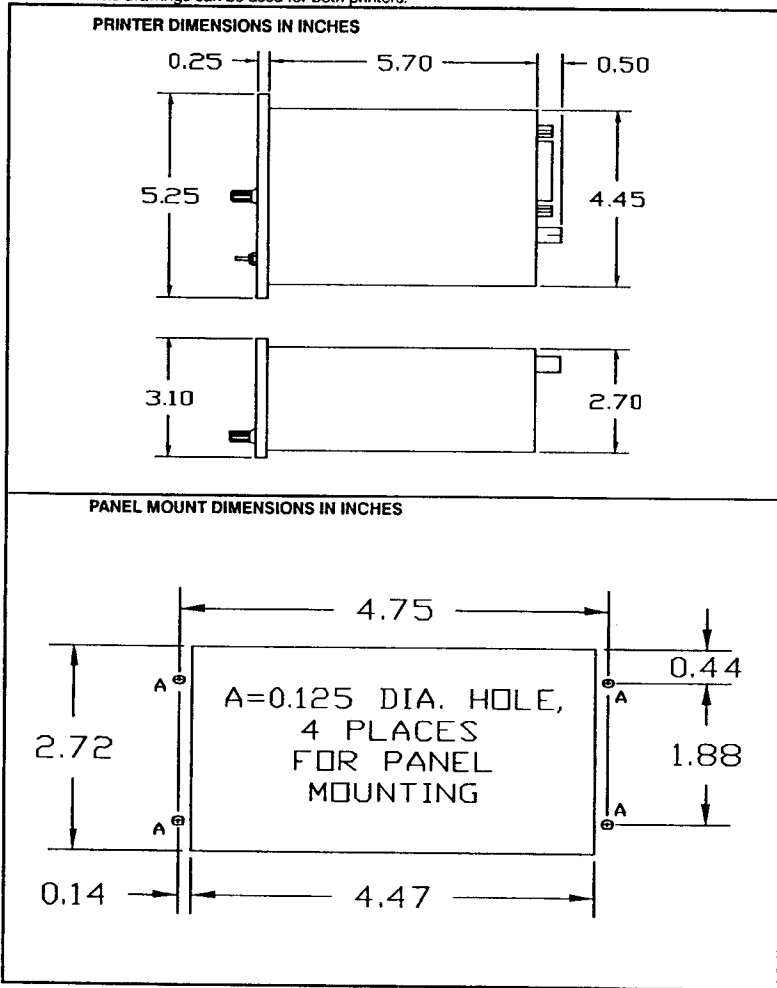
<u>QTY</u>	<u>DESCRIPTION</u>
1	RD4220 or RD4220E printer
1	Power transformer with cable
1	Roll of thermal paper (80ft)
1	Operator's manual

Before installing or operating the printer, check the following:

1. Make sure that the primary power setting is correct for your installation.
2. Make sure that the printer mechanism and paper path are clear of all packing materials or other foreign matter.
3. Make sure that paper is installed. **DO NOT OPERATE the printer without paper.** Refer to section 3.2 for paper loading instructions.

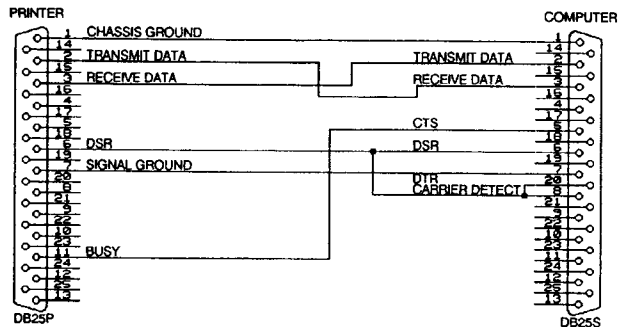
2.2 Panel Mounting

The drawings shown below indicate the size and placement of holes for panel mount applications. The drawings can be used for both printers.



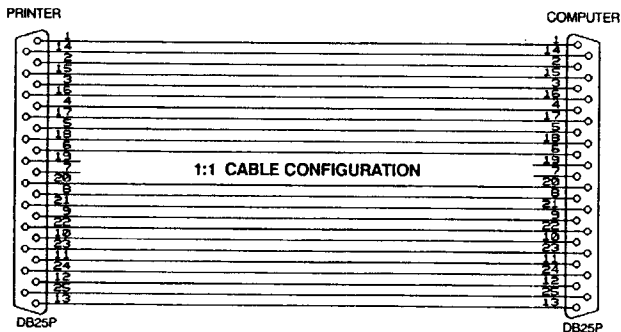
2.3 Serial RS-232 Interface Cable Suggestion

If the RS-232 interface has been selected use a null modem cable to connect to the host. If the current loop interface has been selected, a cable will need to be locally fabricated. An RS-232 cable diagram is shown below.



2.4 Parallel Interface Cable Suggestion

This parallel cable suggestion is used to interface the printers with all IBM and IBM compatible systems. This cable connects the interface to the printer with a 1:1 configuration, and is terminated by a DB25P on each end. This cable configuration is available at most computer supply stores. ex. pin 1 to pin 1, pin 2 to pin 2, ... pin 25 to pin 25.

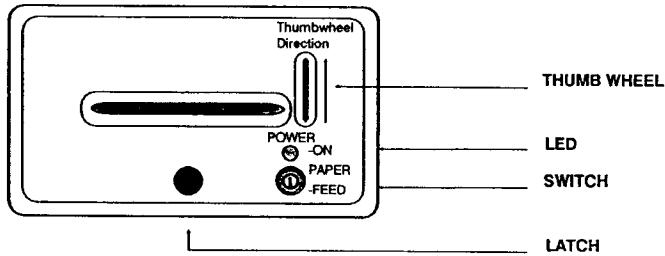


SECTION 3 OPERATOR INFORMATION

3.1 Turn on and Self Test

The operating controls of the RD4220 printers have been kept to a minimum. A convenient self test feature allows the operator to quickly determine that the printer is operating correctly.

The operating controls on the front panel are shown below:



The functions of operating controls are as follows:

CONTROL	FUNCTION
THUMB WHEEL	Used to advance the paper. Do not rotate thumbwheel in a downward motion, this will damage the paper feed mechanism.
LED	Indicates power on and paper installed when green, paper out when flashing red and green, paper low when red.
SWITCH	Power off in down position, Power on in middle, and paper advance in the top (spring loaded) position.
LATCH	To secure the main body of the printer to the mounting box.

To activate the self test feature, shut the printer off, then in one quick motion move the power switch to the paper advance position and hold it there until the self test message appears. Once the self test routine begins you may let go of the switch and let the printer finish the self test. To stop the self test before the end of the message, power down the printer.

For the highest quality output and maximum thermal head life, it is recommended that a premium quality thermal paper be used.

3.2 Paper Loading

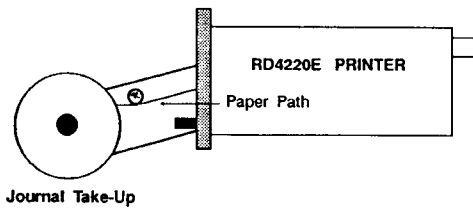
Install the paper spindle into a new roll of thermal paper. Position the roll of paper so that it will feed from the top, then place the roll and spindle into the paper support brackets, making certain that the paper is level. It is recommended that a square and clean cut edge is used for entry of paper into the printer mechanism, (Note: Scissor cut is preferred).

To load paper, turn on the power. Now feed the cut edge of the paper into the guide until the paper stops. This printer will automatically feed the paper 10 line feeds when the optical sensor detects paper. At this time it is recommended that a self test be performed to ensure that the paper is installed correctly, (thermal side up) and that it is feeding properly.

In the event of a paper jam condition do not force paper into the unit, or try to pry the paper out of the unit, this may damage the thermal print mechanism. Disconnect primary power and interface cable before servicing the unit. Remove the face plate by removing the two 4/40 nuts on the back of the face plate, this will allow access to the printer mechanism. Carefully remove paper with a set of tweezers, or a small pair of needle-nose pliers. Once paper is cleared from the mechanism, re-assemble the unit. At this time, re-load the paper.

3.2.1 Journal Take-Up (RD4220E) only

The RD4220E printer incorporates a Journal Take-Up as part of its standard equipment. Paper should be loaded into the take-up journal only after a self test has been performed to ensure that the printer is working properly. The journal take-up is activated automatically when the printer performs a carriage return or a line feed.



SIDE VIEW SHOWING JOURNAL TAKE-UP

SECTION 4 INTERFACE SPECIFICATIONS

4.1 Serial Interface

The RD4220 printers can be purchased as either serial or parallel devices. The interface connector is located on the rear of the RD4220 printers. Connector P1 is the serial port or parallel port, depending on the type of printer, pin assignments shown below. See Jumper Designations Diagram in section 4.3 for details.

Note: A valid baud rate must be set at all times for proper printer operation. See section 4.1.2 for switch settings.

The RD4220/RD4220E printers have three types of serial interfaces, RS-232, RS-485, and a 20mA current loop. In general, the RS-232 interface is preferable if the printer is located close to the host computer and can be connected with a cable run of 50 feet or less. For distances up to 500 feet, the current loop is preferred. The RS-485 interface is used when long bus lines are needed in noisy environments.

RS-232/20 mA Interface

PIN	SIGNAL	DESCRIPTION
1	Ground	Protective ground
2	TXD	Data output from the printer to the host
3	RXD	Data input to the printer or display
5	CTS	Inhibits TXD line when held at -10V by the host
7	Ground	Signal ground
11	Busy	-10V when printer is unable to receive data
20	DTR	+10V when printer is on line
22	RET	-20mA current loop return

RS-485/20 mA Interface

PIN	SIGNAL	DESCRIPTION
1	DTR +	Output
2	DTR -	Output
3	+20 mA	+20 mA input to the printer
7	Data Out -	Output
8	Data Out +	Output
10	Ground	Signal Ground
19	Data In -	Input
20	Data In +	Input
22	RET	-20mA current loop return

There are two conventions used in the RS-232C interface; these are *Data Terminal Equipment* (DTE) and *Data Communications Equipment* (DCE). Examples of DCE are modems, multiplexers, and telephone data line interfaces. All other equipment which originates or receives data such as terminals (including the RD4220 printers) or computers are DTE. The difference between DCE and DTE is that TXD and RXD are reversed, as well as several control signals. This allows a piece of DTE to connect directly to a piece of DCE, e.g. a modem to a terminal, with a straight pin for pin connection in the interconnecting cable. However if two pieces of DTE are to be interconnected it is necessary to transpose TXD and RXD as well as DTR and CTS in the cable. This type of cable is called a *null modem* cable and must be used if the RD4220 printers are connected to a host computer's serial port.

4.1.1 Serial Interface Baud Rate Settings

The data word parameters must be set in the printer to correspond with the settings of the host computer. These are set using the DIP switches SW1 located on the back of the RD4220 chassis. See Jumper Designations Diagram in section 4.3.2.

1. Set the stop bits, data bits and parity using SW1-1 through 4 according to the table below.

SW1	FUNCTION	OFF	ON
SW1-1	STOP BITS	2	1
SW1-2	DATA BITS	8	7
SW1-3	PARITY ENABLE	ENABLE	DISABLE
SW1-4	PARITY	EVEN	ODD

2. Set the baud rate using SW1-5 through SW1-8 according to the table below.

BAUD RATE	SW1-5	SW1-6	SW1-7	SW1-8
50	ON	ON	ON	ON
75	ON	ON	ON	OFF
110	ON	ON	OFF	ON
134.5	ON	ON	OFF	OFF
150	ON	OFF	ON	ON
300	ON	OFF	ON	OFF
600	ON	OFF	OFF	ON
1200	ON	OFF	OFF	OFF
1800	OFF	ON	ON	ON
2000	OFF	ON	ON	OFF
2400	OFF	ON	OFF	ON
3600	OFF	ON	OFF	OFF
4800	OFF	OFF	ON	ON
7200	OFF	OFF	ON	OFF
9600	OFF	OFF	OFF	ON
19200	OFF	OFF	OFF	OFF

3. Select RS-232 or 20 mA current loop interface using JP2 and JP3. Select the RS-485 or 20 mA current loop interface using JP2. Jumpers are located on the component side of the back board. See Jumper Designations Diagram in section 4.3

JUMPER	RS-232 or RS-485	20 mA Current Loop
JP2	pins 1,2	pins 2,3
JP3	pins 1,2	pins 2,3

4.1.2 Serial Interface Switch Settings (RD4220E)

The following switch settings are used for the "sleep" feature in the RD4220E. This feature allows the printer to synchronize on a carriage return within a continuous stream of data at selected time intervals.

Switch Settings 1-4

1	2	3	4	DELAY TIME	POSITION #
ON	ON	ON	ON	No Delay	0
ON	ON	OFF	ON	1 Sec.	1
ON	ON	ON	OFF	10 Sec.	2
ON	ON	OFF	OFF	15 Sec.	3
ON	OFF	ON	ON	30 Sec.	4
ON	OFF	OFF	ON	45 Sec.	5
ON	OFF	ON	OFF	1 Min.	6
ON	OFF	OFF	OFF	5 Min.	7
OFF	ON	ON	ON	10 Min.	8
OFF	ON	OFF	ON	15 Min.	9
OFF	ON	ON	OFF	30 Min.	10
OFF	ON	OFF	OFF	45 Min.	11
OFF	OFF	ON	ON	1 Hour	12
OFF	OFF	OFF	ON	1.5 Hours	13
OFF	OFF	ON	OFF	12 Hours	14
OFF	OFF	OFF	OFF	24 Hours	15

Switches 5-8

Switches 5-8 are used for setting the baud rate. These switch settings are shown in section 4.1.1.

Data Parameters (RD4220E Only)

Data parameters are preset as follows:

NO PARITY, 1 STOP BIT, 8 DATA BITS

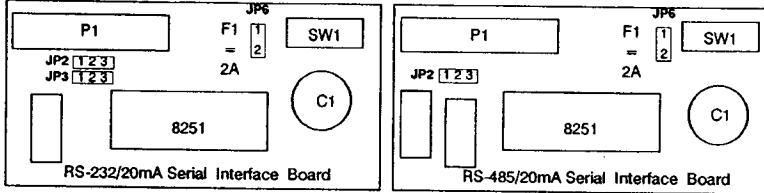
4.2 Parallel Interface

Connector P1 (DB 25S) is the parallel interface. The pin assignments and brief signal descriptions are listed below. See Jumper Designation Diagram in section 4.3 for a visual aid on setting the jumpers.

PIN	SIGNAL	DESCRIPTION
1	Strobe	1 μ sec pulse to clock data into the printer
2	Data 0	Eight data bit input signals to the printer; Signal levels are high for logic 1 and low for a logic 0.
3	Data 1	
4	Data 2	
5	Data 3	
6	Data 4	
7	Data 5	
8	Data 6	
9	Data 7	
10	ACK	6 μ sec pulse from printer when data received
11	Busy	High when printer is unable to receive data
12	PE	High when a paper error occurs in printer
13	Select	High when printer is on line
18-24	Ground	

4.3 Jumper Designations

4.3.1 Interface Board Jumper Designations

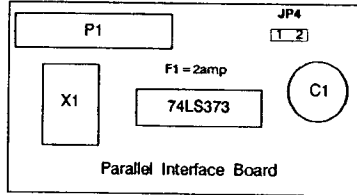


JP2, JP3 = Jumpers to change RS-232 to 20 mA loop. Jumper pins 1 and 2 for RS-232 or RS-485 operation. Jumper pins 2 and 3 for 20 mA operation.

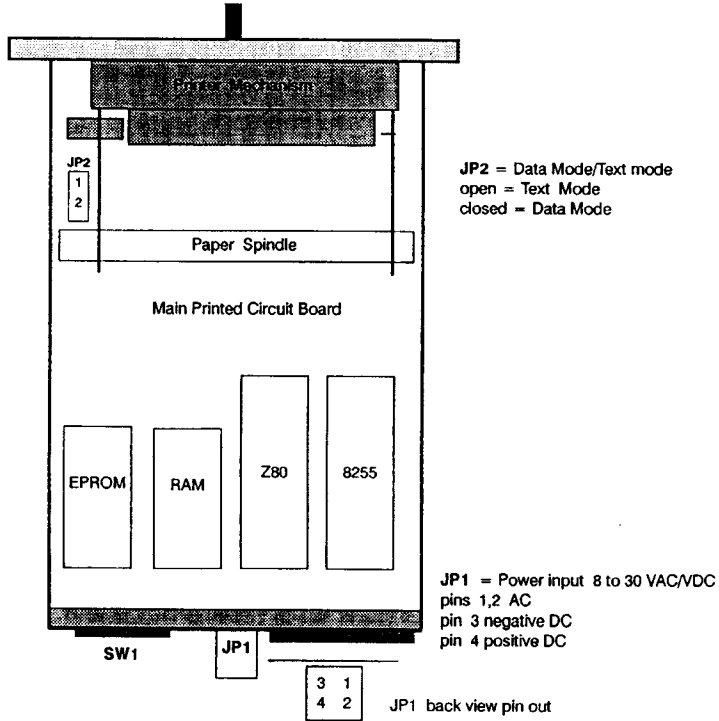
JP6 = Auto Time/Date after carriage return
Open = Disable Closed = Enable

JP4 = Auto Time/Date after carriage return
Open = Disable Closed = Enable

F1 = 2 amp fuse (located on serial and parallel interface boards)



4.3.2 Main Board Jumper Designations



4.4 Flow Control

The RD4220 printers employ a 7K byte data buffer as a standard feature to allow the host computer to rapidly transfer data. Under some circumstances it may be possible to completely fill the 7K buffer. When the buffer is within 50 bytes of being full, the RD4220 printers signal the host computer to pause until a line of data is printed, or until the buffer is under the 50 byte limit. The flow control information is sent to the host using hardware and software protocols.

The hardware protocol uses the BUSY line of the parallel interface and the $\overline{\text{BUSY}}$ line of the serial interface. These pins are asserted or negated as necessary to turn off and turn on the flow of data. The software protocol uses the XON and XOFF ASCII characters (^Q and ^S) which are sent back to the host to start and stop the data stream. Some host systems may not support one or both of these protocols.

SECTION 5 PROGRAMMING INFORMATION

5.1 General

The RD4220 printers have several different operation modes. Standard printers can print text and dot addressable graphics.

5.2 Printable Characters

When the RD4220 printers are initially powered up and placed on-line, their default mode is to process incoming data as ASCII text characters and print them out in the normal font. The standard *printable character set* is listed below.

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
32	20	SP	56	38	8	80	50	P	104	68	h
33	21	!	57	39	9	81	51	Q	105	69	i
34	22	"	58	3A	:	82	52	R	106	6A	j
35	23	#	59	3B	;	83	53	S	107	6B	k
36	24	\$	60	3C	<	84	54	T	108	6C	l
37	25	%	61	3D	=	85	55	U	109	6D	m
38	26	&	62	3E	>	86	56	V	110	6E	n
39	27	'	63	3F	?	87	57	W	111	6F	o
40	28	(	64	40	@	88	58	X	112	70	p
41	29	)	65	41	A	89	59	Y	113	71	q
42	2A	*	66	42	B	90	5A	Z	114	72	r
43	2B	+	67	43	C	91	5B	[	115	73	s
44	2C	,	68	44	D	92	5C	\	116	74	t
45	2D	-	69	45	E	93	5D	]	117	75	u
46	2E	.	70	46	F	94	5E	^	118	76	v
47	2F	/	71	47	G	95	5F	_	119	77	w
48	30	0	72	48	H	96	60	`	120	78	x
49	31	1	73	49	I	97	61	a	121	79	y
50	32	2	74	4A	J	98	62	b	122	7A	z
51	33	3	75	4B	K	99	63	c	123	7B	{
52	34	4	76	4C	L	100	64	d	124	7C	|
53	35	5	77	4D	M	101	65	e	125	7D	}
54	36	6	78	4E	N	102	66	f	126	7E	~
55	37	7	79	4F	O	103	67	g	127	7F	DEL

5.3 Graphics Mode

The printers can be special ordered to print dot-addressable graphics. The host computer controls each dot printed and each dot directly corresponds to one bit of a graphics data byte.

The following sequence must be sent to the printer at the beginning of each line of graphics.

ESC + "S" + n₁ + n₂ + n₃ + n₄ 256 Dots/Line Maximum

The sequence ESC + "S" enables the graphics mode. The length of the bit image data is declared by the digits n₁,n₂,n₃,n₄. The printer will return to the character mode once the number of graphics characters has been printed. Graphics data sent after the maximum number of columns has been reached will be truncated.

An example of graphics where 192 bytes of bit image data are input are as follows:

1BH, 53H, 30H, 31H, 39H, 32H, = ESC + "S" + 0 + 1 + 9 + 2

The relation between graphic data and the printer dot head is as follows:

PRINT HEAD	GRAPHIC DATA
1 (TOP)	D0 (LSB)
2	D1
3	D2
4	D3
5	D4
6	D5
7	D6
8 (BOTTOM)	D7 (MSB on Graphics models only!)

5.4 Text Mode /Data Mode

The RD4220 printers can print in either Text mode or Data mode. To print in Data mode shut off printer and jumper pins 1 & 2 of header P1 on the main board. The printer will remain in this print mode until the jumper P1 is removed. The difference between Text Mode printing and Data Mode printing is that Text Mode print is upside down and right to left when exiting the printer, Data Mode is right side up and left to right when exiting the printer. See Jumper Designations Diagram in section 4.3 for a visual aid on jumper placement.

5.5 Real Time Clock (RD4220E Only)

The RD4220E printer is capable of printing the time and date on command with the installation of the Real Time Clock Option. To display the time that is currently set, the printer must receive the control code **05 decimal (05) hex**. To set the time to a new value the printer must receive the escape sequence **ESC,t** and the new parameters in the following format; **hh:mmA** (hours:minutes **A** for am, **P** for pm., ex. 12:22P. To display the date that is currently set, the printer must receive the control code **06 decimal (06)**. To change the value of the date that is currently set, the printer must receive the escape sequence **ESC,d** and the new parameters in the following format; **mm-dd-yy** (month-day-year), ex. 01-27-90.

5.6 Auto Time & Date

The Auto Time & Date feature can only be used in conjunction with the Real Time Clock. This feature allows the time and date to be printed automatically after the printer has received a carriage return. To enable this feature, jumper pins 1 & 2 of header JP6 on the serial interface board, or pins 1 & 2 of header JP4 on the parallel interface board, (*back board*). See Jumper Designations Diagram in section 4.3 for a visual aid on jumper placement.

5.7 Non-Volatile Message (RD4220E Only)

To *program in* a message you must send the escape sequence **ESC + "M" + data + ETX**.

ESC + "M" + your message of up to 255 bytes(characters) + 03 Hex (ETX)

An example of the programming in *BASIC* would be:

```
10 LPRINT CHR$(27) + "M" + CUSTOM MESSAGE + CHR$(3)
```

To *print out* the custom message you must send the escape sequence **ESC + "m"**:

An example of the programming in *BASIC* would be:

```
10 LPRINT CHR$(27) + "m" (The printer will print out CUSTOM MESSAGE)
```

5.8 International Character Sets

International Character Sets are available for the RD4220 series printers. Standard printers are initialized with the U.S.A. character set. Once a set has been changed to another the printer will stay in that character set until another set is chosen, or the printer is powered down. To change the international character the printer must receive the following ESC sequence: ESC + "R" + n (n = 0-6). See the list below for the n character set designations.

n	NATION	n	NATION
0	JAPAN	4	SWEDEN
1	FRANCE	5	ITALY
2	GERMANY	6	U. S. A.
3	U. K.	7	CUSTOM

5.9 Control Codes and Escape Sequences

CATEGORY	SYMBOL	DECIMAL (HEX)	FUNCTION
Control Codes	PRINT_T	05 (05)	* Display Time
	PRINT_D	06 (06)	* Display Date
Asterisk (*) Denotes Optional Codes	LF	10 (0A)	Single Line Feed
	CR	13 (0D)	Carriage Return (print buffer)
	SO	14 (0E)	Double Width Print On
	SI	15 (0F)	Double Width Print Off
	RESET	24 (18)	Clears all Data from Print Buffer
	ESC	27 (1B)	Escape
ESC Sequences	ESC,R	82 (52)	Change International Character Set
	ESC,S	83 (53)	* Enables Bit Image Graphics
	ESC,d	100 (64)	* Set Date Format mm-dd-yy
	ESC,t	116 (74)	* Set Time Format hh:mmA A for am mode P for pm mode
	ESC,M	77 (4D)	* Program Non-Volatile Message (RD4220E ONLY)
	ESC,m	109 (6D)	* Output Non-Volatile Message (RD4220E ONLY)

5.10 Test Program

This is a test program written in BASIC for the RD4220E printer. This program will test the standard control code and escape sequences executed by the RD4220E.

```
10 CLS
20 WIDTH LPRINT 255 :REM sets output line width
30 LPRINT CHR$(14)
40 LPRINT"OMEGA RD4220E" :REM double width print on
50 LPRINT"THERMAL PRINTER"
60 LPRINT CHR$(15) :REM double width print off
70 LPRINT"OMEGA"
80 LPRINT"ONE OMEGA DRIVE"
90 LPRINT"P.O. BOX 4047"
100 LPRINT"STAMFORD, CONNECTICUT 06907-0047"
110 LPRINT CHR$(10) :REM single line feed
120 LPRINT
130 LPRINT
140 LPRINT"THIS IS A GRAPHICS TEST"
150 LPRINT CHR$(27) + "S" + CHR$(48);CHR$(50);CHR$(50);CHR$(53); :REM length = 255
160 FOR X = 1 TO 255
170 LPRINT CHR$(255); :REM fires all dots
180 NEXT X
190 LPRINT
200 LPRINT
210 CLS
220 LPRINT"CLOCK TEST"
230 PRINT"PLEASE HAVE YOUR PRINTER TURNED ON TO SET THE TIME/DATE";CHR$(10)
240 FOR X = 500 TO 10000 STEP 300:SOUND X,2 :NEXT X
250 LPRINT CHR$(14);"CLOCK TEST"
260 LPRINT CHR$(15)
270 INPUT"DO YOU WISH TO CHANGE THE TIME? (Y/N) ";Y$:CLS
280 IF Y$ = "N" OR Y$ = "n" THEN GOTO 330
290 LPRINT"THE TIME CURRENTLY SET IS ";CHR$(5)
300 PRINT"ENTER TIME AS hh:mmA (hours:minutes A for am P for pm)"
310 INPUT A$
320 LPRINT CHR$(27) + "t";A$;"THE NEW TIME IS"
330 LPRINT CHR$(14);CHR$(5)
340 LPRINT CHR$(15)
350 INPUT"DO YOU WISH TO CHANGE THE DATE? (Y/N) ";Y$:CLS
360 IF Y$ = "N" OR Y$ = "n" THEN GOTO 410
370 LPRINT"THE DATE CURRENTLY SET IS";CHR$(6)
380 PRINT"ENTER THE DATE IN THE FOLLOWING FORMAT mm-dd-yy (month-day-year)"
390 INPUT A$
400 LPRINT CHR$(27) + "d";A$;"THE NEW DATE IS"
410 LPRINT CHR$(14);CHR$(6)
420 LPRINT CHR$(15)
430 END
```


SECTION 6 MAINTENANCE

6.1 Introduction

The RD4220 printers are designed to require a minimum of maintenance and service. This section provides instructions for cleaning and maintenance. Electrical and mechanical repairs should be performed by *qualified personnel only*. Make certain that all *electrical connections are disconnected before any service is performed on the RD4220 printers*.

6.2 Required Tools and Supplies

1. Common hand tools
2. Volt-Ohm meter
3. Denatured alcohol
4. Cleaning rags
5. Cotton swabs
6. Silicone based lubricant

6.3 Cleaning

The RD4220 exterior cabinet may be cleaned with a non-abrasive cleanser. Care should be taken to prevent liquids from entering inside the mechanical assembly. If in a dirty environment the mechanism may be removed and the parts may be cleaned with alcohol and a cotton swab. The mechanism may also be "blown out" with compressed air. Do not direct air flow to printer platen, this may remove the soft rubber printing surface from the platen. When the mechanism is clean and free of dirt, a light silicone lubricant may be applied (lightly) to the moving mechanical components.

6.4 Maintenance Chart

CLEAN OFFICE OR LIGHT USE	ONCE PER YEAR
CLEAN FACTORY TYPE ENVIRONMENT MEDIUM USE	MONTHLY
DIRTY FACTORY TYPE ENVIRONMENT HEAVY USE	WEEKLY

SECTION 7 SPECIFICATIONS

SPECIFICATIONS	Standard	Graphics
Performance	RD4220	RD4220E
Max. Print Rate	0.6 Lines/second	0.6 Lines/second
Line Density	6 Lines/inch	8 Lines/inch
Print Head Life	500,000 character lines	
Buffer Size	7000 characters	
General		
Number of Columns	40	40
Font	5x7 Dot matrix, (96 characters)	8x6 Dot matrix, (96 characters)
Print Modes	Data or Text	
Dot Diameter	0.014" (0.35mm)	
Dot Spacing	0.014" (0.35 mm) vertical, 0.010" (0.25 mm) horizontal	
Line Spacing	0.060" (1.5 mm)	0
Paper Width Roll Stock 80ft/roll	3.125" (79.4 mm)	3.125" (79.4 mm)
Temperature Range	Operating: 32° to 122° F (0° to 50° C) Non-operating: -13° to 185° F (-25° to 85° C) 90% max. RH (non condensing) Low Temp. ICs available.	
Power	8 to 30 VAC or VDC/110 VAC (220 VAC optional) 2.5 watts standby, 12 watts printing Fuse = 2 amp SUBMINIATURE PICO II [®] Littelfuse [®] part # 251002	
Interface		
Serial/Parallel	RS-232, RS-485, 20 mA serial/8 bit Centronics type parallel optional	
Mechanical		
Dimensions	2.70" H x 4.45" W x 5.70" D (68.60 x 114.30 x 144.80 mm)	
Weight	2.25 lb (1.02 kg)	

