

CITIZEN

User's Manual

MINI DOT MATRIX PRINTER

MODEL **iDP-3110**

Japan CBM Corporation  
Information Systems Div.

1995.09.04(10-DCL)8

## Declaration of Conformity

Manufacturer's Name : Japan CBM Corporation  
 Manufacturer's Address : 1-1-7, Okubo, Shinjuku-ku, Tokyo  
 169, Japan

### Declare the Product

Product Name Dot Matrix Printer  
 Model Number (s) iDP-3110 Series  
 (iDP3110R, iDP3110P)  
 (S.NO.95X0001 - )

### Conform to the following Standards

LVD	: EN60950	:1992+A1+A2:1993
EMC	: EN55022	:1994 Class B
	: EN60555-2	:1987
	: EN50082-1	:1992
	: IEC801-2	:1991 4KV CD, 8KV AD
	: IEC801-3	:1984 3V/m, 27MHz-500MHz
	: IEC801-4	:1988 0.5KV Signal Line 1KV AC mains

### Supplementary Information

"The product complies with the requirements of the Low Voltage Directive 73/23/EEC, 93/68/EEC and the EMC Directive 89/336EEC, 92/31/EEC, 93/68EEC"

Place Tokyo, Japan

Signature

Date Sept.1995



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### Warning

This is a Class A products. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

This declaration is applied only for 230V model.

## IMPORTANT SAFETY INSTRUCTIONS

- \* Read all of these instructions and save them for later reference.
- \* Follow all warnings and instructions marked on the product.
- \* Unplug this product from the wall outlet before cleaning. Do not use liquid or aerosol cleaners.  
Use a damp cloth for cleaning.
- \* Do not use this product near water.
- \* Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.
- \* Slots and openings on the cabinet and the back or bottom are provided for ventilation.  
To ensure reliable operation of the product and to protect it from overheating, do not block or cover these openings. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface.  
This product should never be placed near or over a radiator or heat register.  
This product should not be placed in a built-in installation unless proper ventilation is provided.
- \* This product should be operated from the type of power source indicated on the marking label.  
If you're not sure of the type of power available, consult your dealer or local power company.
- \* Do not allow anything to rest on the power cord. Do not locate this product where the cord will be walked on.
- \* If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord ampere rating.  
Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
- \* Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.
- \* Except as explained elsewhere in this manual, don't attempt to service this product yourself.  
Opening and removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing on those compartments to service personnel.
- \* Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
  - A. When the power cord or plug is damaged or frayed
  - B. If liquid has been spilled into the product.
  - C. If the product has been exposed to rain or water.
  - D. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
  - E. If the product has been dropped the cabinet has been damaged.
  - F. If the product exhibits a distinct change in performance, indicating a need for service.

**IMPORTANT:** This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when 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.

**CAUTION:** Use shielded cable for this equipment.

For Uses in Canada

This digital apparatus does not exceed the class A limits for radio noise emissions from digital, apparatus, as set out in the radio interface regulations of the Canadian department of communications.

## CONTENTS

1. INTRODUCTION .....	6
1.1 Features .....	6
1.2 Accessories .....	6
2. TYPE CLASSIFICATIONS .....	7
2.1 Type .....	7
2.2 AC adapter .....	7
2.3 Specifications .....	8
3. EXTERNAL APPEARANCE AND PART DESCRIPTION .....	9
3.1 External Appearance .....	9
3.2 Part Descriptions .....	10
4. OPERATIONS .....	11
4.1 Connection of the AC Adapter .....	11
4.2 Inserting the Printer Cover .....	12
4.3 Inserting Ribbon Cassettes .....	13
4.4 Inserting Paper .....	14
4.5 Self Test Printing .....	15
4.6 General Notices .....	15
5. PARALLEL INTERFACE .....	16
5.1 Specifications .....	16
5.2 Connector Pin Assignment .....	16
5.3 Description of Input / Output Signals .....	17
6. SERIAL INTERFACE .....	19
6.1 Specifications .....	19
6.2 Connector Pin Assignment .....	20
6.3 Description of Input / Output Signal .....	20
7. DIP SWITCH SETTING .....	23
7.1 Serial Interface Type .....	23
7.2 Parallel Interface Type .....	23
8. PRINT CONTROL FUNCTION .....	24
8.1 Control Command .....	24
9. CHARACTER SET .....	31
9.1 Character code .....	31
10. EXTERNAL DIMENSIONS .....	34

## 1. INTRODUCTION

The iDP 3110 is a dot-impact printer suitable for use with various data communication terminals, and measurement terminals.

This product is extremely compact and features extensive functions suited for a wide range of applications. Please read this manual thoroughly to understand the printer before use.

### 1.1 Features

1. Compact desk-top dot matrix printer
2. Light weight
3. High speed printing
4. Low power consumption

### 1.2 Accessories

The following attachments are included in this set aside from the printer itself. Please confirm.

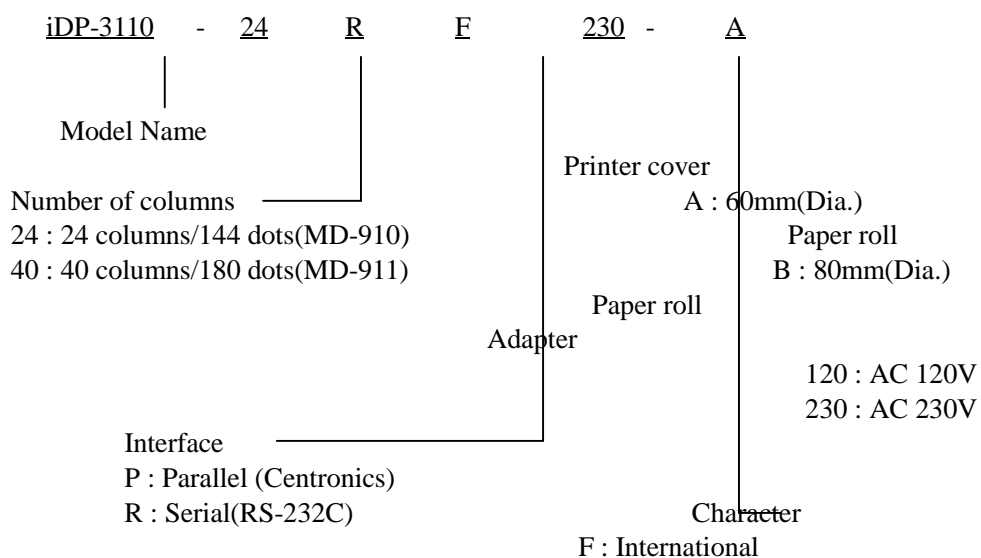
Paper roll	(1 roll)
Ribbon cassette	(1 unit)
AC adapter	(1 unit)
User's manual	(1 booklet)

## 2. TYPE CLASSIFICATIONS

### 2.1 Type

The product is categorized according to the naming plan indicated below.

iDP-3110	24	P	F	120	A
	40	R		230	B



### 2.2 AC adapter

Please use the exclusive adapter indicated below.

90AD-U (AC 120V)

90AD-E (AC 220-240V)

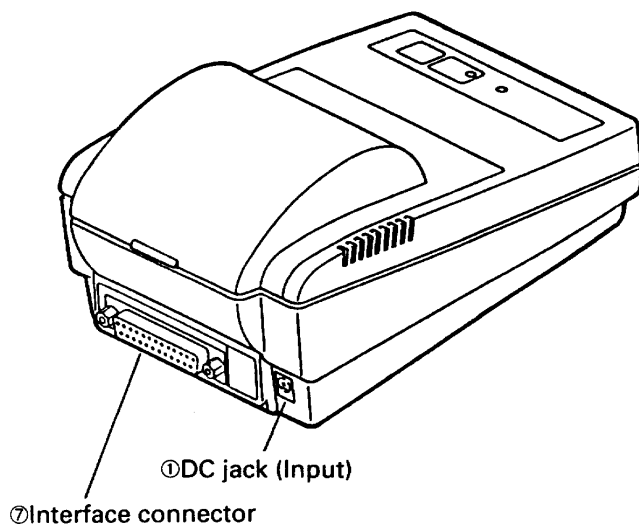
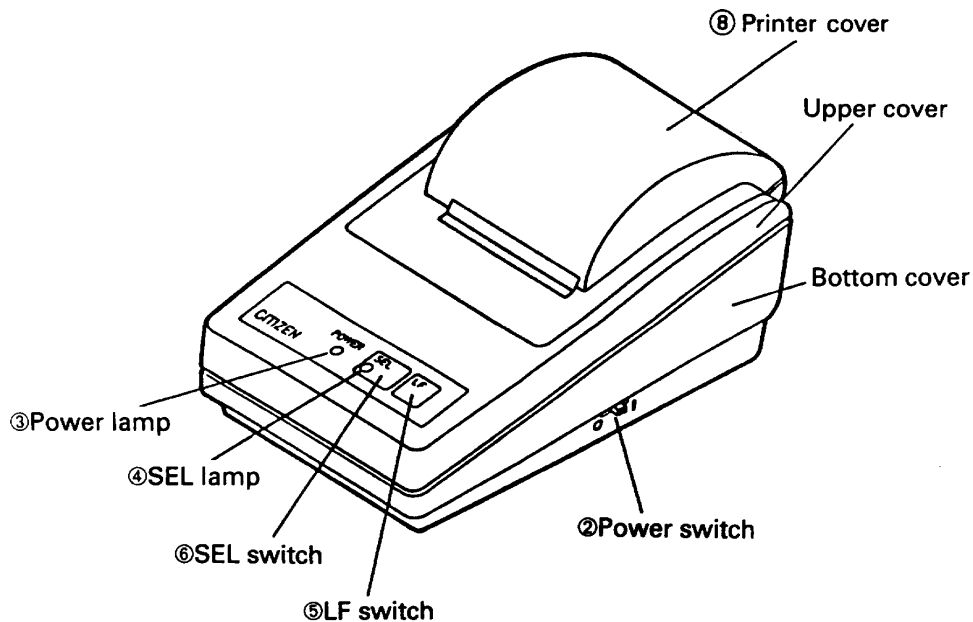
## 2.3 Specifications

Item		iDP3110-24*	iDP3110-40*
1	Printing method	Dot matrix	
2	Printing direction	One-way printing	
3	Character configuration (W × H)	(5 + 1) × 8	(4 + 0.5) × 8
4	Number of columns per line	24 columns: 144 dot/line	40 columns: 180 dot/line
5	Printing speed	Approx. 2.5 line/sec.	Approx. 1.8 lines/sec.
6	Character size (W × H)	1.62 × 2.4 mm	1.08 × 2.4 mm
7	Line pitch	3.52 mm	
8	Paper	Paper Roll 57.5 ± 0.5(W) × 60 (Dia) mm 57.5 ± 0.5(W) × 80 (Dia) mm	
9	Interface	Parallel Interface (Conformity to Centronics) or Serial Interface (RS-232C)	
10	Ribbon cassette	Exclusive ribbon cassette Purple print : IR-91P Black print : IR-91B (Option)	
11	Voltage	DC 7V ± 1V (Printing) Use exclusive adapter (DC 7V, 1.2A)	
12	Power consumption	Printing : approx. 7VA Stand-by : approx. 0.5VA	
13	Weight	Approx. 400g	
14	Dimension	106(W) × 180(D) × 88(H) mm(60mm Dia. paper Roll) 106(W) × 180(D) × 106(H) mm(80mm Dia. paper Roll)	
15	Operating temp.	0°C to 40°C	
16	Storage temp	-20°C to 60°C	



### 3. EXTERNAL APPEARANCE AND PART DESCRIPTION

#### 3.1 External Appearance



### 3.2 Part Descriptions

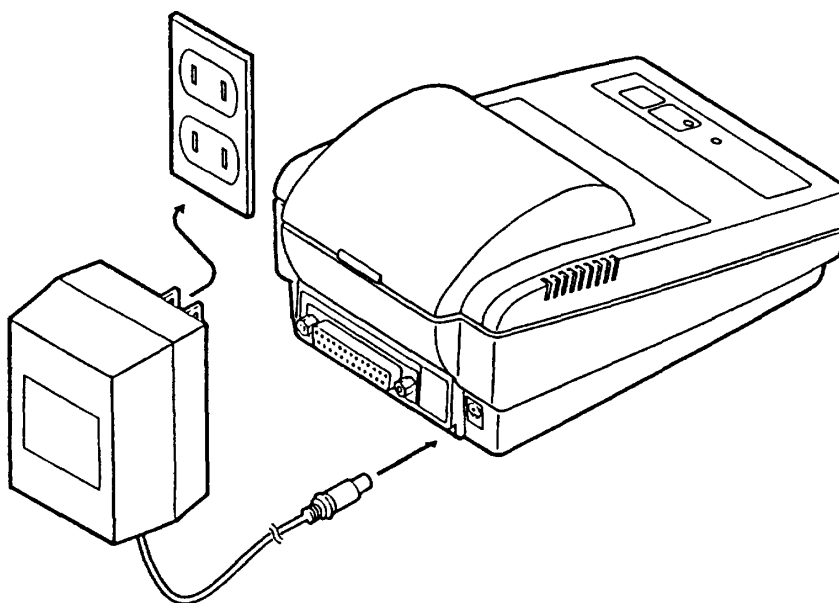
1. DC Jack  
Insert the output plug of the AC adapter attached.
2. Power Switch  
When switched ON, power is supplied to the printer, starting the initializing operation.
3. Power Lamp  
Lighted when power is turned ON and goes out when turned OFF.
4. SEL Lamp  
Lighted when printer is in the selected condition (ON-LINE).  
Printer becomes operational only when this lamp is on.
5. LF Switch  
Paper is fed when switch is pressed (de-select condition only).  
Used to supply paper or to insert some space in the output.
6. SEL Switch  
Printer is selected (ON-LINE) by pressing this switch.  
Printer is de-selected (OFF-LINE) by pressing the switch again.
7. Interface Connector  
Printer is connected to various hosts via cables.  
Please ensure that both the printer and the host are turned off before connecting.
8. Printer Cover  
Opened to exchange ribbon cassette and paper roll.

## 4. OPERATIONS

### 4.1 Inserting the AC Adapter

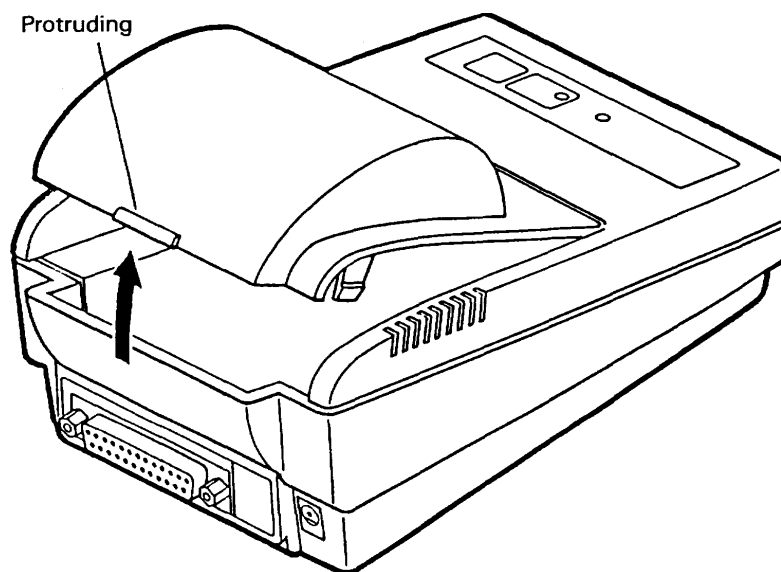
- (1) Ensure that the power switch is OFF.
- (2) Insert the output plug of the AC adapter into the DC jack of the printer.
- (3) Insert the power plug of the AC adapter into a power outlet supplying the designated voltage.

(Use of exclusive AC adapter is recommended. Output is DC 7V , 1.2A. Avoid using power sources not conforming to this specification.)



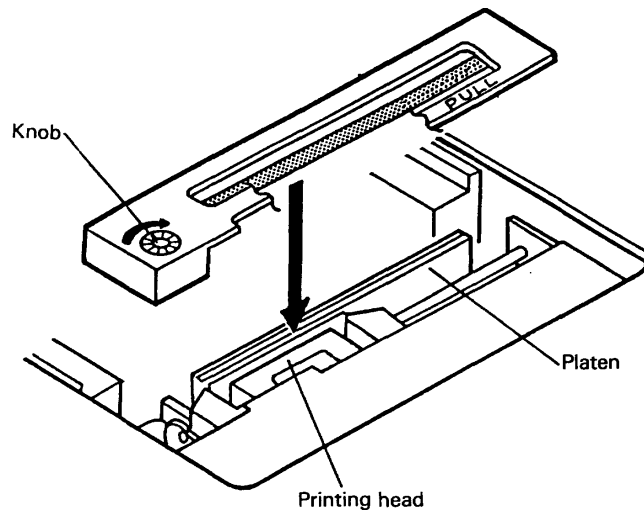
## 4.2 Inserting the Printer Cover

- (1) Hold the protruding section at the rear of the printer cover and lift in the direction indicated.
- (2) Attach the cover by pressing downward after hooking the cover to the acceptor located in the front part.



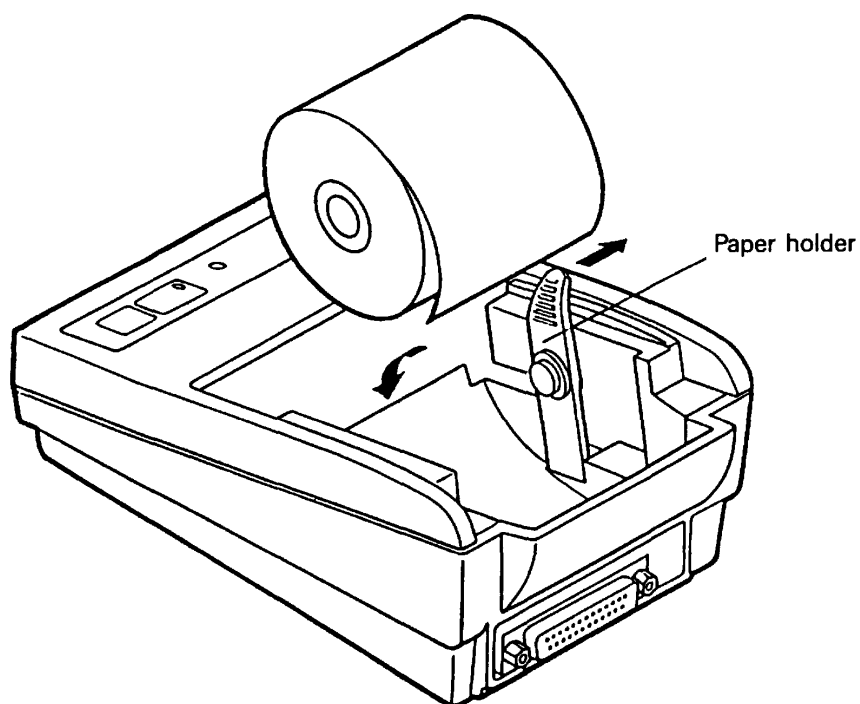
### 4.3 Inserting Ribbon Cassettes

- (1) Turn the printer off and remove the printer cover.
- (2) Press down on the Ribbon cassette while inserting the ribbon between the printing head and the platen.
- (3) Wind up the ribbon slack by turning the knob in the direction of the arrow.



#### 4.4 Inserting Paper

- (1) Remove the printer cover.
- (2) Ensure that the end of the paper is straight as indicated in the diagram.
- (3) Insert the end of the paper into the slot of the printer mechanism.
- (4) After turning ON the printer, press the LF switch until 5 to 6 cm of paper is fed out of the printer mechanism.
- (5) Insert paper after moving aside the paper holder in the direction of the arrow. Then, secure the center of the roll with the holder.
- (6) Then, attach the printer cover so the end of the paper comes out of the opening in the cover.



#### 4.5 Self Test Printing

A self-printing function is incorporated in this product to enable the printer to check itself.

This function is triggered by the following procedure.

- (1) Insert paper into the printer.
- (2) Ensure that the ribbon cassette is attached correctly and turn the power OFF.
- (3) Turn ON the power switch while holding the LF switch down. Release the LF switch after the self-printing operation has started.

Printing is initiated by this operation. To end self-printing, turn OFF the printer.

#### 4.6 General Notices

- (1) Never operate your printer without loading paper and ribbon cassette. Any printing without paper and ribbon cassette may cause damage to printer head.
- (2) Replace ribbon cassette before it is worn out.
- (3) Be careful not to drop any foreign matters, such as paper clips and pins into your printer. These can cause mechanical trouble.
- (4) Do not block the ventilation slots to the printer.
- (5) Always place your printer on a flat stable desk.
- (6) No organic solvent (thinner, benzine) shall be used in cleaning the surface of the main body case.
- (7) Make sure that the power of the printer is turned off whenever you do the following.
  - 1) Taking out any foreign matter which was dropped into the printer.
  - 2) Replacing the ribbon cassette.

## 5. PARALLEL INTERFACE

### 5.1 Specifications

- a) Data input system : 8 bit parallel (DAT 1-8)
- b) Control signal : ACK, BUSY, STB, RESET, SELECT
- c) Compatible Connector : Printer side : 57LE-40360  
 (AMPHENOL or equivalent)  
 : Cable side : 57-30360  
 (AMPHENOL or equivalent)

### 5.2 Connector Pin Assignment

PIN	SIGNAL NAME	PIN	SIGNAL NAME
1	STB	19	TWISTED PAIR GND
2	DATA 1	20	"
3	" 2	21	"
4	" 3	22	"
5	" 4	23	"
6	" 5	24	"
7	" 6	25	"
8	" 7	26	"
9	" 8	27	"
10	ACK	28	"
11	BUSY	29	"
12		30	GND
13	SELECT	31	RESET
14	GND	32	
15		33	GND
16	GND	34	
17	FRAME GND	35	
18		36	

The diagram shows a 36-pin connector with two rows of 18 pins each. The top row is numbered 19 to 36 from left to right. The bottom row is numbered 1 to 18 from left to right. Each pin is represented by a small circle.



### 5.3 Description of Input / Output Signals

#### (1) Input signal

All input signals utilize type 74HC of CMOS and can be used in TTL level as the input is pulled up with 3.3 k $\Omega$  resistance.

- DATA                8 bit parallel signal (positive logic)
- STB                 Strobe signal for reading out data (negative logic)
- RESET              Signal for resetting the entire unit (negative logic 4ms or more)

#### (2) Output signal

TTL is utilized for all output signals. The output is pulled up with 3.3k $\Omega$  resistance.

- ACK                 Signal for requesting data. ACK is issued at the end of the BUSY signal (negative logic)
- BUSY                Signal indicating the printer is busy. Input new data when the signal is in "LOW" condition.(positive logic)
- SELECT             Signal indicating the printer is set to a selected condition (on-line). "HIGH" state indicates the printer is selected.

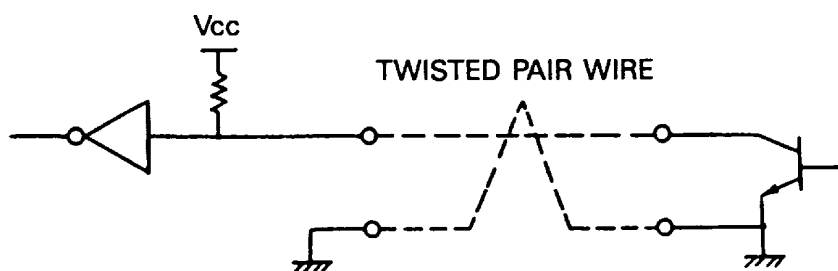
#### (3) Others

- GND                The common circuit ground.
- FG                 Equivalent to "case ground".

#### • Input

[ Printer side ]

[ Host side ]

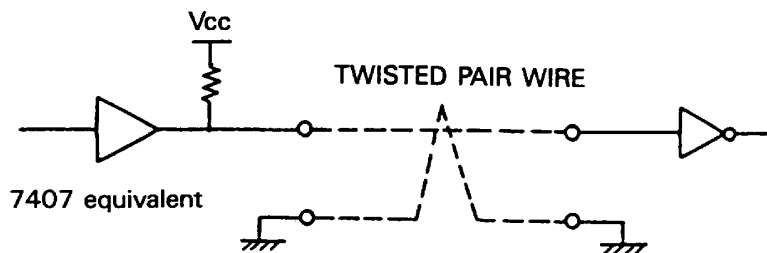


- DATA :                74HC373 equivalent
- STB :                74HC14 equivalent
- RESET :              74HC04 equivalent

• Output

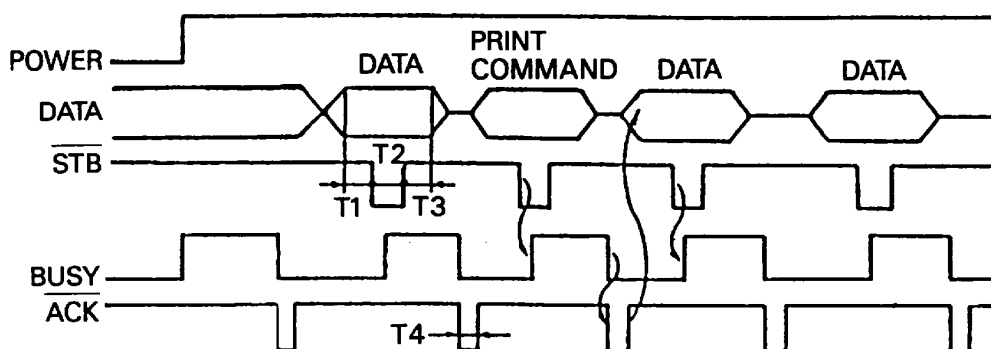
[ Printer side ]

[ Host side ]



(4) Timing chart

1) Timing for data entry and printing



T1	0.5 $\mu$ s MIN
T2, T3	1 $\mu$ s MIN
T4	2 $\mu$ s TYPE

5) Data receiving

Printer is capable of accepting data from the host while the BUSY signal is in the "LOW" state. Printer cannot accept data when the signal is "HIGH".

## 6. SERIAL INTERFACE

### 6.1 Specifications

- 1) Synchronization : Asynchronous
- 2) Baud rate : User selection, 4,800; 9,600 Baud / sec
- 3) Word configuration : Start bit 1 bit  
: Data bit 8 bit  
: Stop bit More than 1 bit

#### 4) Signal polarity

##### RS-232C

- \* Mark = Logic "1" (-3 to -12V)
- \* Space = Logic "0" (+3 to +12V)
- TTL(RESET)
- \* H level = Logic "1" (refer to (3), section 6.3)
- \* L level = Logic "0"

#### 5) Input control (DTR signal)

- \* Mark : Data transmission not possible
- \* Space : Data transmission possible

## 6.2 Connector Pin Assignment

SIGNAL PIN	SIGNAL NAME	SIGNAL DIRECTION HOST-PRINTER	FUNCTION	RS232C	TTL
1	FG		Frame ground	O	
7	GND		Signal ground	O	
3	RD	→	Received data	O	
20	DTR	←	Printer BUSY signal	O	
23	RESET	→	Printer reset signal		O

Note : 1. Signals for RS-232C are based on EIA RS-232C level.

Applicable connector (D-Sub connector)

Printer : 17LE-13250 (Anphenol equivalent)

Cable : 17JE-23250 (Anphenol equivalent)

## 6.3 Description of Input / Output Signal

### (1) I / O signals

#### 1) RD

Serial input data signal. Data is ignored when framing error, overrun error, or parity error has occurred.

#### 2) DTR

Input command or data while this signal is in ready state. Data input while the signal is BUSY will cause an overrun error to occur and the data will be ignored. Data can be provided to the input buffer even if the printer is printing.

Busy state may also occur when power is applied, or during test printing, on-line, or when the printer is reset.

## 3) RESET

Signal resets the entire printer. (More than 4ms.)

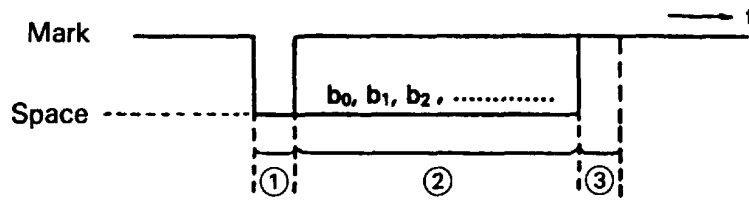
## 4) FG

Frame ground

## 5) GND

Common ground for the circuit.

## (2) Data configuration

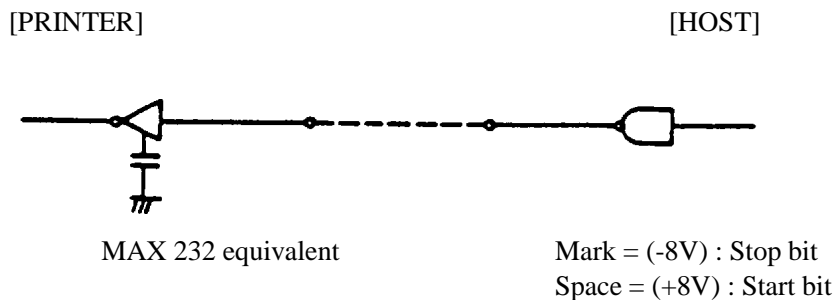


- (1) Start bit (1 bit)
- (2) Data bit (8 bit)
- (3) Stop bit (more than 1)

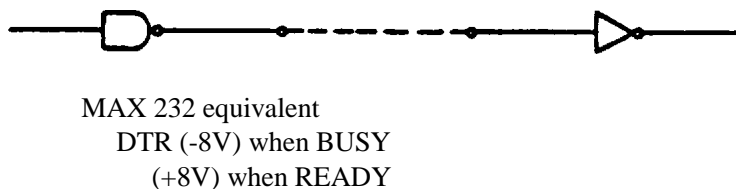
(4) Electrical characteristics

1) RS-232C circuit

Input (RD)

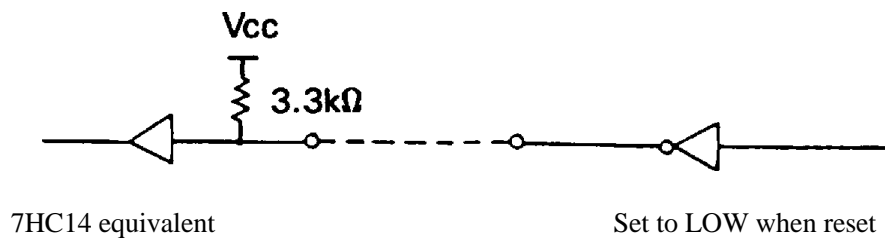


Output (DTR)



2) TTL circuit

Input (RESET)



## 7. DIP SWITCH SETTING

### 7.1 Serial Interface Type

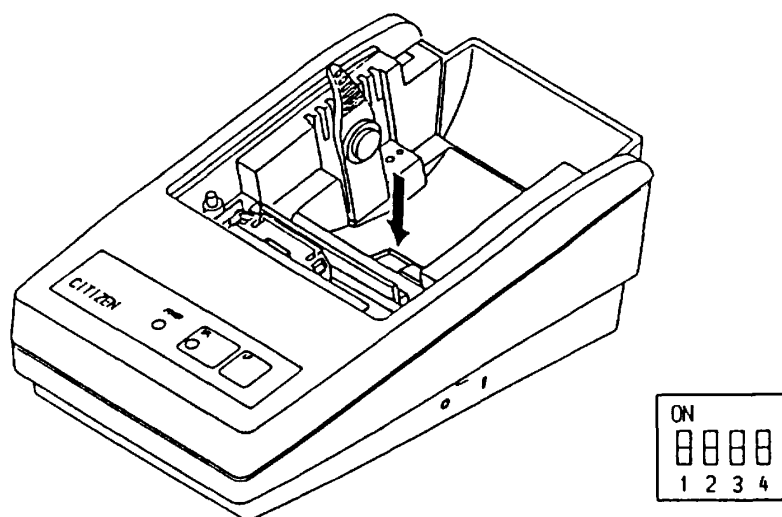
Switch NO.	Functions	OFF	ON	Shipping Setting
1	Character direction selection	Normal character	Inverted character	OFF
2	Baud rate selection	9600 BPS	4800 BPS	ON
3,4	Not used			OFF

### 7.2 Parallel Interface Type

Switch NO.	Function	OFF	ON	Shipping Setting
1	Character direction selection	Normal Character	Inverted character	OFF
2	Print command selection	CR	LF	OFF
3, 4	Not used			OFF

#### Dip switch position

The Arrow mark in the figure below indicates the location of the dip switch with the printer cover removed. Turn the printer OFF before changing the dip switch settings.



## 8. PRINT CONTROL FUNCTION

### 8.1 Control Command

#### 1) Print command (CR or LF)

If parallel interface is used, select code CR (0DH) or LF (0AH) on the DIP switch 2.

If the selected code (CR or LF) is input, the data in the print buffer is printed and line feed is performed.

When the serial interface is used, only the CR code becomes effective.

When graphic (mosaic) printing is performed, line feed is not performed by the print command, and graphic (mosaic) printing is allowed on the next line.

#### 2) Input data cancel command (CAN)

By entering the CAN (18H) code, all data entered prior to the entry of the code on a same line is canceled.

#### 3) Enlarged character printing (SO)

By entering the SO (0EH) code on a specific digit, data entered there-after is output as enlarged characters.

The function is cleared by entering the print code (CR or LF) or DC4 (14H).

The number of printable columns per line for an entire line of enlarged characters are indicated in the table below.

Model	Number of columns
iDP3110-24*	12 columns
iDP3110-40*	20 columns



#### 4) Power down function

In order to reduce power consumption when printer is waiting for the operation, 2 power down modes triggered by the codes DC2 and DC3 are incorporated into this product. When the printer receives power down commands (DC2 or DC3), it switches to the power down mode after all entered data is printed out.

##### a) DC2 (12H)

Unit switches to power down mode when DC2 code is entered. Operation of the oscillator is not terminated.

[Power down release]

##### (a-1) Reset input

By applying "LOW" pulse to the RESET terminal for more than 4ms, the power down mode is cleared, thereby switching the unit to operational condition approximately 100ms after initialization.

##### b) DC3 (13H)

Unit switches to power down mode when DC3 code is entered.

Operation of the oscillator is terminated, reducing the power consumption to less than that of the DC2 power down mode.

[Power down release]

##### (b-1) Reset input

By applying "LOW" pulses to the RESET terminal for more than 4ms, the power down mode is cleared, thereby in HIGH-level switching the unit to operational condition approximately 100ms after initialization.

#### 5) Escape control command

By entering ESC (1BH) followed by an ASCII code, the control command indicated below are performed.

Symbol n after the ASCII code indicates an 8 bit binary number. The "+" symbol is used merely as a separator and is not to be entered.

## a) Line spacing setting command (ESC + A + n)

Dot line space setting is determined by entering the code ESC + A + n.

Initial setting is 2 dot line space. The n should be an even number in the range of  $0 \leq n \leq 255$ .

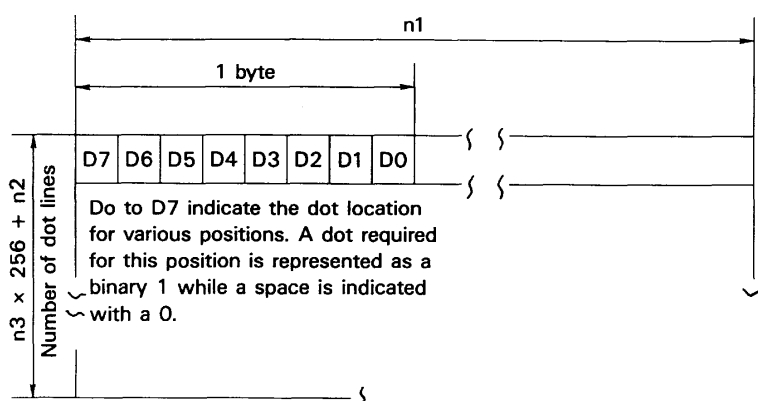
Note) If an odd number is entered, the dot line is set to "n-1".

Continuous printing is enabled by specifying  $n = 0$  or 1.

## b) Bit image printing (ESC + K + n1 + n2 + n3)

By entering ESC + K + n1 + n2 + n3, print mode is switched from the text mode to bit image mode. n1, n2, and n3 indicate the transmission volume of the bit image data to follow. That is, n1 indicates the horizontal byte while n2 and n3 signify the vertical dot lines.

(Relation between the data and printout)



(Range of parameter setting)

MODEL	n1	n2	ne
iDP3110-24*	1 to 18	0 to 255	0 to 1
iDP3110-40*	1 to 23	0 to 255	0 to 1

In case a number is beyond the specificable range is specified, and if  $n2 = n3 = 0$  is specified, the bit image mode is canceled and the printer returns to text mode.

As this printer prints out 4 dot lines as one unit, the lacking data is output as space once the data for 4 dot lines are read in or the output of data specified in n1, n2 and n3 has finished.

Note 1) If n1 = 23 is specified in iDP3110-40 specification, 4 dots from the topmost dot (MSC DOT) become invalid. This is due to the fact that the output position for a single line consists of 180 dots.

Note 2) Although the printer returns to text mode when bit image mode printout is completed, line spacing is set to 0 to enable further output in the bit image mode. Line feed is required in order to commence text mode output.

For bit image printing, inverted printing is not performed but normal printing, even if the DIP switch 1 is set to "ON".

c) International character setting (ESC + R + n)

By entering the code ESC + R + n, characters input hereafter are set to the characters for the following countries. Then n value and country setting is as indicated in the table below.

n	Country	n	Country
0	America	5	Sweden
1	France	6	Italy
2	Germany	7	Spain
3	England	8	Japan
4	Denmark		

n other than that specified becomes invalid and the setting prior to the invalid specification is employed. When the printer is turned on or RESET, the country is set to n = 0 (America).

## d) Character registration (ESC + &amp; + A1 + A2)

Individual patterns can be registered by entering the code ESC + & + A1 + A2, then entering the pattern data. A maximum of 8 characters can be registered, and any address in the range of 20H to FFH can be used for the registration. However, if a new pattern is registered in an address already in use, existing data is cleared and the newly entered data becomes valid. If more than 8 characters are registered, all existing character registration is cleared.

## [Address setting]

Specified address is matched to the character code and can be accessed likewise to the stored fixed character record. If a fixed character is defined in the specified address, the fixed character becomes invalid. A1 signifies the starting address for the registration and A2 is the ending address.

## [Method of data transmission]

## d-1) Single character registration

Select the address to be defined (character code) from among 20H to FFH and designate it as A1.

When registering a single character, starting and ending addresses match each other. That is, A1 = A2.

<Example>      A 6 × 8 dot matrix full dot pattern is to be registered in address 41H  
                     (code for the fixed character "A").  
                     (Numerals are hexadecimal.)

1B	•	26	•	41	•	41	•	FF	•	FF	•	FF	•	FF	•	FF	•	FF
↑		↑		↑		↑												
ESC	&	A1	A2	Pattern data (6 byte)														

In the successive controls, a 6 × 8 dot matrix full dot is output whenever the character code 41H is specified.  
 (Character "A" cannot be accessed.)

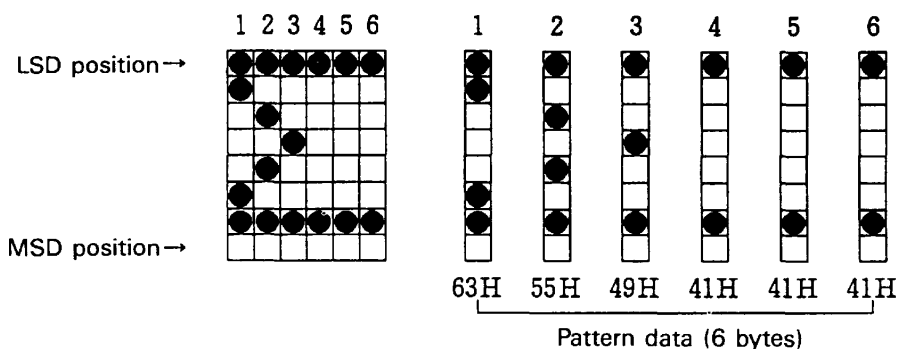
d-2) Multiple character registration

By repeating the single character registration, a maximum of 8 characters can be registered. When defining multiple characters in a successive address (character code), register pattern data for a maximum of 8 characters by designation A1 as the starting address and A2 as the ending address.

[Pattern data configuration]

d-3) In case of iDP3110-24\* (24 columns) specification  
 Pattern data to be registered must consist of 6 bytes per character. That is, pattern data configured by a 6 × 8 dot matrix is broken up into 6 vertically positioned units each of which is represented by 1 byte of data. All together, 6 bytes of data are transmitted.

<Example> When transmitting the following data,

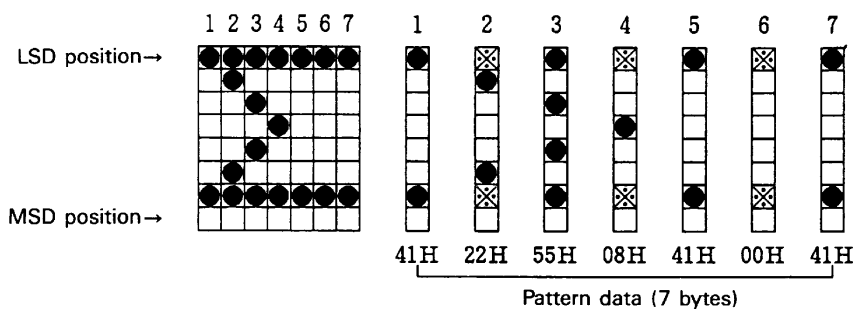


d-4) In case of iDP3110-40\* (40 columns) specification

Pattern data to be registered must consist of 7 bytes per character.

That is, pattern data configured by a  $7 \times 8$  dot matrix is broken up into 7 vertically positioned units each of which is represented by 1 byte of data. All together, 7 bytes of data are transmitted.

<Example> When transmitting the following data,



As the model utilizes the half-dot printing method, it is not capable of positioning successive dots in the printing direction (between print). Therefore, pattern specification in the position “\*” to the right of the position “●” in the diagram above will not be registered as pattern data.

e) Continuous paper feed command (ES + B + n)

By entering the code ESC + B + n, continuous paper feed operation is carried out for n dot lines.

The n should be an even number in the range of  $4 \leq n \leq 255$ . If an odd number is entered, the dot line is set to “n-1”. The command is canceled if a number exceeding this range is specified.

If printout data is stored within the input buffer when the command is entered, the printer commences with the printout. However, the print line (10 dot line) will be included in the line feed value “n”.

therefore, if  $4 \leq n \leq 9$  is specified, line space shall be set as “0”.

## 9. CHARACTER SET

### 9.1 Character code

(In the following Table \*1-\*12 are the characters of the next page by a command, ECS + R + n.)

HEXA-decimal	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0000	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
NUL	SP	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111		
DC2	DC3	DC4														
0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111			
0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111					
0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111						
0110	0111	1000	1001	1010	1011	1100	1101	1110	1111							
0111	1000	1001	1010	1011	1100	1101	1110	1111								
1000	1001	1010	1011	1100	1101	1110	1111									
1001	1010	1011	1100	1101	1110	1111										
1010	1011	1100	1101	1110	1111											
1011	1100	1101	1110	1111												
1100	1101	1110	1111													
1101	1110	1111														
1110	1111															
1111																

HEXA-Decimal	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	0000															
1	0001	NUL	SP	O	*3	P	*8	p	—	—	160	176	192	208	224	240
2	0010	1	!	1	A	Q	a	q	—	T	144	161	177	193	209	225
3	0011	2	"	2	B	R	b	r	—	†	146	162	178	194	210	226
4	0100	3	#	3	C	S	c	s	—	‡	147	163	179	195	211	227
5	0101	4	\$	4	D	T	d	t	—	—	148	164	180	196	212	228
6	0110	5	%	5	E	U	e	u	—	—	149	165	181	197	213	229
7	0111	6	&	6	F	V	f	v	—	—	150	166	182	198	214	230
8	1000	7	'	7	G	W	g	w	—	—	151	167	183	199	215	231
9	1001	8	(	8	H	X	h	x	—	—	152	168	184	200	216	232
A	1010	9	)	9	I	Y	i	y	—	—	153	169	185	201	217	233
B	1011	10	*	:	J	Z	j	z	—	—	154	170	186	202	218	234
C	1100	11	+	;	K	*4	k	*9	—	—	155	171	187	203	219	235
D	1101	12	,	<	L	*5	l	*10	—	—	156	172	188	204	220	236
E	1110	13	-	=	M	*6	m	*11	—	—	157	173	189	205	221	237
F	1111	14	.	>	N	*7	n	*12	—	—	158	174	190	206	222	238
		15	/	?	O	—	o	+	—	—	159	175	191	207	223	239



## Individual Country

## Character Codes

	CODE	U.S.A	France	Germany	U.K.	Denmark	Sweden	Italy	Spain
* 1	<b>23H</b>	#	#	#	£	#	#	#	Pt
* 2	<b>24H</b>	\$	\$	\$	\$	\$	¤	\$	\$
* 3	<b>40H</b>	@	à	§	@	@	É	@	@
* 4	<b>5BH</b>	[	°	Ä	[	Æ	Å	°	i
* 5	<b>5CH</b>	\	Ç	Ö	\	Ø	Ö	\	Ñ
* 6	<b>5DH</b>	]	§	Ü	]	À	À	é	í
* 7	<b>5EH</b>	^	^	^	^	^	Ü	^	^
* 8	<b>60H</b>	·	·	·	·	·	é	ù	·
* 9	<b>7BH</b>	{	è	ä	{	æ	ä	à	¨
* 10	<b>7CH</b>		ù	ö		ø	ö	ò	ñ
* 11	<b>7DH</b>	}	è	ü	}	á	á	è	}
* 12	<b>7EH</b>	~	¨	ß	~	~	ü	ì	~

10. EXTERNAL DIMENSIONS

