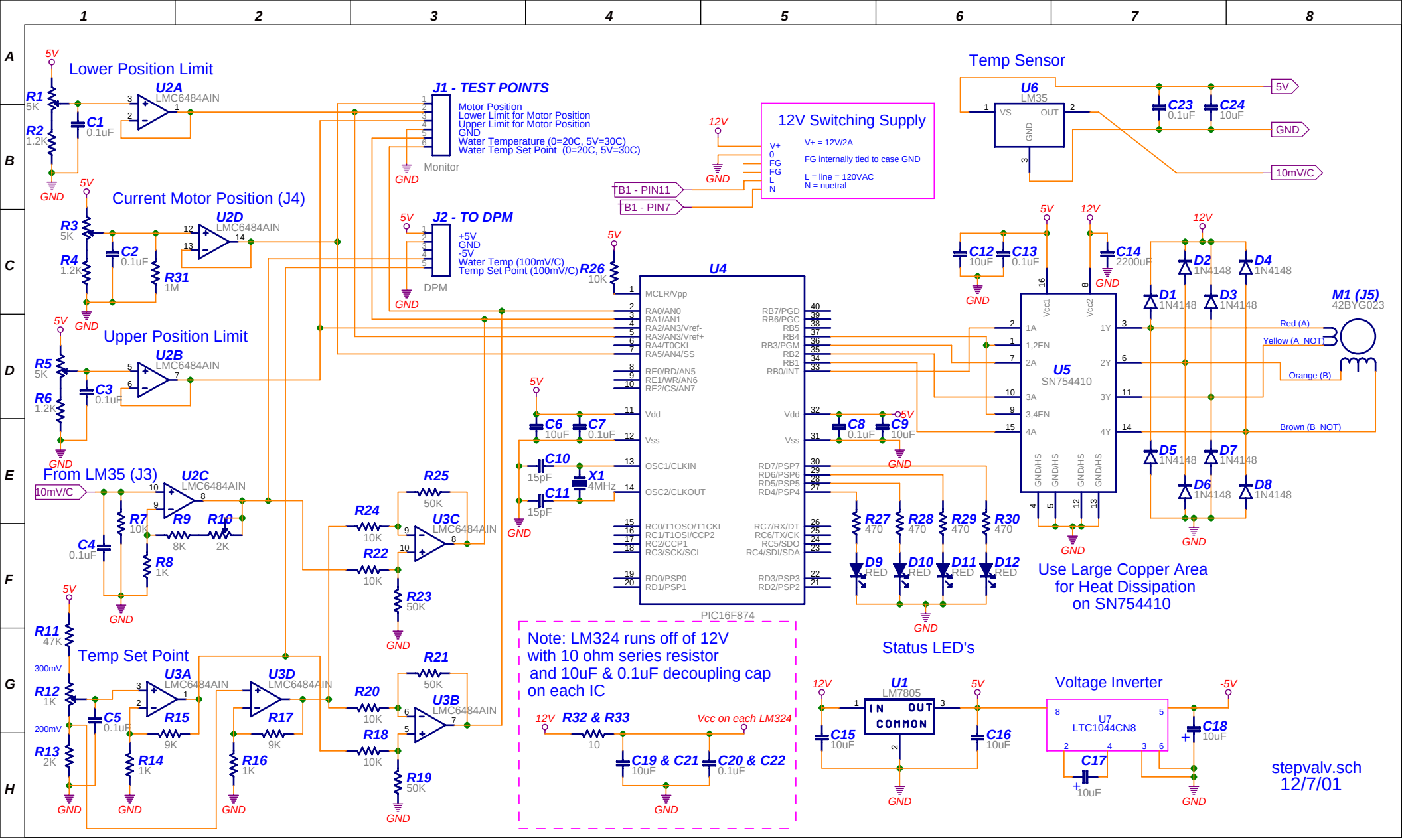
Lower Position Limit
U2A
LMC6484AIN
R1
5K
R2
1.2K
C1
0.1uF
5V
GND
J1 - TEST POINTS
Motor Position
Lower Limit for Motor Position
Upper Limit for Motor Position
GND
Water Temperature (0=20C, 5V=30C)
Water Temp Set Point (0=20C, 5V=30C)
Monitor
Current Motor Position (J4)
U2D
LMC6484AIN
R3
5K
R4
1.2K
C2
0.1uF
R31
1M
J2 - TO DPM
+5V
GND
-5V
Water Temp (100mV/C)
Temp Set Point (100mV/C)
DPM
Upper Position Limit
U2B
LMC6484AIN
R5
5K
R6
1.2K
C3
0.1uF
From LM35 (J3)
10mV/C
U2C
LMC6484AIN
R7
10K
R9
8K
R10
2K
C4
0.1uF
R8
1K
Temp Set Point
300mV
200mV
R11
47K
R12
1K
R13
2K
C5
0.1uF
U3A
LMC6484AIN
R15
9K
R14
1K
U3D
LMC6484AIN
R17
9K
R16
1K
R24
10K
R25
50K
U3C
LMC6484AIN
R22
10K
R23
50K
R20
10K
R21
50K
U3B
LMC6484AIN
R18
10K
R19
50K
12V Switching Supply
V+ = 12V/2A
FG internally tied to case GND
L = line = 120VAC
N = nuetral
TB1 - PIN11
TB1 - PIN7
U4
PIC16F874
MCLR/Vpp
RA0/AN0
RA1/AN1
RA2/AN3/Vref-
RA3/AN3/Vref+
RA4/T0CKI
RA5/AN4/SS
RE0/RD/AN5
RE1/WR/AN6
RE2/CS/AN7
Vdd
Vss
OSC1/CLKIN
OSC2/CLKOUT
RC0/T1OSO/T1CKI
RC1/T1OSI/CCP2
RC2/CCP1
RC3/SCK/SCL
RD0/PSP0
RD1/PSP1
RB7/PGD
RB6/PGC
RB5
RB4
RB3/PGM
RB2
RB1
RB0/INT
RD7/PSP7
RD6/PSP6
RD5/PSP5
RD4/PSP4
RC7/RX/DT
RC6/TX/CK
RC5/SDO
RC4/SDI/SDA
RD3/PSP3
RD2/PSP2
C6
10uF
C7
0.1uF
C8
0.1uF
C9
10uF
C10
15pF
C11
15pF
X1
4MHz
Note: LM324 runs off of 12V
with 10 ohm series resistor
and 10uF & 0.1uF decoupling cap
on each IC
12V
R32 & R33
10
Vcc on each LM324
C19 & C21
10uF
C20 & C22
0.1uF
Temp Sensor
U6
LM35
VS
OUT
GND
C23
0.1uF
C24
10uF
5V
GND
10mV/C
C12
10uF
C13
0.1uF
C14
2200uF
U5
SN754410
1A
1,2EN
2A
3A
3,4EN
4A
1Y
2Y
3Y
4Y
Vcc1
Vcc2
GND/HS
D1
1N4148
D2
1N4148
D3
1N4148
D4
1N4148
D5
1N4148
D6
1N4148
D7
1N4148
D8
1N4148
M1 (J5)
42BYG023
Red (A)
Yellow (A_NOT)
Orange (B)
Brown (B_NOT)
R27
470
R28
470
R29
470
R30
470
D9
RED
D10
RED
D11
RED
D12
RED
Use Large Copper Area
for Heat Dissipation
on SN754410
Status LED's
U1
LM7805
IN
OUT
COMMON
C15
10uF
C16
10uF
Voltage Inverter
U7
LTC1044CN8
C17
10uF
C18
10uF
-5V
stepvalv.sch
12/7/01