

**control board**  
**impact dot matrix printer**  
**Model CBS190G**

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## Specifications

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### Introduction

Model CBS190G is a Control Board for Model M190G Impact Dot Printer Mechanism. It has 768 characters buffer. The interface is RS-232C. Baud rate, parity & data length can be selected by DIP switch settings.

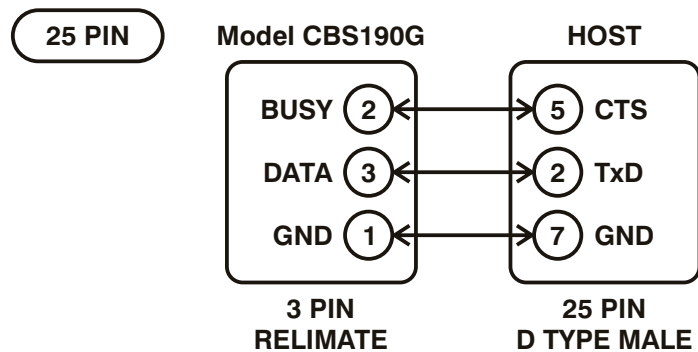
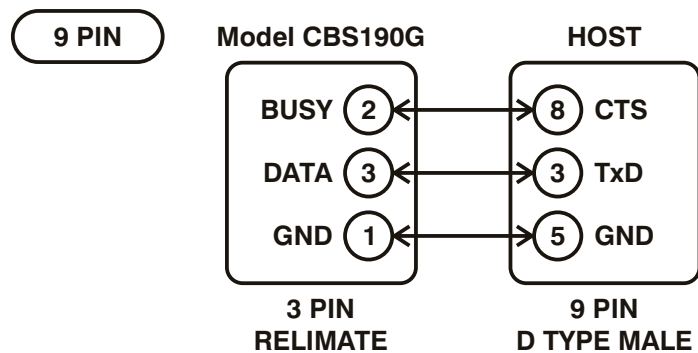
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### General Specifications

01. Size : 53(W) x 91(L) x 20(H) mm
02. Data Input : RS232C Serial
03. Data Buffer : 768 characters
04. Control Functions : Reset, Paper Feed and Self Test
05. Power Supply : i) +5VDC  
ii) 200mA when not printing & 1.5A (average) when printing, Peak current 3A.
06. Fonts : Normal, Double Width, Double Height & Quadruple Size.
07. Character Set : 96 Characters ASCII (As shown below) :  
a b c d e f g h i j k l m n o p q r s t u v w x y z  
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z  
& ' " , . : ; ? ! \ / \_ ( ) { } [ ] ^ \* |  
1 2 3 4 5 6 7 8 9 0 \$ £ - + = < > ° ` ~ @ # %
08. Graphics : Full Graphic capability. Each dot accessible.
09. No. of Columns : i) 24 in normal mode & double height mode.  
ii) 12 in double width and quadruple size mode.
10. Connectors : i) 20 pins berg strip for mechanism.  
ii) 2 pins relimate for power.  
iii) 3 pins relimate for data  
iv) 5 pins relimate for control signals.
11. Switches : One four way DIP Switch for baud rate, data length and parity selection.
12. Temperature : 0 to +50°C
13. Humidity : 0 to 90% RH (Non Condensing).

## Serial Data Transmission

01. Baud Rates : 1200, 2400, 4800, 9600(Default) BPS
02. Data Length : 7 or 8( Default) Bits.
03. Data Buffer : 768 Characters.
04. Parity setting : Present or Absent.
05. Handshaking Signals : The card gives out a BUSY signal. When the card is ready to accept a data byte, the BUSY line is at about +9 volts. When it is unable to accept any data, this line goes to about -9 volts.
06. Data Voltage : RS-232 Levels.
07. Serial Interface Connection : **9 PIN**



Note:

- 1) Short Together DCD, DTR and DSR on your host connector.
- 2) Transmit data to the Printer after turning on the power and initializing the printer.
- 3) In 9 PIN D TYPE MALE Connector, DCD, DTR, DSR have following pin Numbers :
  - i. DCD (1)
  - ii. DTR (4)
  - iii. DSR (6)
- 4) In 25 PIN D TYPE MALE Connector, DCD, DTR and DSR Pin Number as follows :
  - i. DCD (8)
  - ii. DTR (20)
  - iii. DSR (6)

## Baud Rate Selection

The card accepts data at 4 different baud rates, namely 1200, 2400, 4800 and 9600. These rates are selected by DIP Switches as follows. :

**Baud Rate Selection**

BPS	LINK 2	LINK 1
2400	LOW	LOW
4800	LOW	HIGH
9600	HIGH	LOW
19200	HIGH	HIGH

**Data Length Selection**

	LINK 3
HIGH	8 BITS DATA
LOW	7 BITS DATA

**Parity Selection**

	LINK 4
HIGH	PARITY PRESENT
LOW	PARITY PRESENT

## Optional Control Signals

The card accepts data at 4 different baud rates, namely 1200, 2400, 4800 and 9600. These rates are selected by DIP Switches as follows. :

**RESET**

The card has an automatic power-up reset circuit. When power is first applied, it produces a reset signal. The user can at any time apply a reset signal without removing power using this line.

**RESET**

This is used for feeding paper. It is normally high. If taken low, paper feeding motor starts and keeps running till this line is low. While paper feeding motor is running, BUSY is active.

**Note:** The FEED line is a direct input to the LSI and so voltage on this line must never exceed Vcc of the card. The load is 1LSTTL.

**RESET**

This is normally high. If taken low, a test pattern is printed. While test printing is going on, Busy is active.

**Note:** This line is a direct input to the LSI. Hence, voltage on this line must never exceed the Vcc of the card. The load is 1LSTTL.

### Control Codes

Various print styles and fonts can be selected by first sending the code for ESC (1B) followed by a special code word formulated as per following table.

Bit 0	0 for normal mode	1 for inverted mode
Bit 1	0 for characters	1 for graphics
Bit 2	0 for single width	1 for double width
Bit 3	0 for single height	1 for double height
Bit 4	0	0
Bit 5	0	0
Bit 6	0	0

Following are some examples of the fonts printed when various control codes are given :

Control Code	Font
1 B, 00	Normal
1 B, 01	Normal inverted
1 B, 04	Double Width
1 B, 05	Double Width inverted
1 B, 08	Double Height
1 B, 09	Double Height inverted
1 B, 0C	Quadruple size
1 B, 0D	Quadruple size inverted

→ This mode is automatically selected after power up

## Graphic Mode

It is selected by making bit 1 in the code word as logic 1. In this printer, there are 144 dots in one line. They are grouped into 24 groups, each of 6 dots. From this, data bytes to be input are found as follows.

If you wish to print dots 1, 3 and 6, make a table as follows :

		DOT 1	DOT 2	DOT 3	DOT 4	DOT 5	DOT 6	
0	0	1	0	1	0	0	1	= 29 H

First send the control code 1BH, 02H and then send 29H followed by 00H 23 times. In graphic mode you cannot use LF (0AH) and CR (0DH) to signal end of data. In this mode they will be taken as data bytes.

To illustrate it further, if you want to print all the odd numbered dots i.e. dot nos. 1, 3, 5, ..... etc., then after 1BH, 02H, send 2AH Hex 24 times.

To print all even numbered dots, after 1BH, 02H, send 15H Hex 24 times.

The graphic mode is cleared after printing one line. If you want this mode on successive lines, send the control code afresh each time, (i.e. 1BH followed by code word).

## Line Feed

Sending 0AH or 0DH will cause the contents of the data buffer (if there are any) to be printed followed by a line feed. If there is no data in the buffer, then a simple line feed will occur.

In graphic mode these will NOT cause line feed. They will be interpreted as data bytes.

## Connectors

### 20 Pin Berg Strip for Printer Mechanism (J1)

- |                                      |                                |
|--------------------------------------|--------------------------------|
| 01. Fast Paper Feed Trigger Solenoid | 11. Print Solenoid (E)         |
| 02. Fast Paper Feed Trigger Solenoid | 12. Print Solenoid (F)         |
| 03. Reset Detector GND               | 13. Print Solenoid (G)         |
| 04. Reset Detector Waveform.         | 14. Print Solenoid (H)         |
| 05. Reset Detector + 5 V             | 15. Common For Print Solenoids |
| 06. Motor (+)                        | 16. Common For Print Solenoids |
| 07. Motor (-)                        | 17. Print Solenoid (A)         |
| 08. Print Solenoid (B)               | 18. Trigger Detector Waveform  |
| 09. Print Solenoid (C)               | 19. Trigger Detector GND       |
| 10. Print Solenoid (D)               | 20. Trigger Detector +5V       |

### 4 Pin Relimate for Power (J4)

- |           |         |
|-----------|---------|
| 01. +5DC  | 03. GND |
| 02. +5 DC | 04. GND |

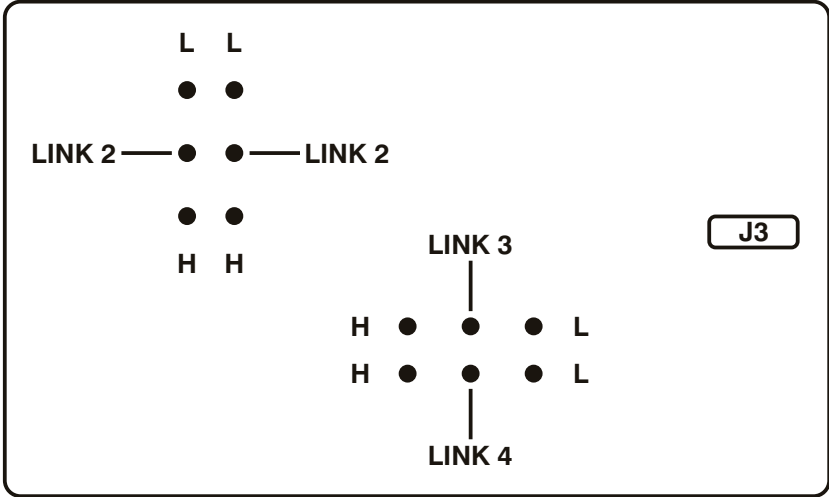
### 3 Pin Relimate for Control Signals (J3)

01. GND
02. BUSY
03. DATA

### 5 Pin Relimate (J2)

- |               |           |
|---------------|-----------|
| 01. LED ANODE | 04. FEED  |
| 02. GND       | 05. RESET |
| 03. TEST      |           |

Bottom View







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