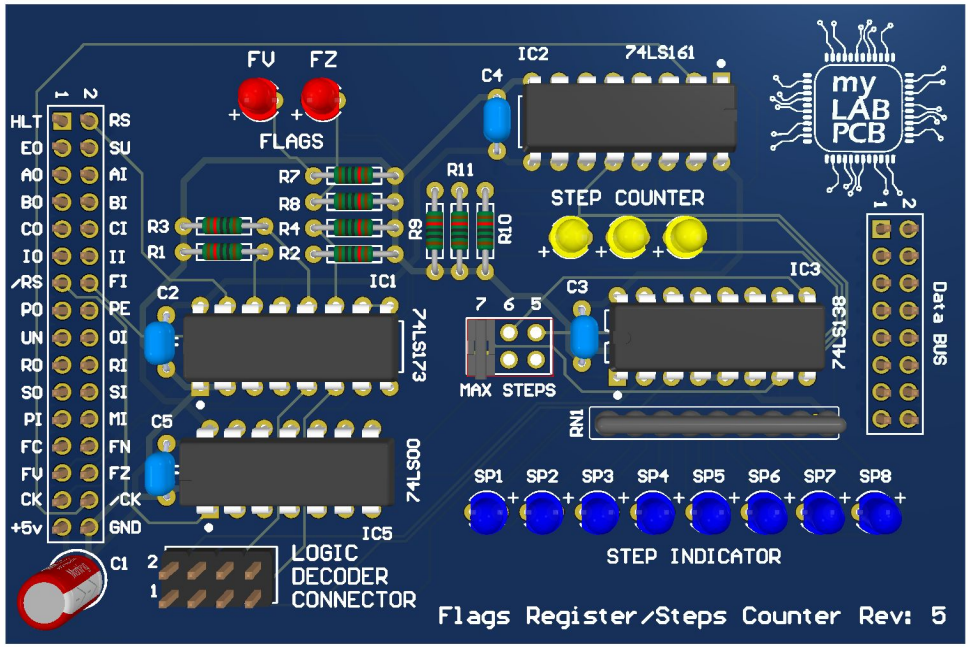
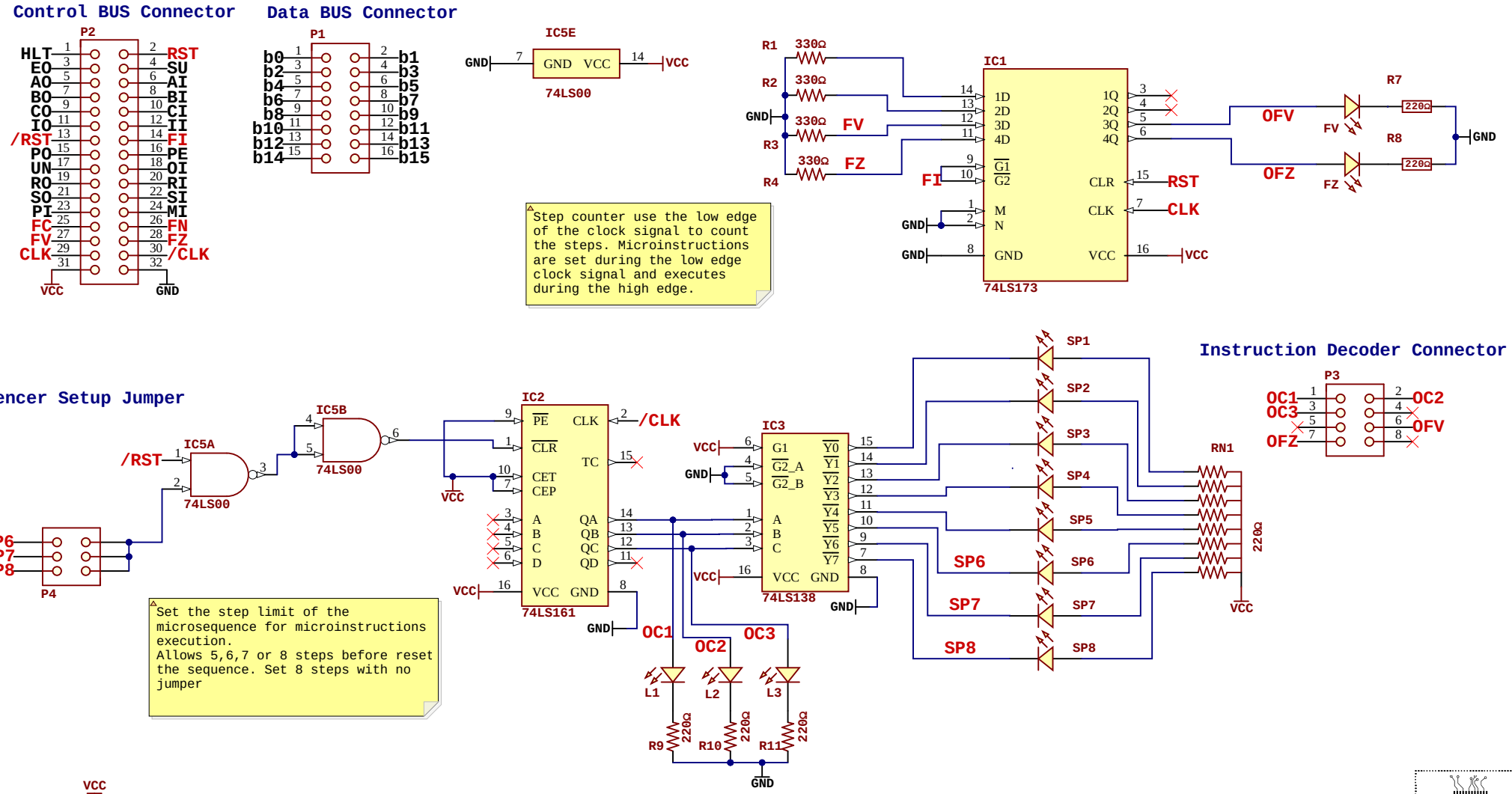
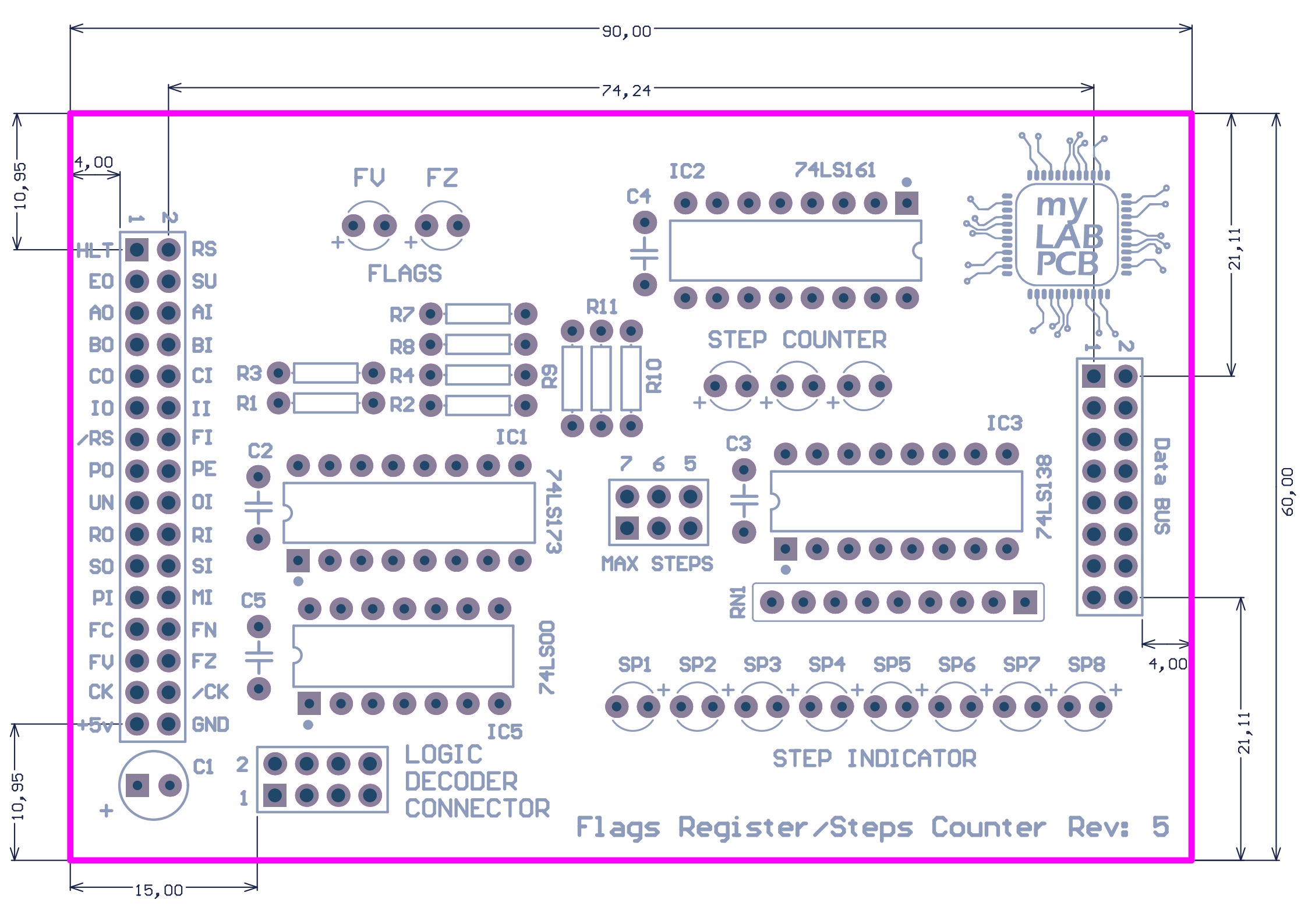
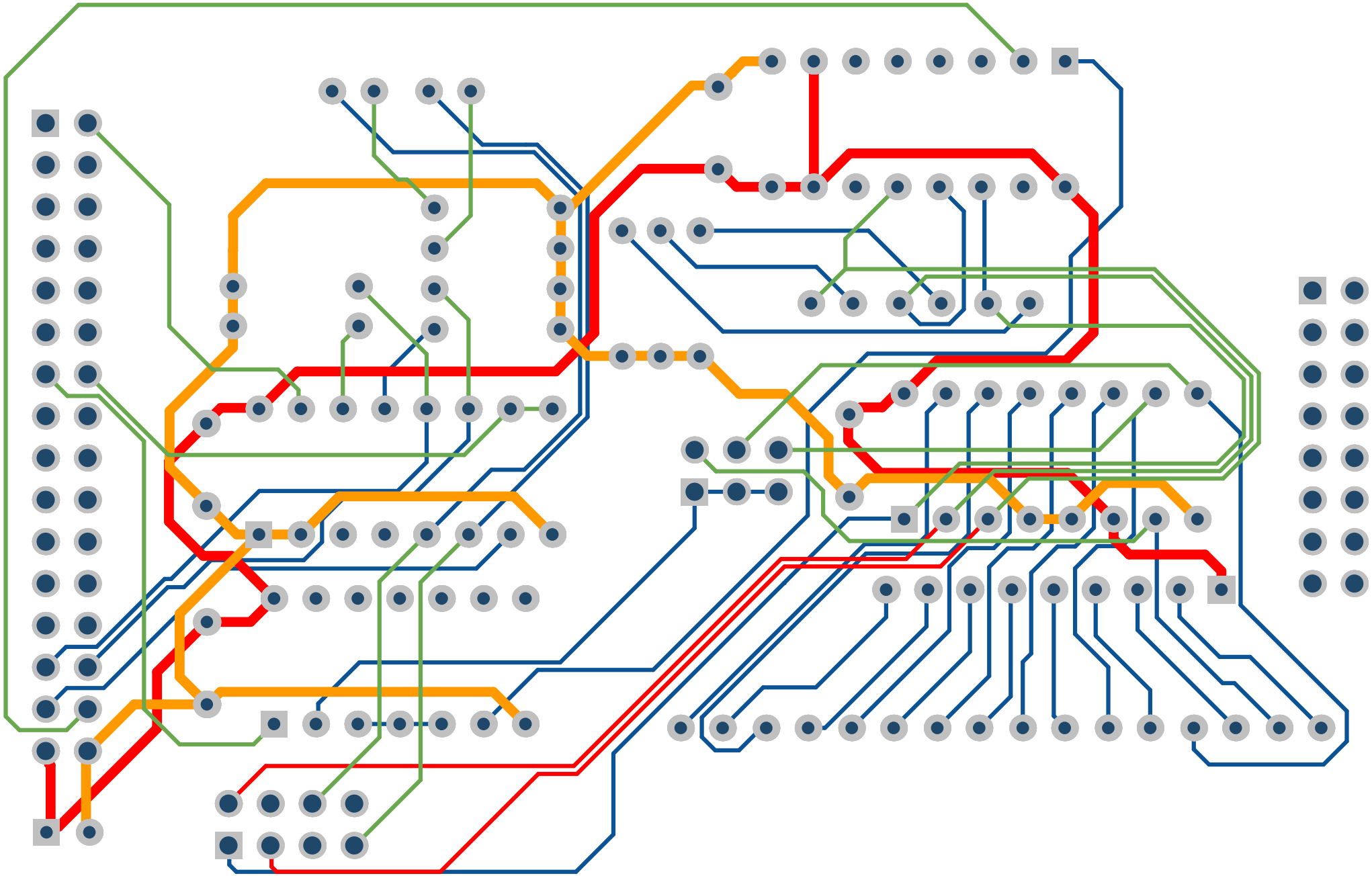

FV
FZ
FLAGS
IC2
74LS161
C4
my
LAB
PCB
STEP COUNTER
R11
R7
R8
R4
R2
R3
R1
R9
R10
IC1
C2
74LS173
7 6 5
MAX STEPS
IC3
C3
74LS138
Data BUS
RN1
C5
74LS00
IC5
SP1 SP2 SP3 SP4 SP5 SP6 SP7 SP8
STEP INDICATOR
C1
2
1
LOGIC
DECODER
CONNECTOR
Flags Register/Steps Counter Rev: 5
1 2
HLT RS
EO SU
AO AI
BO BI
CO CI
IO II
/RS FI
PO PE
UN OI
RO RI
SO SI
PI MI
FC FN
FV FZ
CK /CK
+5v GND


Control BUS Connector
P2
HLT 1 2 RST
EO 3 4 SU
AO 5 6 AI
BO 7 8 BI
CO 9 10 CI
IO 11 12 II
/RST 13 14 FI
PO 15 16 PE
UN 17 18 OI
RO 19 20 RI
SO 21 22 SI
PI 23 24 MI
FC 25 26 FN
FV 27 28 FZ
CLK 29 30 /CLK
31 32
VCC
GND
Data BUS Connector
P1
b0 1 2 b1
b2 3 4 b3
b4 5 6 b5
b6 7 8 b7
b8 9 10 b9
b10 11 12 b11
b12 13 14 b13
b14 15 16 b15
IC5E
GND 7
GND VCC
14 VCC
74LS00
R1 330Ω
R2 330Ω
R3 330Ω FV
R4 330Ω FZ
GND
IC1
1D 2D 3D 4D
1Q 2Q 3Q 4Q
G1 G2
CLR
M N
CLK
GND
VCC
FI
RST
CLK
VCC
74LS173
OFV
OFZ
R7 220Ω
R8 220Ω
FV
FZ
GND
Step counter use the low edge of the clock signal to count the steps. Microinstructions are set during the low edge clock signal and executes during the high edge.
Sequencer Setup Jumper
SP6
SP7
SP8
P4
IC5A
/RST
74LS00
IC5B
74LS00
IC2
PE CLK
CLR
TC
CET
CEP
A QA
B QB
C QC
D QD
VCC GND
74LS161
/CLK
VCC
GND
IC3
G1
G2_A
G2_B
A
B
C
Y0 Y1 Y2 Y3 Y4 Y5 Y6 Y7
VCC GND
74LS138
SP1
SP2
SP3
SP4
SP5
SP6
SP7
SP8
RN1
220Ω
Instruction Decoder Connector
P3
OC1 OC2
OC3 OFV
OFZ
OC1
OC2
OC3
L1 L2 L3
R9 220Ω
R10 220Ω
R11 220Ω
Set the step limit of the microsequence for microinstructions execution.
Allows 5,6,7 or 8 steps before reset the sequence. Set 8 steps with no jumper
VCC
C1 10µF
C2 100nF
C3 100nF
C4 100nF
C5 100nF
GND
Decoupling Capacitors
my LAB PCB
Project: myCPU Flags Register / Sequencer
Revision: 5
Date: 28/06/2022
Author: Rafa Hernández


90,00
74,24
10,95
4,00
1
2
HLT
EO
AO
BO
CO
IO
/RS
PO
UN
RO
SO
PI
FC
FV
CK
+5v
RS
SU
AI
BI
CI
II
FI
PE
OI
RI
SI
MI
FN
FZ
/CK
GND
C1
FV
FZ
FLAGS
R7
R8
R3
R4
R1
R2
R11
R9
R10
IC1
74LS173
C2
C5
74LS00
IC5
2
1
LOGIC
DECODER
CONNECTOR
IC2
74LS161
C4
STEP COUNTER
7 6 5
MAX STEPS
IC3
74LS138
C3
RN1
SP1 SP2 SP3 SP4 SP5 SP6 SP7 SP8
STEP INDICATOR
my
LAB
PCB
Data BUS
21,11
60,00
4,00
Flags Register/Steps Counter Rev: 5



Bill of Materials

Designator	Description	Value	Q
C1	Electrolytic capacitor 16v/50v	10µF	1
C2, C3, C4, C5	Ceramic or tantalum capacitor	100nF	4
FV, FZ	Led 3mm Round	Red	2
IC1	4-bit D-Type Register with 3 state outputs	74LS173	1
IC2	4-Bit sync counter	74LS161	1
IC3	3-Line to 8-Line decoder/demultiplexer	74LS138	1
IC5	Quad 2-input NAND gates	74LS00	1
L1, L2, L3	Led 3mm Round	Yellow	3
P1	Pin Header, THT, pitch 2.54mm, Dual Row, Vertical, 16p	16p	1
P2	Pin Header, THT, pitch 2.54mm, Dual Row, Vertical, 32p	32p	1
P3	Pin Header, THT, pitch 2.54mm, Dual Row, Vertical, 8p	8p	1
P4	Pin Header, THT, pitch 2.54mm, Dual Row, Vertical, 6p	6p	1
R1, R2, R3, R4	Resistor axial	330Ω	4
R7, R8, R9, R10, R11	Resistor axial	220Ω	5
RN1	Resistor array 8 elements,9 pins	220Ω	1
SP1, SP2, SP3, SP4, SP5	Led 3mm Round	Blue	8

Assembly List

Desig.	Description	Value
C1	Electrolytic capacitor 16v/50v	10µF
C2	Ceramic or tantalum capacitor	100nF
C3	Ceramic or tantalum capacitor	100nF
C4	Ceramic or tantalum capacitor	100nF
C5	Ceramic or tantalum capacitor	100nF
FV	Led 3mm Round	Red
FZ	Led 3mm Round	Red
IC1	4-bit D-Type Register with 3 state outputs	74LS173
IC2	4-Bit sync counter	74LS161
IC3	3-Line to 8-Line decoder/demultiplexer	74LS138
IC5	Quad 2-input NAND gates	74LS00
L1	Led 3mm Round	Yellow
L2	Led 3mm Round	Yellow
L3	Led 3mm Round	Yellow
P1	Pin Header, THT, pitch 2.54mm, Dual Row, Vertical, 16p	16p
P2	Pin Header, THT, pitch 2.54mm, Dual Row, Vertical, 32p	32p
P3	Pin Header, THT, pitch 2.54mm, Dual Row, Vertical, 8p	8p
P4	Pin Header, THT, pitch 2.54mm, Dual Row, Vertical, 6p	6p
R1	Resistor axial	330Ω
R2	Resistor axial	330Ω
R3	Resistor axial	330Ω
R4	Resistor axial	330Ω
R7	Resistor axial	220Ω
R8	Resistor axial	220Ω
R9	Resistor axial	220Ω
R10	Resistor axial	220Ω
R11	Resistor axial	220Ω
RN1	Resistor array 8 elements,9 pins	220Ω
SP1	Led 3mm Round	Blue
SP2	Led 3mm Round	Blue
SP3	Led 3mm Round	Blue
SP4	Led 3mm Round	Blue
SP5	Led 3mm Round	Blue
SP6	Led 3mm Round	Blue
SP7	Led 3mm Round	Blue
SP8	Led 3mm Round	Blue