Documentation for z80 Mainframe

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Dedication

Dedicated to caffeine for giving me the energy to write this and sleep deprivation for making me think this was a good idea.

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Chapter 1

Main Board

Chapter 2

Dot Matrix Printer

The main output for the z80 mainframe is the printer. This particular setup is designed to use an Epson LX-810 printer interfacing over a parallel port as shown in figure (null pointer).

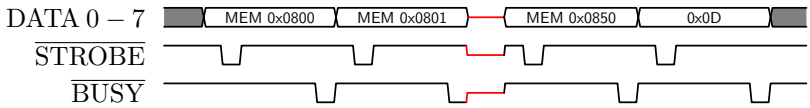

Figure 2.1: Driver Board to Printer Timing

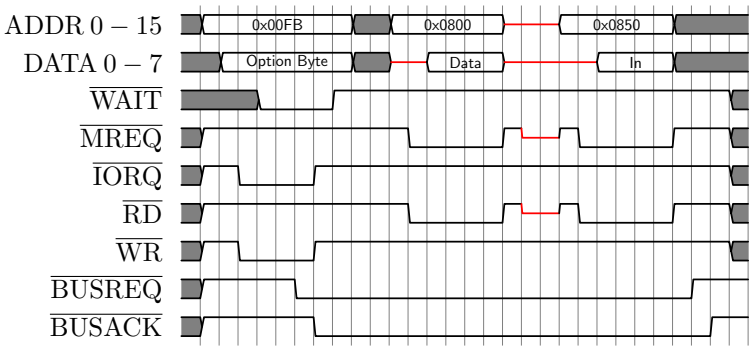

Figure 2.2: Main Bus to Printer Driver Timing

Chapter 3

Card Punch

Chapter 4

Card Reader

Chapter 5

Paper Tape Reader

Chapter 6

Paper Tape Punch

Appendix A

Part List

Appendix B

Code Listings

B.1 ROM Listing

B.2 Line Printer Driver Listing

```
1  char header[]={0x00,0x1B,0x40,0x1B,0x52,0x00,0x1B,
2                 0x74,0x01,0x1B,0x36,0x12,0x1B,0x50};
3  void setup() {
4    // put your setup code here, to run once:
5    Serial.begin(2400);
6    pinMode(2,OUTPUT);
7    pinMode(3,OUTPUT);
8    pinMode(4,OUTPUT);
9    pinMode(5,OUTPUT);
10   pinMode(6,OUTPUT);
11   pinMode(7,OUTPUT);
12   pinMode(8,OUTPUT);
13   pinMode(9,OUTPUT);
14   pinMode(10,OUTPUT);
15   pinMode(11,INPUT);
16   digitalWrite(10,HIGH);
17   for(int i=0; i<sizeof(header);i++)
18   {
19     for(int j=0;j<8;j++)
20     {
21       if(((header[i]>>j)&1)==1)
22       {
23         digitalWrite(j+2,HIGH);
24       }
25       else
26       {
27         digitalWrite(j+2,LOW);
28       }
29     }
30     delayMicroseconds(10);
31     digitalWrite(10,LOW);
32     delayMicroseconds(10);
33     digitalWrite(10,HIGH);
34     while(digitalRead(11)==HIGH){};
35   }
36   Serial.println("Ready...");
37 }
38 int feed = 0;
39 void serialEvent()
40 {
41   char data=Serial.read();
42   for(int j=0;j<8;j++)
43     {
```

```
44        if(((data>>j)&1)==1)
45        {
46          digitalWrite(j+2,HIGH);
47        }
48        else
49        {
50          digitalWrite(j+2,LOW);
51        }
52      }
53      delayMicroseconds(10);
54      digitalWrite(10,LOW);
55      delayMicroseconds(10);
56      digitalWrite(10,HIGH);
57      Serial.print(data);
58      if(data == 0x0d){feed++;Serial.println();};
59      if(data != 0x0d){feed=0;};
60      if(feed >= 3){
61        feed=0;
62        data = 0x0c;
63        for(int j=0;j<8;j++)
64        {
65          if(((data>>j)&1)==1)
66          {
67            digitalWrite(j+2,HIGH);
68          }
69          else
70          {
71            digitalWrite(j+2,LOW);
72          }
73        }
74        delayMicroseconds(10);
75        digitalWrite(10,LOW);
76        delayMicroseconds(10);
77        digitalWrite(10,HIGH);
78      }
79      while(digitalRead(11)==HIGH){};
80  }
81
82  void loop() {
83    // put your main code here, to run repeatedly:
84
85  }
```

B.3 Card Punch Driver Listing

B.4 Card Reader Driver Listing

B.5 Paper Tape Punch Driver Listing

B.6 Paper Tape Reader Driver Listing

Appendix C

Circuit Diagrams

C.1 Main Board

C.2 Line Printer Driver Board

C.3 Card Punch Driver Board

C.4 Card Reader Driver Board

C.5 Paper Tape Punch Driver Board

C.6 Paper Tape Reader Driver Board

Appendix D

PCB Masks

D.1 Main Board

D.2 Line Printer Driver Board

D.3 Card Punch Driver Board

D.4 Card Reader Driver Board

D.5 Paper Tape Punch Driver Board

D.6 Paper Tape Reader Driver Board

Appendix E

Part Drawings