Input

Output

JP9
6 GND
5 MISO
4 CS
3 SCK
2 VCC
1 VCC
South

JP1
6 GND
5 MISO
4 CS
3 SCK
2 VCC
1 VCC
West

JP11
6 VCC
5 VCC
4 SCK
3 CS
2 MOSI
1 GND
North

JP4
6 VCC
5 VCC
4 SCK
3 CS
2 MOSI
1 GND
East

JP7
2 M_MISO
1

JP8
2 MOSI
1

U2
COL 0 1   18 COLUMN0
COL 1 2   17 COLUMN1
COL 2 3   16 COLUMN2
COL 3 4   15 COLUMN3
       5   14
       6   13
       7   12
       8   11 VCC
       9   10
ULN2803
GND

VCC

SR_DATA   14   SER VCC 16
                          15 RED0
SR_SCK   11   SCK QA   1 RED1
SR_CLEAR   10   SCL QB   2 RED2
                     QC   3 RED3
SR_LATCH   12   RCK QD   4 BLUE0
                     QE   5 BLUE1
SR_EN   13   G   QF   6 BLUE2
                     QG   7 BLUE3
                8   GND QH
                          QH* 9
U3
74LS595D
GND

VCC
C4
0.1uF
GND

VCC
VCC

Program fuses to disable reset function
U1
29 PC6(/RESET)   PC0(ADC0)   23 SR_SCK
                   PC1(ADC1)   24 SR_DATA
21 AGND   PC2(ADC2)   25 SR_LATCH
20 AREF   PC3(ADC3)   26 SR_CLEAR
18 AVCC   PC4(ADC4/SDA) 27 SR_EN
                   PC5(ADC5/SCL) 28
                        ADC6   19
7   PB6(XTAL1/TOSC1)   ADC7   22
8   PB7(XTAL2/TOSC2) PD0(RXD)   30 COL0
                   PD1(TXD)   31 COL1
3   GND   PD2(INT0)   32 COL2
5   GND   PD3(INT1)   1   COL3
4   VCC   PD4(XCK/T0)   2   BUTTON0
6   VCC   PD5(T1)   9   BUTTON1
                   PD6(AIN0)   10 BUTTON2
                   PD7(AIN1)   11 BUTTON3
                   PB0(ICP)   12
                   PB1(OC1A)   13
                   PB2(SS/OC1B)   14 CS
                   PB3(MOSI/OC2) 15 MOSI
                   PB4(MISO)   16 MISO
                   PB5(SCK)   17 SCK
ATmega48

VCC
R2
10K
S1
20 MHz Resonator
Q2
GND
GND
GND

VCC
C5   C6
0.1uF   0.1uF
GND

VCC
U4
14   SER VCC 16
               15 GRN0
11   SCK QA   1 GRN1
10   SCL QB   2 GRN2
          QC   3 GRN3
12   RCK QD   4 C0
          QE   5 C1
13   G   QF   6 C2
          QG   7 C3
     8   GND QH QH* 9
74LS595D
GND

VCC
VCC
C10
10uF
C3
0.1uF
GND

GND
AVR_PROG
6 5
4 3
2 1
JP2
GND
RESET RST
SCK   SCK
MISO   MISO
MOSI
MOSI
+5
VCC

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Design by: Ryan Owens

Spark Fun Electronics

TITLE: Button_Pad_Controller-v24   SFE

Document Number: REV:
LED Display Circuit

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Col0

Row0

PAD-G$0

C0 — BUTTON0
RED0 — RED
BLUE0 — BLU — GND — COLUMN0
GRN0 — GRN

BUTTONPAD-4X4

PAD-G$4

C1 — BUTTON0
RED1 — RED
BLUE1 — BLU — GND — COLUMN0
GRN1 — GRN

Row1

BUTTONPAD-4X4

PAD-G$8

C2 — BUTTON0
RED2 — RED
BLUE2 — BLU — GND — COLUMN0
GRN2 — GRN

Row2

BUTTONPAD-4X4

PAD-G$12

C3 — BUTTON0
RED3 — RED
BLUE3 — BLU — GND — COLUMN0
GRN3 — GRN

Row3

BUTTONPAD-4X4

Col1

PAD-G$1

C0 — BUTTON1
RED0 — RED
BLUE0 — BLU — GND — COLUMN1
GRN0 — GRN

BUTTONPAD-4X4

PAD-G$5

C1 — BUTTON1
RED1 — RED
BLUE1 — BLU — GND — COLUMN1
GRN1 — GRN

BUTTONPAD-4X4

PAD-G$9

C2 — BUTTON1
RED2 — RED
BLUE2 — BLU — GND — COLUMN1
GRN2 — GRN

BUTTONPAD-4X4

PAD-G$13

C3 — BUTTON1
RED3 — RED
BLUE3 — BLU — GND — COLUMN1
GRN3 — GRN

BUTTONPAD-4X4

Col2

PAD-G$2

C0 — BUTTON2
RED0 — RED
BLUE0 — BLU — GND — COLUMN2
GRN0 — GRN

BUTTONPAD-4X4

PAD-G$6

C1 — BUTTON2
RED1 — RED
BLUE1 — BLU — GND — COLUMN2
GRN1 — GRN

BUTTONPAD-4X4

PAD-G$10

C2 — BUTTON2
RED2 — RED
BLUE2 — BLU — GND — COLUMN2
GRN2 — GRN

BUTTONPAD-4X4

PAD-G$14

C3 — BUTTON2
RED3 — RED
BLUE3 — BLU — GND — COLUMN2
GRN3 — GRN

BUTTONPAD-4X4

Col3

PAD-G$3

C0 — BUTTON3
RED0 — RED
BLUE0 — BLU — GND — COLUMN3
GRN0 — GRN

BUTTONPAD-4X4

PAD-G$7

C1 — BUTTON3
RED1 — RED
BLUE1 — BLU — GND — COLUMN3
GRN1 — GRN

BUTTONPAD-4X4

PAD-G$11

C2 — BUTTON3
RED2 — RED
BLUE2 — BLU — GND — COLUMN3
GRN2 — GRN

BUTTONPAD-4X4

PAD-G$15

C3 — BUTTON3
RED3 — RED
BLUE3 — BLU — GND — COLUMN3
GRN3 — GRN

BUTTONPAD-4X4

TITLE: Button_Pad_Controller-v24

Document Number:
LED Matrix

REV:

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