SpoolScale
Version 1.1, Dec 2022
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WARNING: This version of the SpoolScale has multiple bugs. This schematic is only available for documentation purposes. See Version 1.2 or further for fully functional designs.

Switch Settings:
1. i2C/UART Mode
2. Screen On/Off
3. Warn Pulse/Cont
Warn +2 > 4. Warn +4
5. Warn +8
6. Warn +16
7. Warn +32
8. Warn +64
9. Warn +128

U4 ATTINY1616-SFR
1 VDD
2 PA4 — HXDAT
3 PA5 — HXCLK
4 PA6 — WARN
5 PA7 — BUT1
6 PB5 — DIPR2
7 PB4 — DIPR1
8 TOSC1/PB3 — DIP6
9 TOSC1/PB2 — DIP7
10 PB1 — DIP8
20 GND
19 PA3/EXTCLK — DIP9
18 PA2 — SCL/RXD
17 PA1 — SDA/TXD
16 PA0/RESET#/UPDI — UPDI
15 PC3 — DIP10
14 PC2 — TM16STB
13 PC1 — TM16DIN
12 PC0 — TM16CLK
11 PB0 — DIMIN

U1 ATTINY1616-MNR
1 PA2 — SCL/RXD
2 EXTCLK/PA3 — DIP9
3 GND
4 VDD — VCC
5 PA4 — HXDAT
6 PA5 — HXCLK
7 PA6 — WARN
8 PA7 — BUT1
9 PB5 — DIPR2
10 PB4 — DIPR1
21 EP
20 PA1 — SDA/TXD
19 PA0/RESET#/UPDI — UPDI
18 PC3 — DIP10
17 PC2 — TM16STB
16 PC1 — TM16DIN
15 PC0 — TM16CLK
14 PB0 — DIMIN
13 PB1 — DIP8
12 PB2/TOSC2 — DIP7
11 PB3/TOSC1 — DIP6

C14 100nF
VCC
GND

SW2
DIP10 DIP9 DIP8 DIP7 DIP6 DIP7 DIP8 DIP9 DIP10
20 19 18 17 16 15 14 13 12 11
1 2 3 4 5 6 7 8 9 10
DIPR2 — DIPR1

DIP6 DIP7 DIP8
DIP9 DIP10
RN3 10k
RN4 10k
VCC
GND

N1 1
N2 1
N3 1
N4 1

DIMOUT
GND

CN1
6 5 4 3 2 1
DIMOUT — DIMIN
SCL/RXD — SDA/TXD
R9 220
R8 220
GND
D1 5.6V
F1 1 2
VCC

CN2
6 5 4 3 2 1
LOAD_RED
LOAD_BLACK
LOAD_WHITE
LOAD_GREEN
WARN+
WARN-

WARN+
F2 1 2
GND

LOAD_BLACK
GND

LOAD_RED
L1 2.2uH
C7 100nF
C10 10uF
R3 20k
C6 100nF
R4 8.2k
GND

Q1 S8550
U2 HX711
1 VSUP
2 BASE
3 AVDD
4 VFB
5 AGND
6 VBG
7 INNA
8 INPA
16 DVDD
15 RATE
14 XI
13 XO
12 DOUT — HXDAT
11 PD_SCK — HXCLK
10 INPB
9 INNB
VCC
C9 100nF
C11 10uF
C12 100nF
GND

R6 100 — LOAD_GREEN
R7 100 — LOAD_WHITE
C8 100nF
GND

WARN-
WARN
Q2 AO3400A
R1 20k
GND

VCC
BUT1
SW1
1 2 3
4 5 6
VCC

RN1 10k
VCC
DIMIN
TM16STB
TM16CLK
TM16DIN

BUT1 — R2 8.2k
GND
VCC
C5 100uF
C4 100nF
C13 100uF
GND
VCC
GND

TM16DIN
TM16CLK
TM16STB
C3 100pF
C2 100pF
C1 100pF
GND
VCC

U3 TM1616
1 DIN
2 CLK
3 STB
4 VDD
5 SEG1
6 SEG2
7 SEG3
8 SEG4
16 GRID1 — DIG1
15 GRID2 — DIG2
14 GND
13 GRID3 — DIG3
12 GRID4 — DIG4
11 SEG7 — SEG7
10 SEG6 — SEG6
9 SEG5 — SEG5

SEG4
SEG3
SEG2
SEG1

LED1
DIG1 SEG1 SEG6 DIG2 DIG3 SEG2
12 11 10 9 8 7
G1 a f G2 G3 b
a b   a b   a b
f g   f g   f g
e c   e c   e c
d dp d dp d dp
e d dp c g G4
1 2 3 4 5 6
SEG5 SEG4 SEG3 SEG7 DIG4