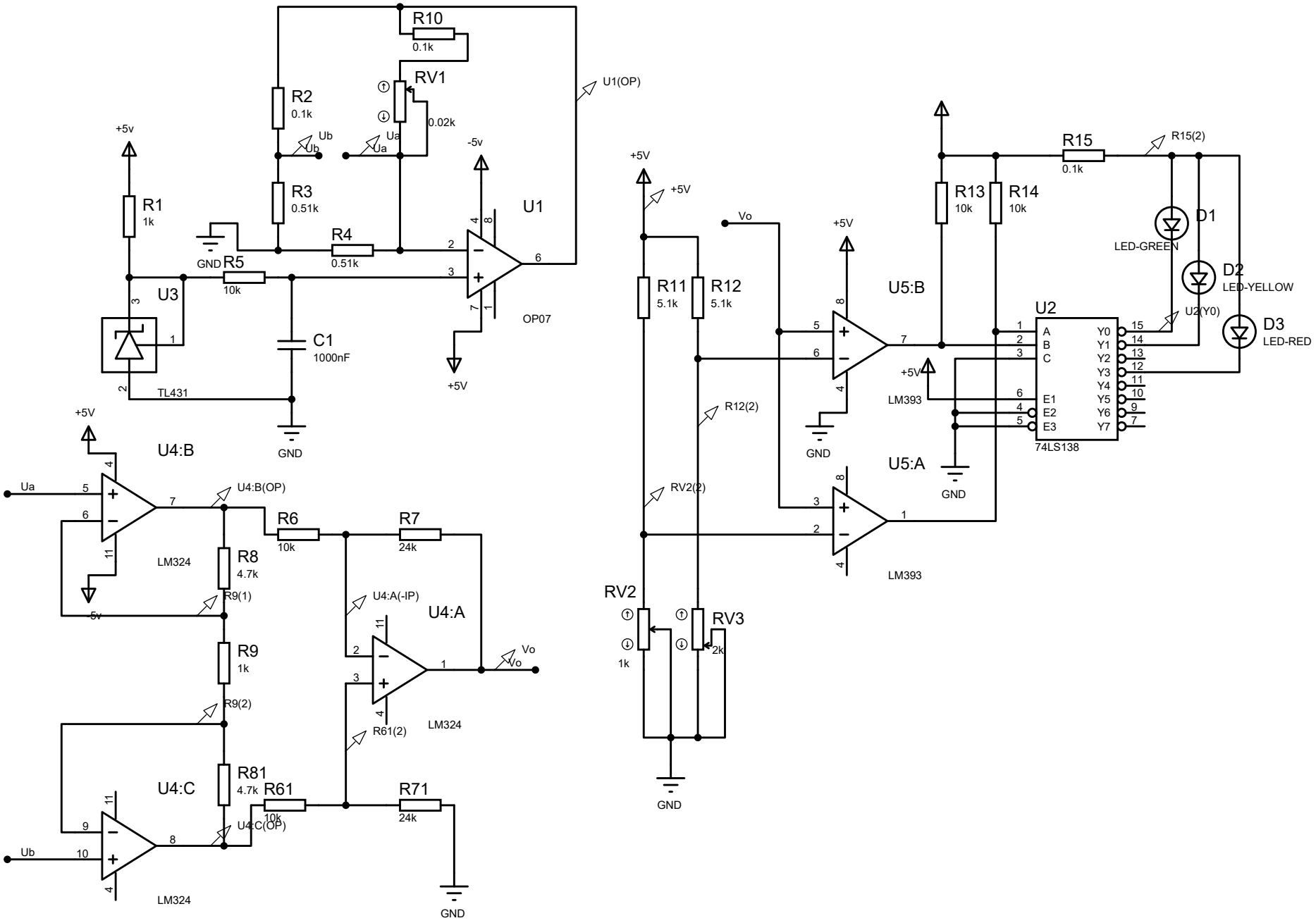
R10
0.1k
RV1
0.02k
R2
0.1k
R3
0.51k
R4
0.51k
R5
10k
R1
1k
U3
TL431
C1
1000nF
U1
OP07
U1(OP)
Ub
Ua
+5v
-5v
GND
U4:B
LM324
U4:B(OP)
R6
10k
R7
24k
R8
4.7k
R9(1)
R9
1k
R9(2)
U4:A(-IP)
U4:A
LM324
Vo
R61(2)
R81
4.7k
U4:C
R61
10k
R71
24k
U4:C(OP)
LM324
+5V
R11
5.1k
R12
5.1k
R12(2)
RV2(2)
RV2
1k
RV3
2k
U5:B
U5:A
LM393
R13
10k
R14
10k
R15
0.1k
R15(2)
D1
LED-GREEN
D2
LED-YELLOW
D3
LED-RED
U2
74LS138
U2(Y0)