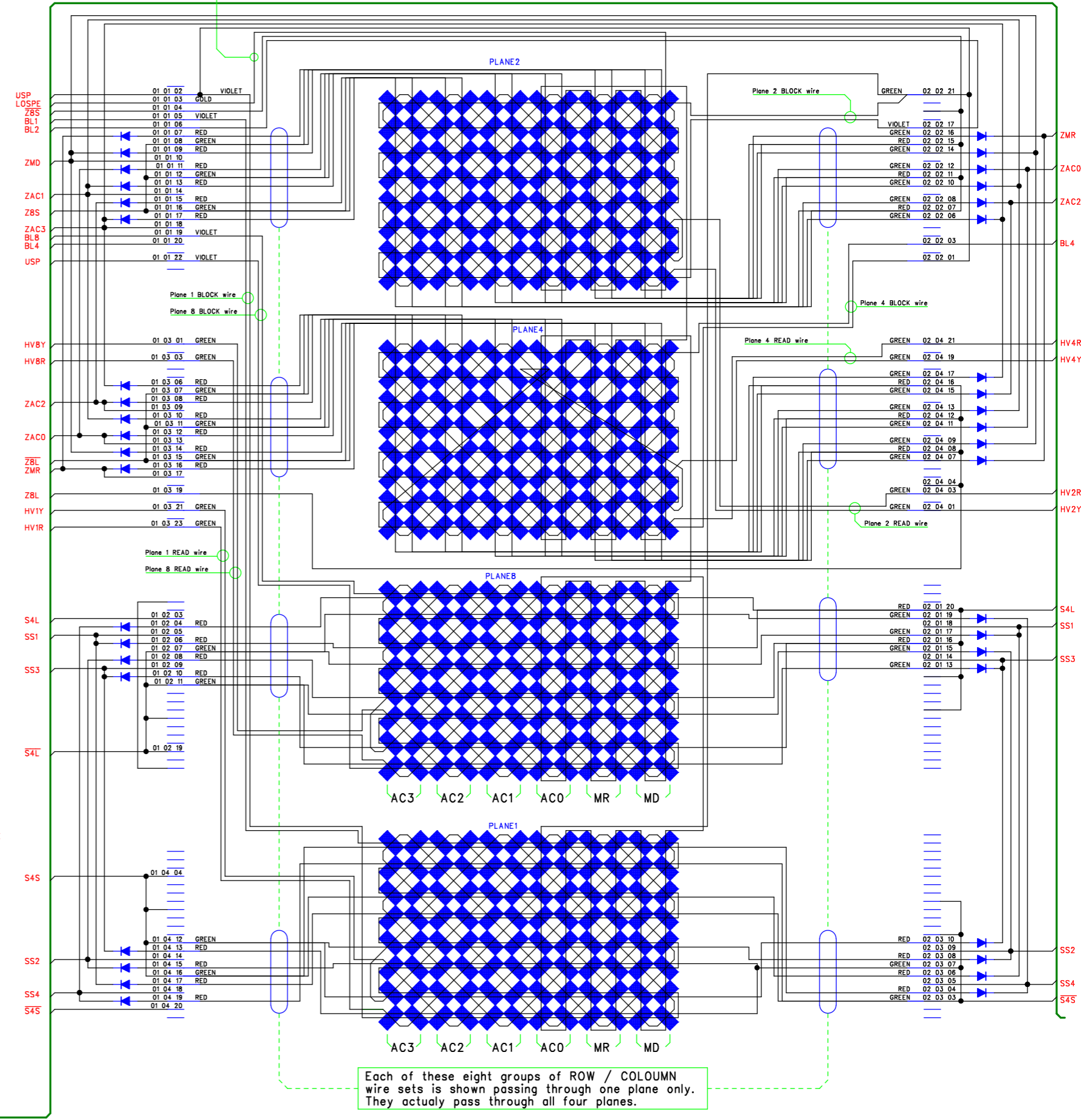
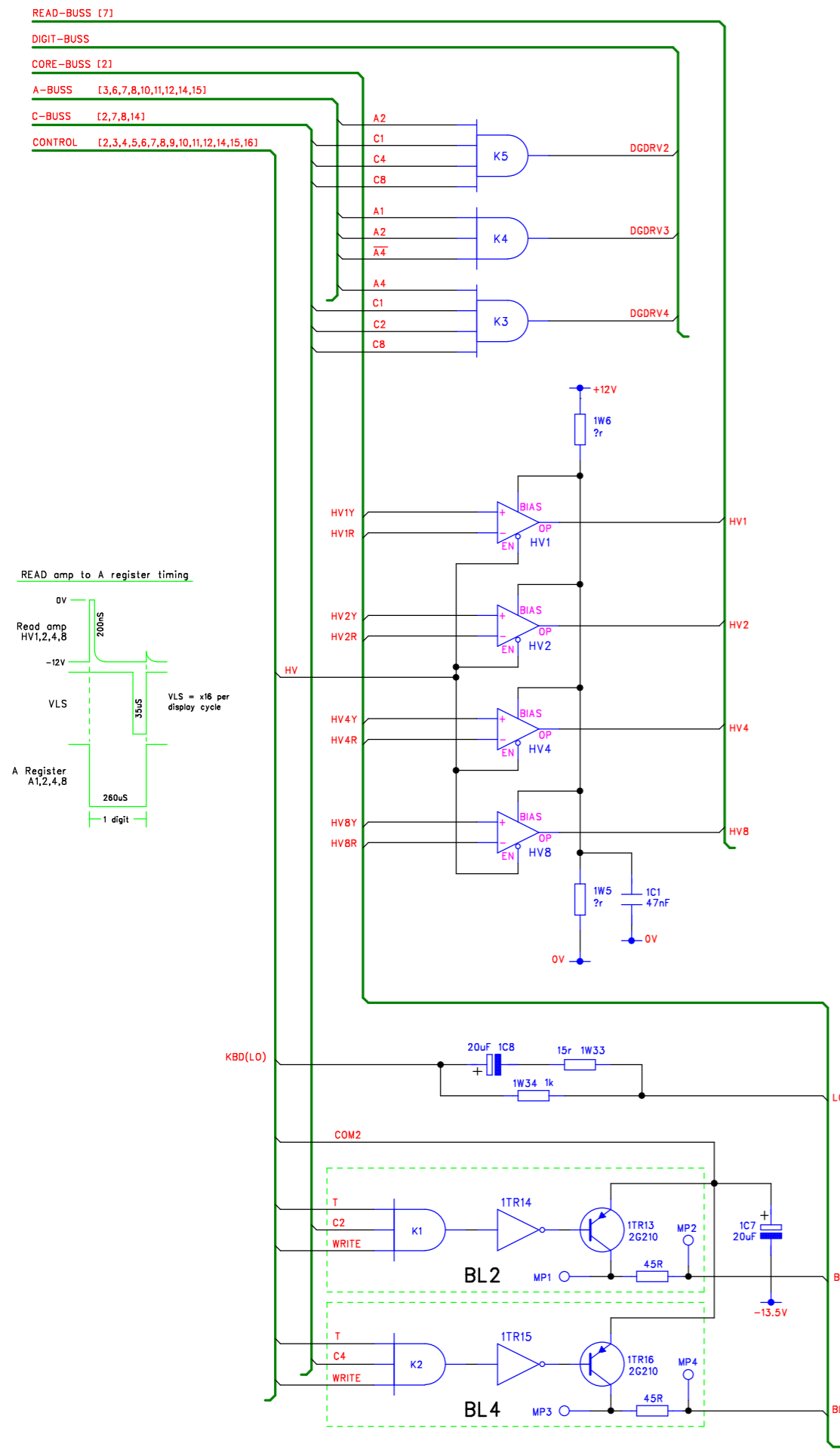


RevNo	Revision note	Date	By	Checked
-	-	-	-	-

Lö SPE only clears the MD, MR and AC0 registers



Each of these eight groups of ROW / COLOUMN wire sets is shown passing through one plane only. They actually pass through all four planes.



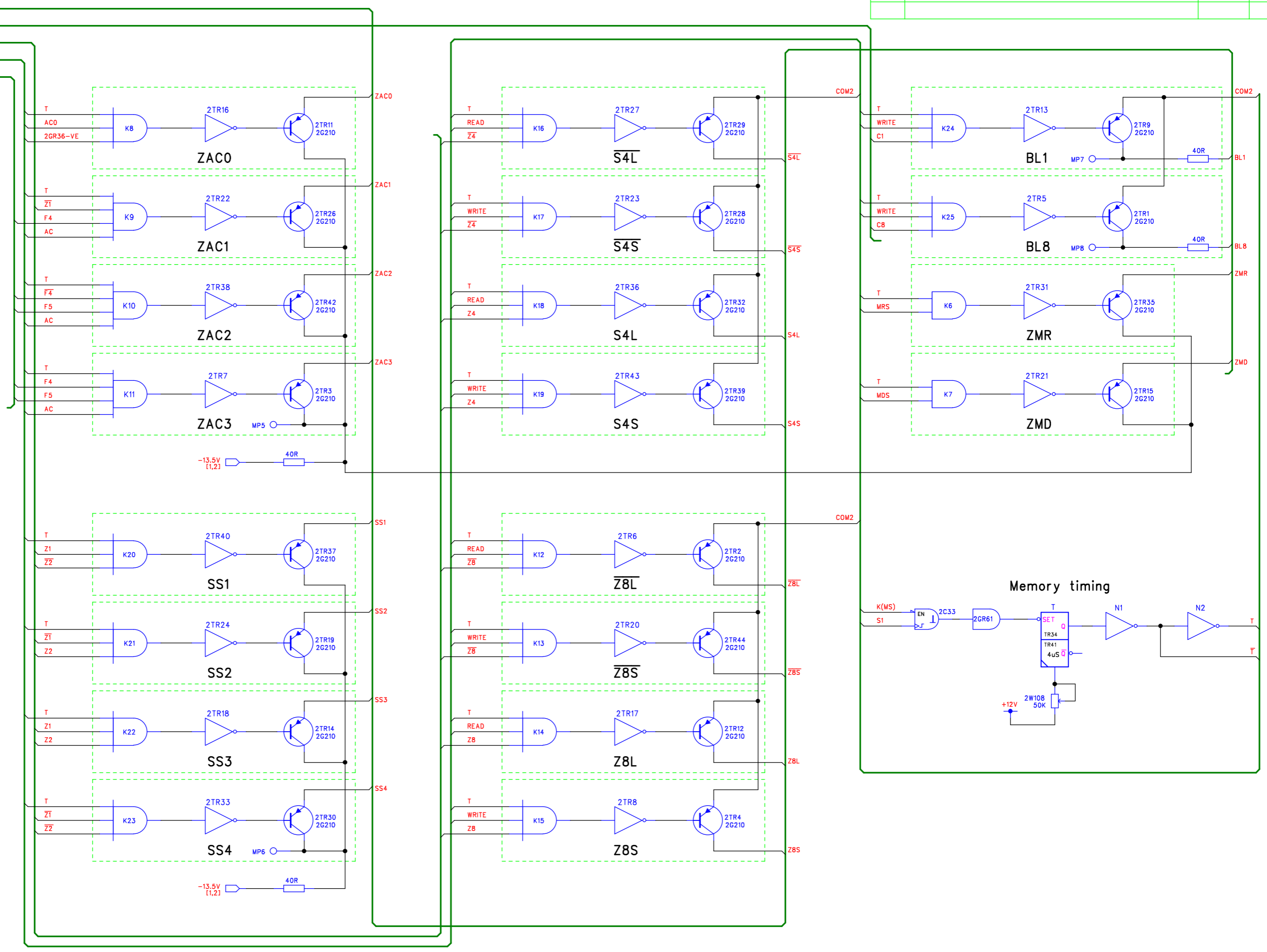
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Pcb Dwg # =		Scale	Nts	Title	
Drawn	Name	Date	Sheet	Soemtron ETR 222 Calculator	
Checked	MD Hatch	3/02/2021	Next Sheet	#1 - Core Memory	
Drawing Number			Soemtron 222 Logic		
A2 Issue		A			

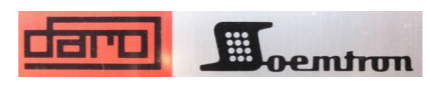
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CORE-BUSS [1]
 C-BUSS [1,7,8,14]
 Z-COUNTER [3,4,5,6]
 CONTROL [1,3,4,5,6,7,8,9,10,11,12,14,15,16]
 FUNCTIONS [3,4,5,6,7,8,9,10,11,12,15]

RevNo	Revision note	Date	By	Checked
-	-	-	-	-



Negative logic referenced to 0V - Logical 1 = -12v, logical 0 = 0v



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Pcb Dwg # =

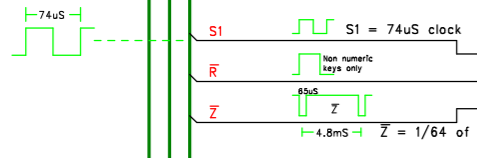
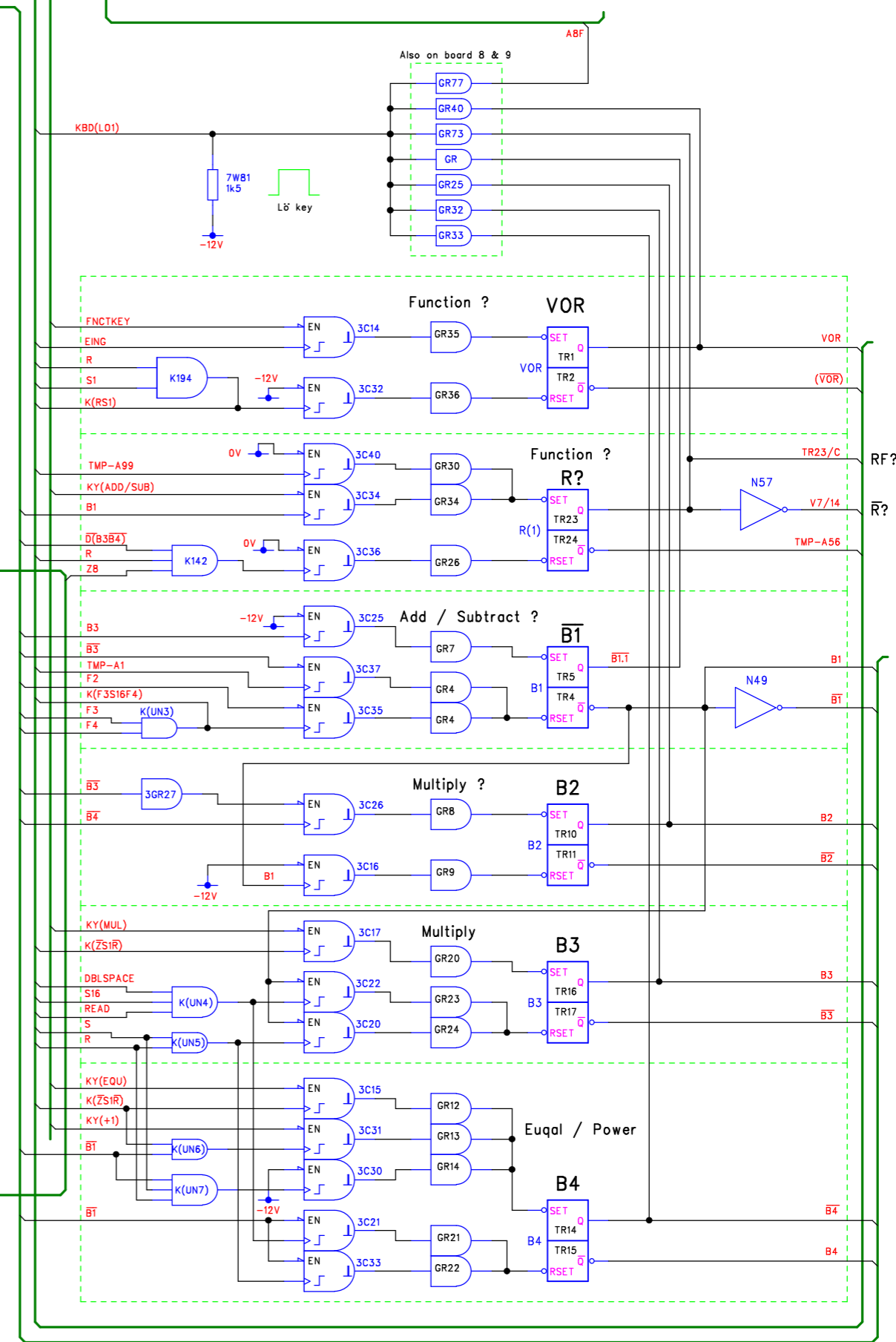
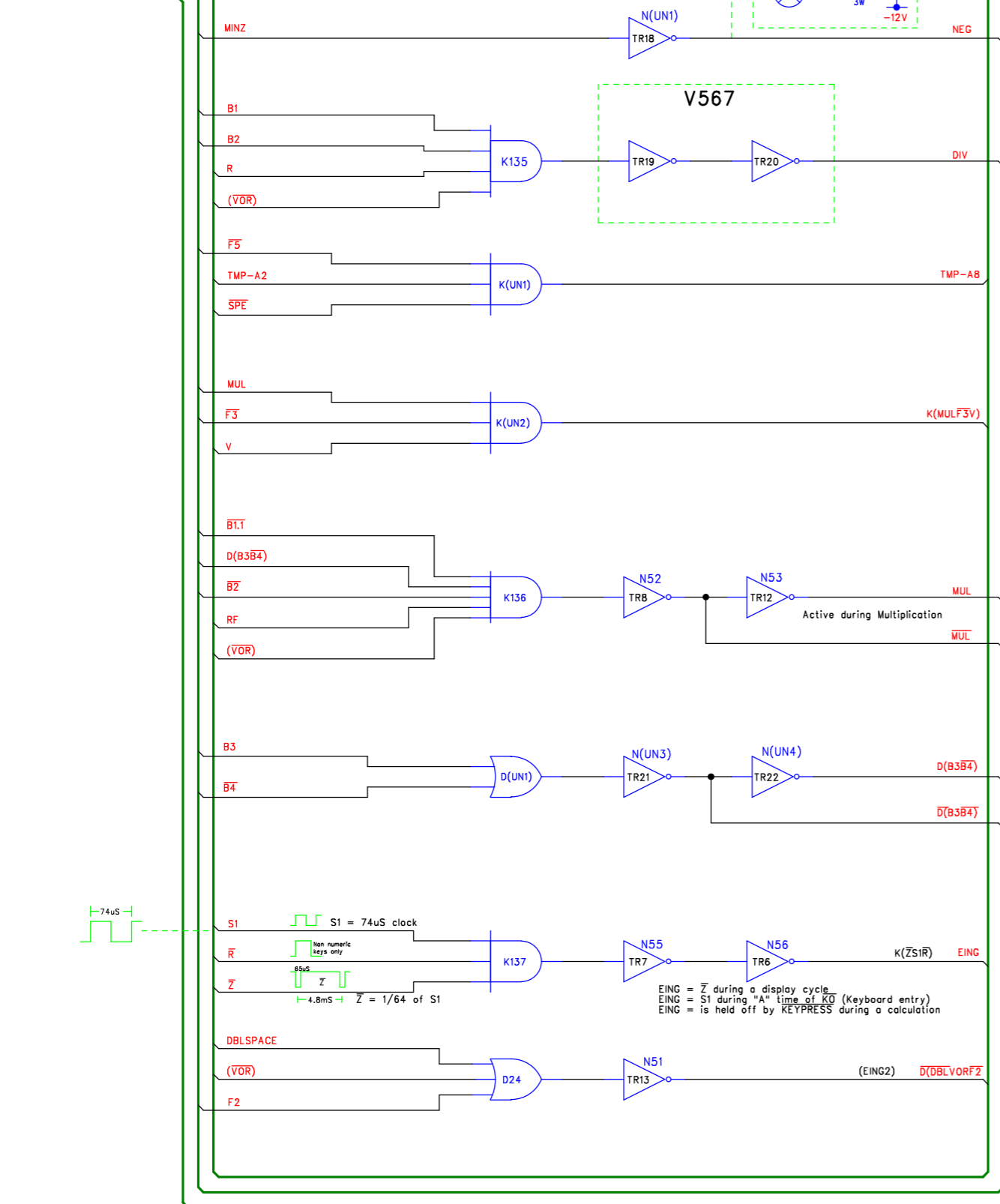
Name	Date
Drawn MD Hatch	3/02/2021
Checked -	-

Scale	Nts
Sheet 2	2
Next Sheet 3	3
Drawing Number	

Title	Issue
Soemtron ETR 222 Calculator #2 - Core Memory Drivers Logic Diagram	A

A-BUSS [1,6,7,8,10,11,12,14,15]
 ENCODED-FUNCTION [5,6,10,11,12,13,15]
 CONTROL [1,2,4,5,6,7,8,9,10,11,12,14,15,16]
 FUNCTIONS [2,4,5,6,7,8,9,10,11,12,15]
 Z-COUNTER [2,4,5,8]

RevNo	Revision note	Date	By	Checked
-	-	-	-	-



EING = Z during a display cycle
 EING = S1 during "A" time of K0 (Keyboard entry)
 EING = is held off by KEYPRESS during a calculation



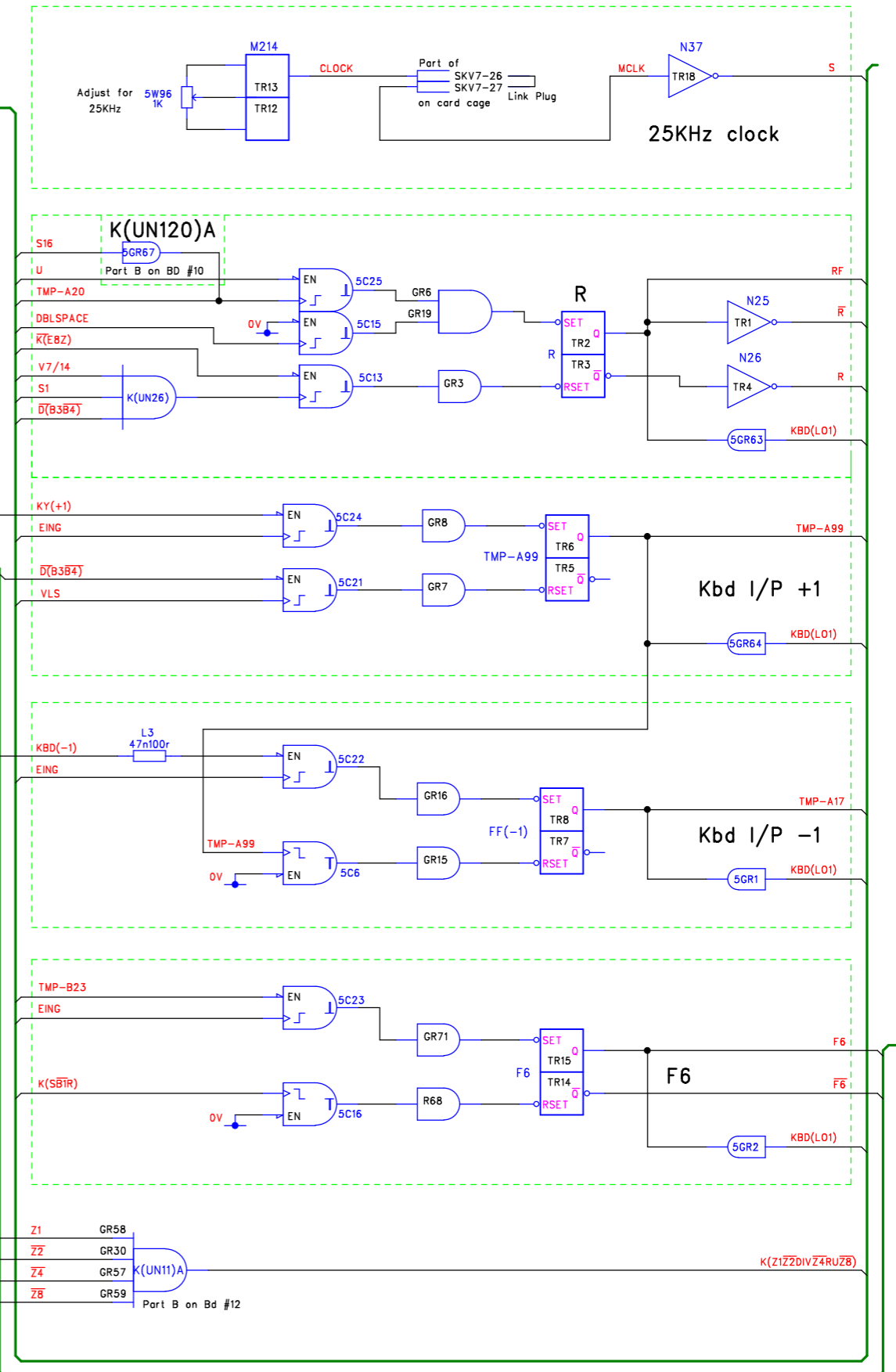
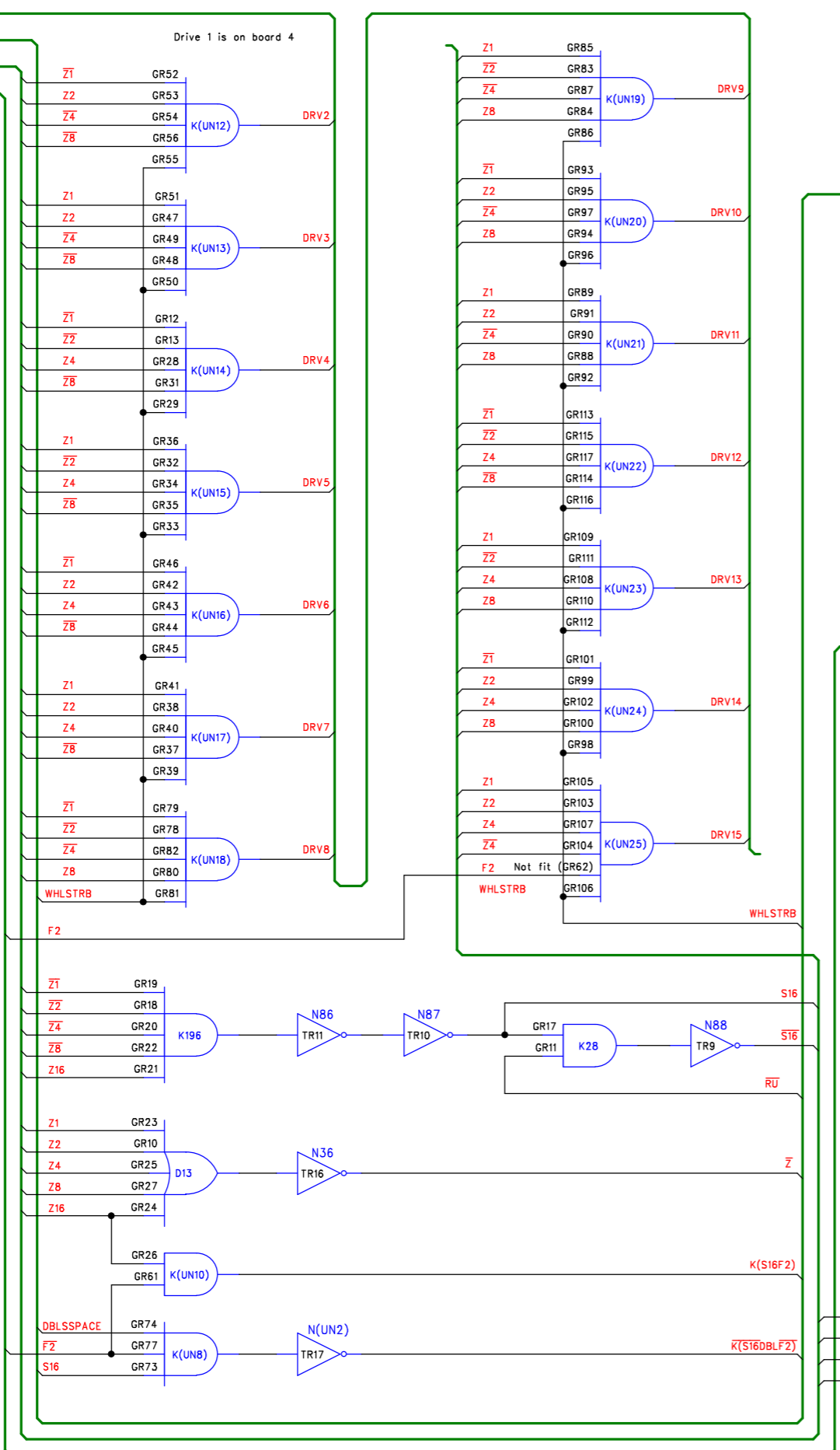
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Pcb Dwg # =		Scale	Nts	Title	
Drawn	Name	Date	Sheet	Soemtron ETR 220 Calculator	
Checked	MD Hatch	4/02/2021	Next Sheet	#3 - Functions B1/2/3/4 - VOR	
			Drawing Number	Soemtron 222 Logic	
				A2 Issue	A

Negative logic referenced to 0V - Logical 1 = -12v, logical 0 = 0v

ENCODED-FUNCTION [3,6,10,11,12,13,15]
 NIXIEDRV [14]
 CONTROL [1,2,3,4,6,7,8,9,10,11,12,14,15,16]
 Z-COUNTER [2,3,4,6]
 FUNCTIONS [2,3,4,6,7,8,9,10,11,12,15]

RevNo	Revision note	Date	By	Checked
-	-	-	-	-



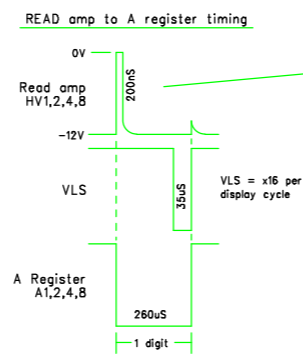
Negative logic referenced to 0V - Logical 1 = -12v, logical 0 = 0v



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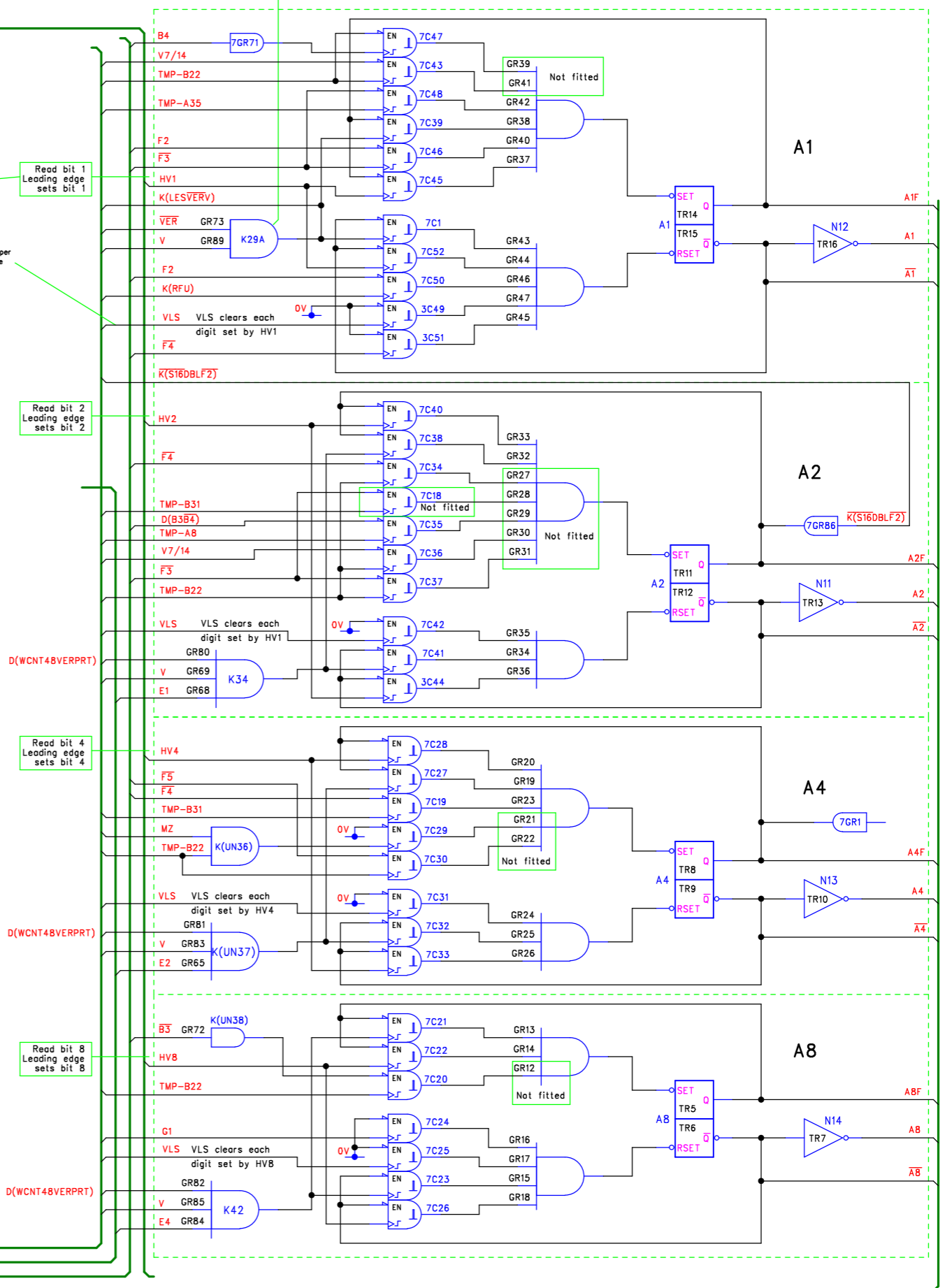
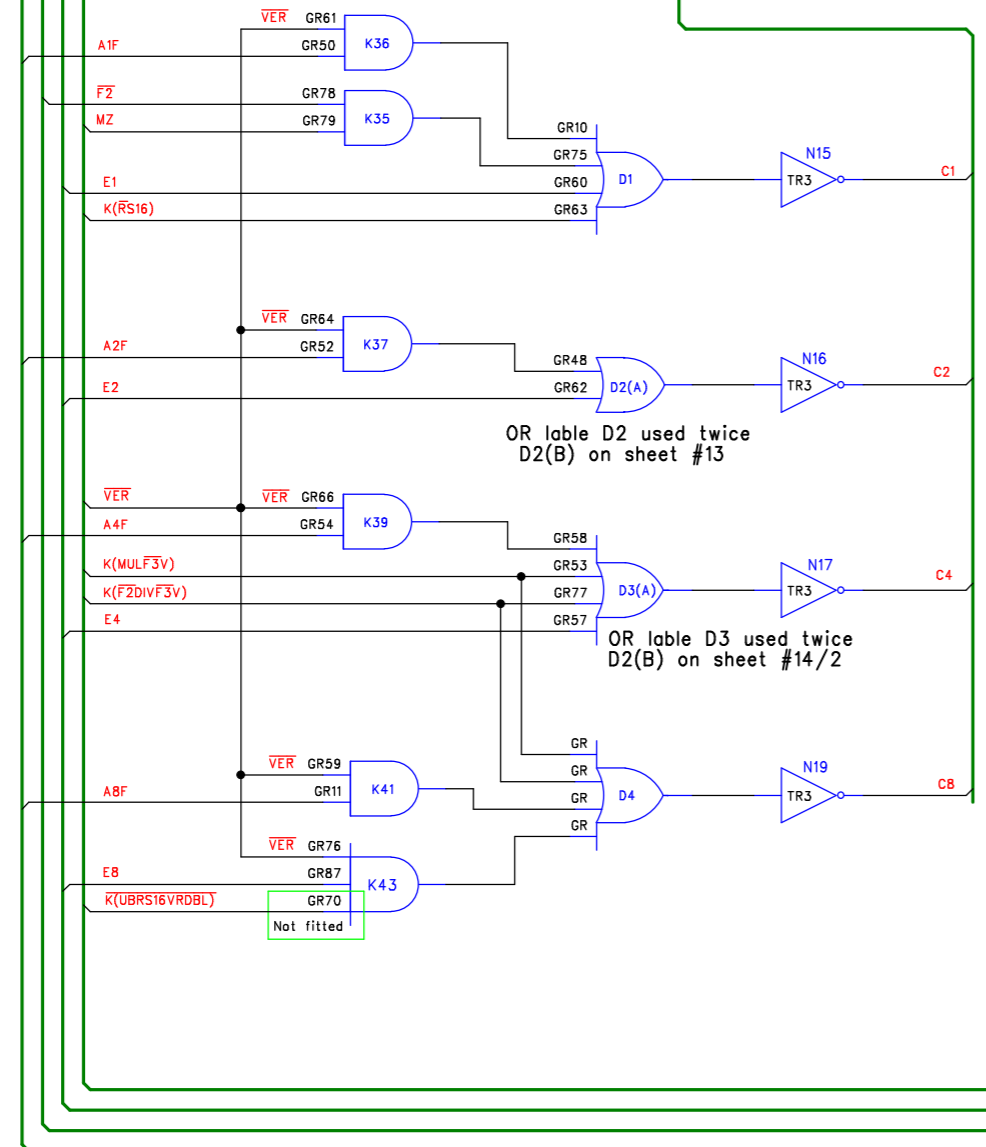
Pcb Dwg # =		Scale	Nts	Title	
Drawn	Name	Date	Sheet	Soemtron ETR 220 Calculator	
Checked	MD Hatch	17/02/2021	Next Sheet	#5 - DRV2-16 - F6 - KBD+/-1	
			Drawing Number	Soemtron 222 Logic	
				A2 Issue	A

READ-BUSS [1]
 C-BUSS [1,2,8,14]
 CONTROL [1,2,3,4,5,6,8,9,10,11,12,14,15,16]
 E-BUSS [4,8]
 FUNCTIONS [2,3,4,5,6,8,9,10,11,12,15]
 A-BUSS [1,3,6,8,10,11,12,14,15]



K28/A is split over boards 3/4

RevNo	Revision note	Date	By	Checked
-	-	-	-	-



No reset KBD(L01) ?

No reset KBD(L01) ?

Negative logic referenced to 0V - Logical 1 = -12v, logical 0 = 0v



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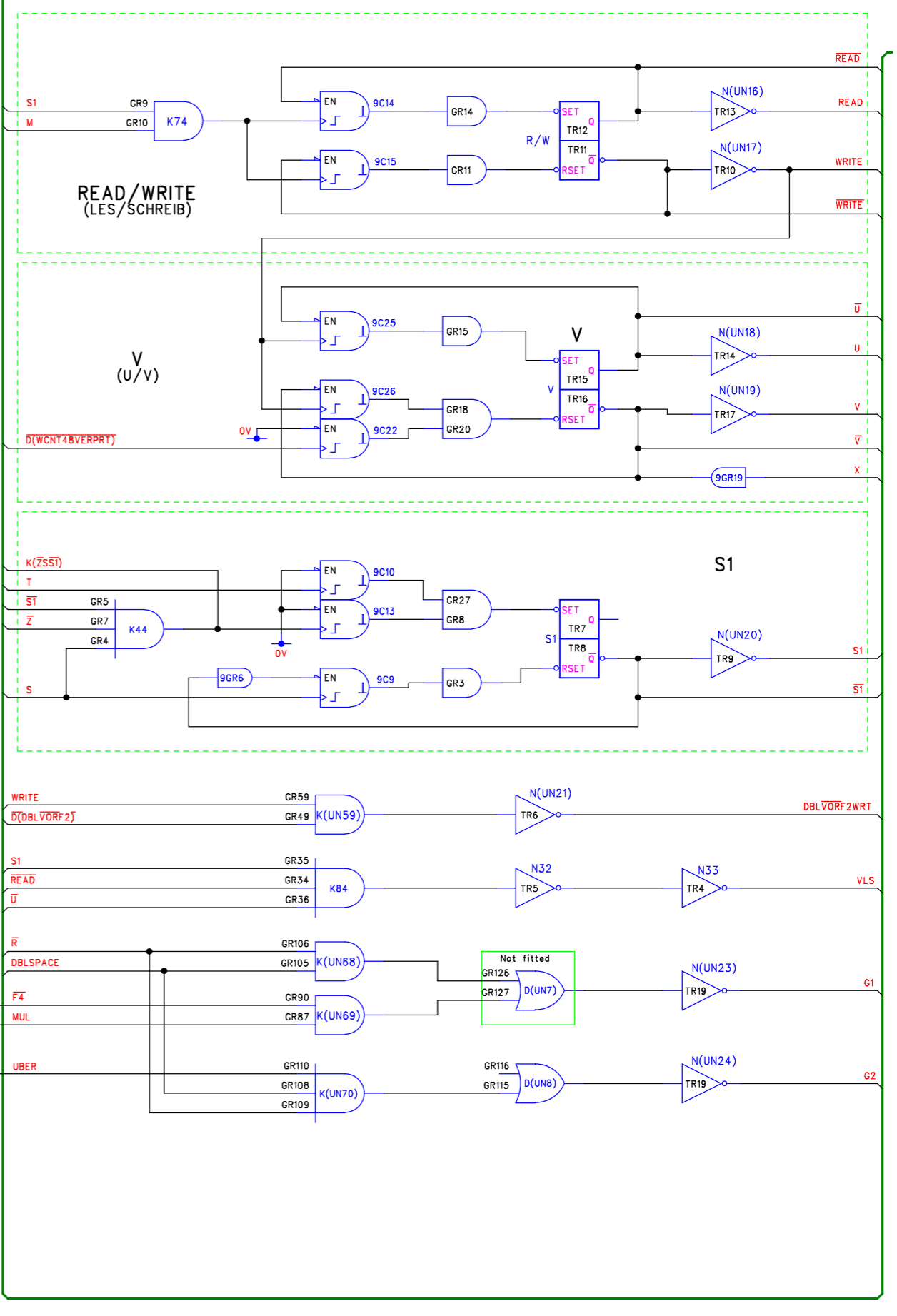
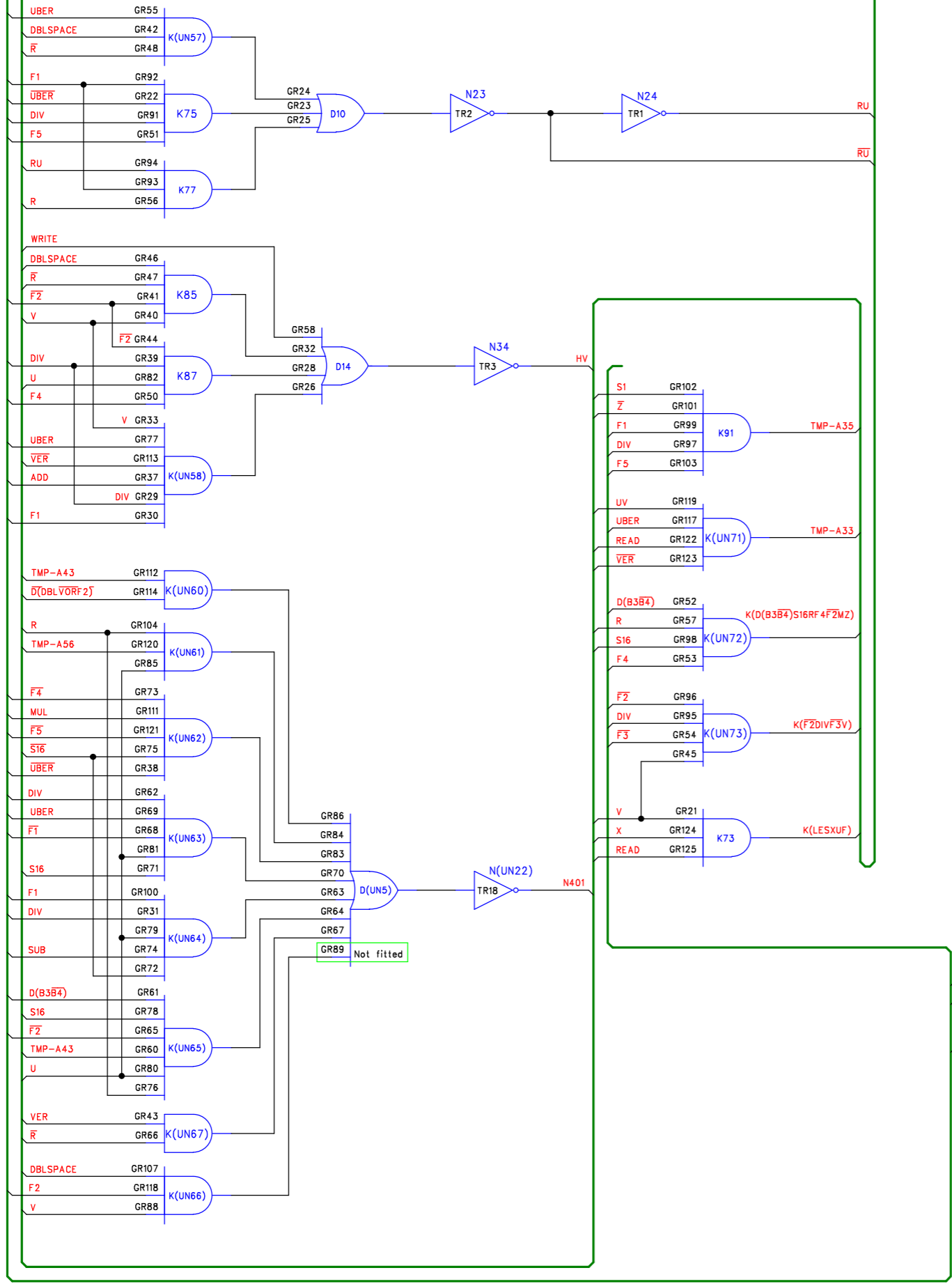
Pcb Dwg # =

Name	Date	Scale	Nts
Drawn MD Hatch	03/03/2021	Sheet 7	8
Checked -	-	Next Sheet	Drawing Number

Title Soemtron ETR 220 Calculator
 #7 - FUNCTION-LATCH-B1/2/3/4,VOR,R
 Logic Diagram
 Soemtron 222 Logic A2 Issue A

RevNo	Revision note	Date	By	Checked
-	-	-	-	-

CONTROL [1,2,3,4,5,6,7,8,10,11,12,14,15,16]
 FUNCTIONS [2,3,4,5,6,7,8,10,11,12,15]



Next is K(UN74)
 Next is N(UN25)
 Next is D(UN9)

Negative logic referenced to 0V - Logical 1 = -12v, logical 0 = 0v



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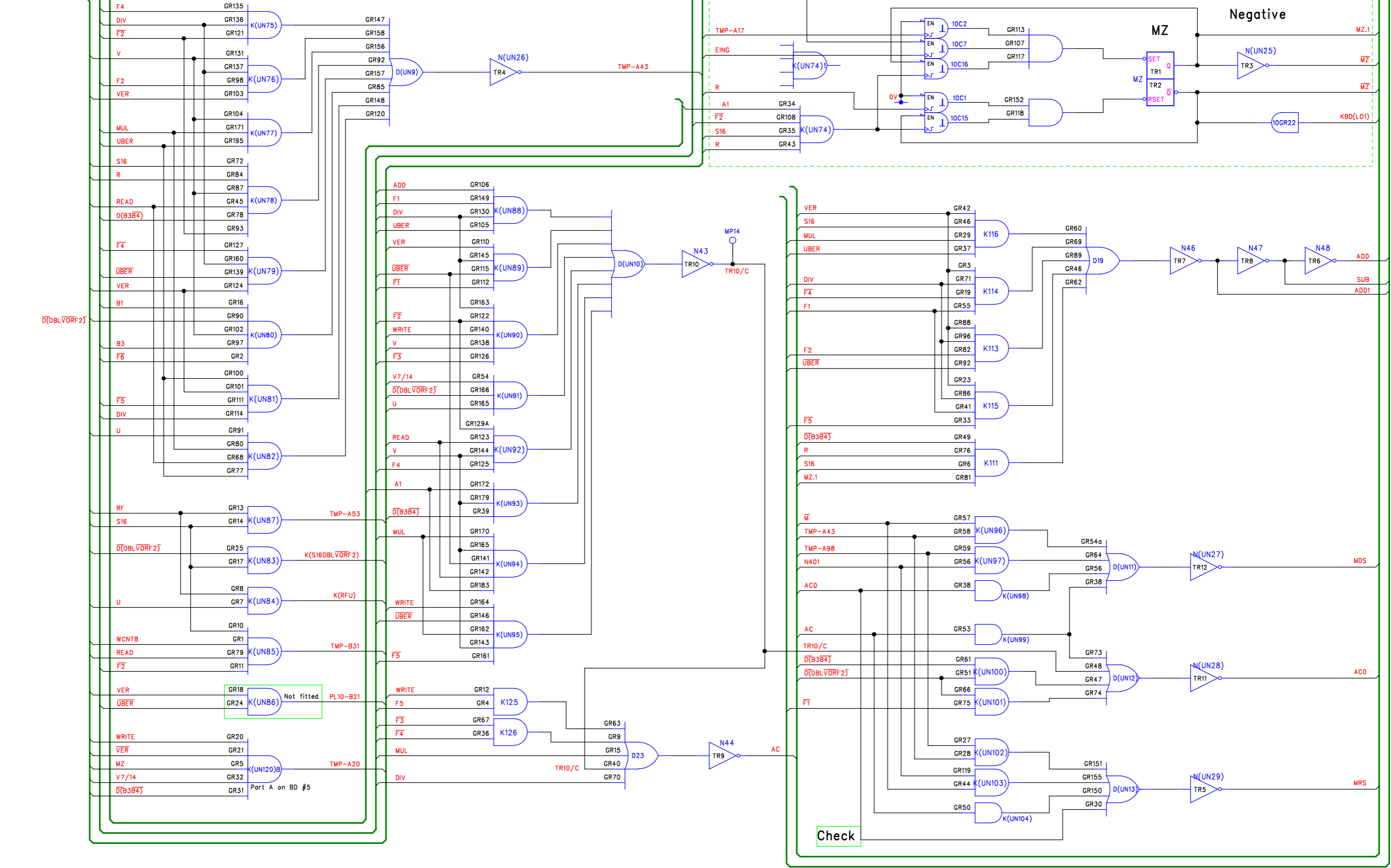
Pcb Dwg # =

Name	Date	Scale	Nts
Drawn MD Hatch	05/03/2021	Sheet	9
Checked -	-	Next Sheet	10
Drawing Number		Soemtron 222 Logic	

Title **Soemtron ETR 222 Calculator**
#9 - READ/WRITE, S1, V, Misc Gating
Logic Diagram
 A2 Issue A

RevNo	Revision note	Date	By	Checked
-	-	-	-	-

ENCODED-FUNCTION [3,5,6,11,12,13,15]
 A-BUSS [1,3,6,7,8,11,12,14,15]
 FUNCTIONS [2,3,4,5,6,7,8,9,11,12,15]
 CONTROL [1,2,3,4,5,6,7,8,9,11,12,14,15,16]



Missing component on board 10
 GR128, GR159, GR94, GR173, GR174
 GR175, GR176, GR177, GR178, B21



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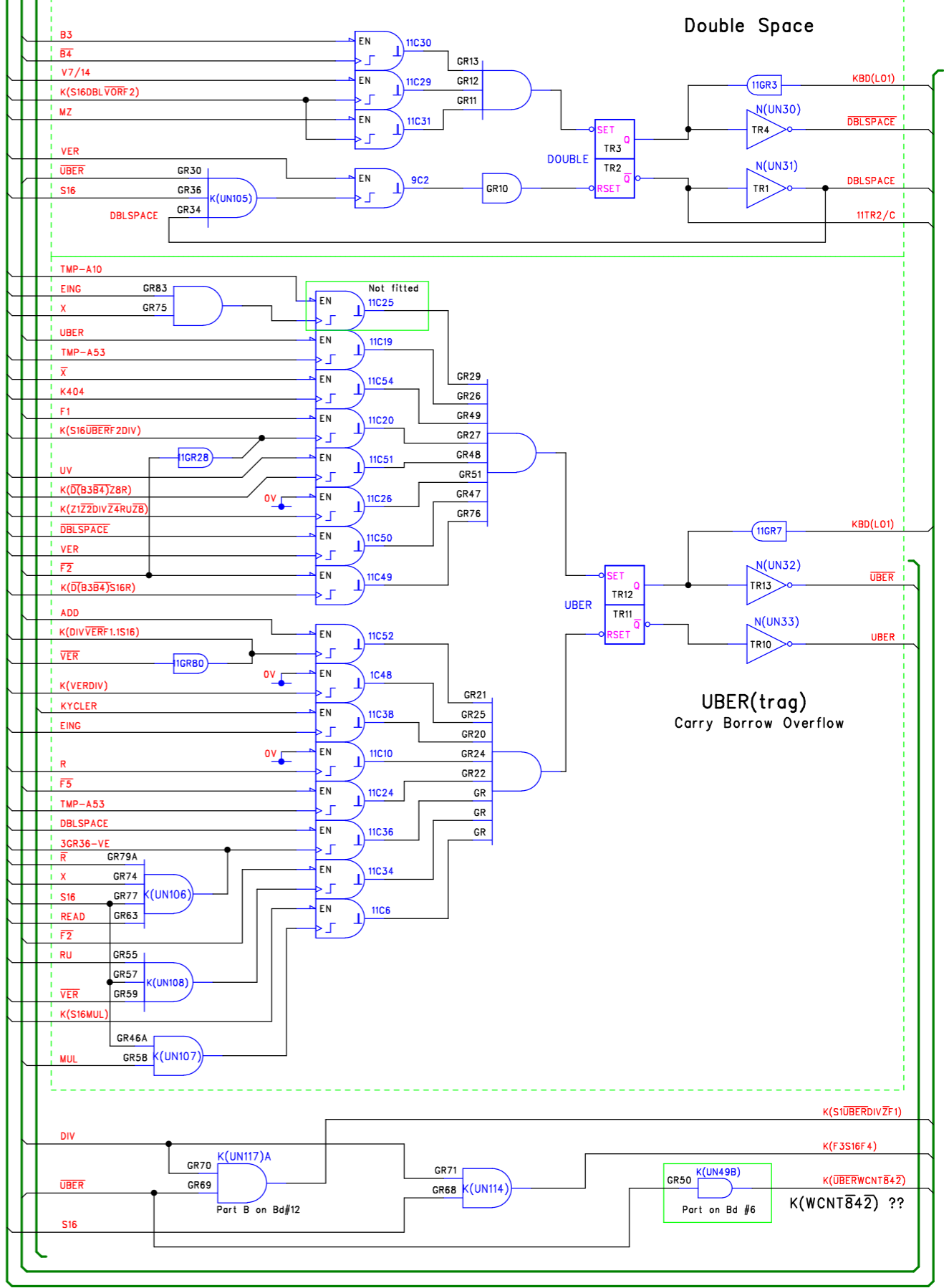
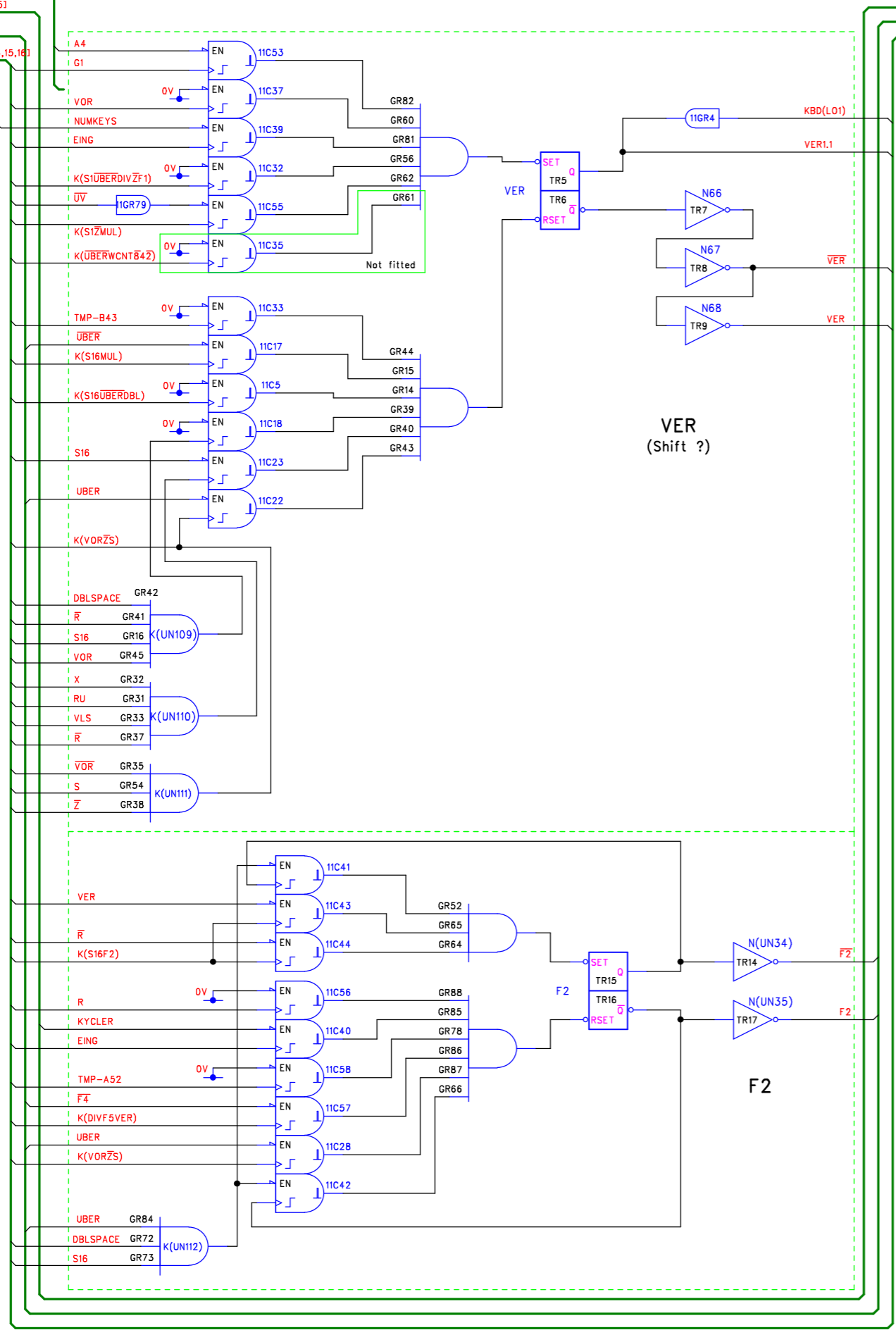
Pcb Dwg # =		Scale	Nts	Title	
Drawn	Name	Date	Sheet	Soemtron ETR 222 Calculator	
Checked	MD Hatch	08/03/2021	10	#10 - MZ, Misc Gating	
			11	Logic Diagram	
			Drawing Number	Soemtron 222 Logic	A2 Issue A

Negative logic referenced to 0V - Logical 1 = -12v, logical 0 = 0v

RevNo	Revision note	Date	By	Checked
-	-	-	-	-

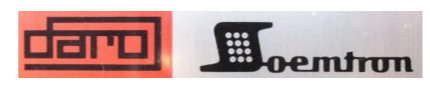
A-BUSS [1,3,6,7,8,10,12,14,15]
 ENCODED-FUNCTION [3,5,6,10,12,13,15]
 FUNCTIONS [2,3,4,5,6,7,8,9,10,12,15]
 CONTROL [1,2,3,4,5,6,7,8,9,10,12,14,15,16]
 ENCODED-NUMBER [13,15]

Gr79 used twice



Next is K(UN116)
 Next is N(UN36)
 Next is D(UN14)

R98 used twice



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Pcb Dwg # =

Name	Date	Scale	Nts
Drawn MD Hatch	10/03/2021	Sheet	11
Checked -	-	Next Sheet	12
Drawing Number		Soemtron 222 Logic	

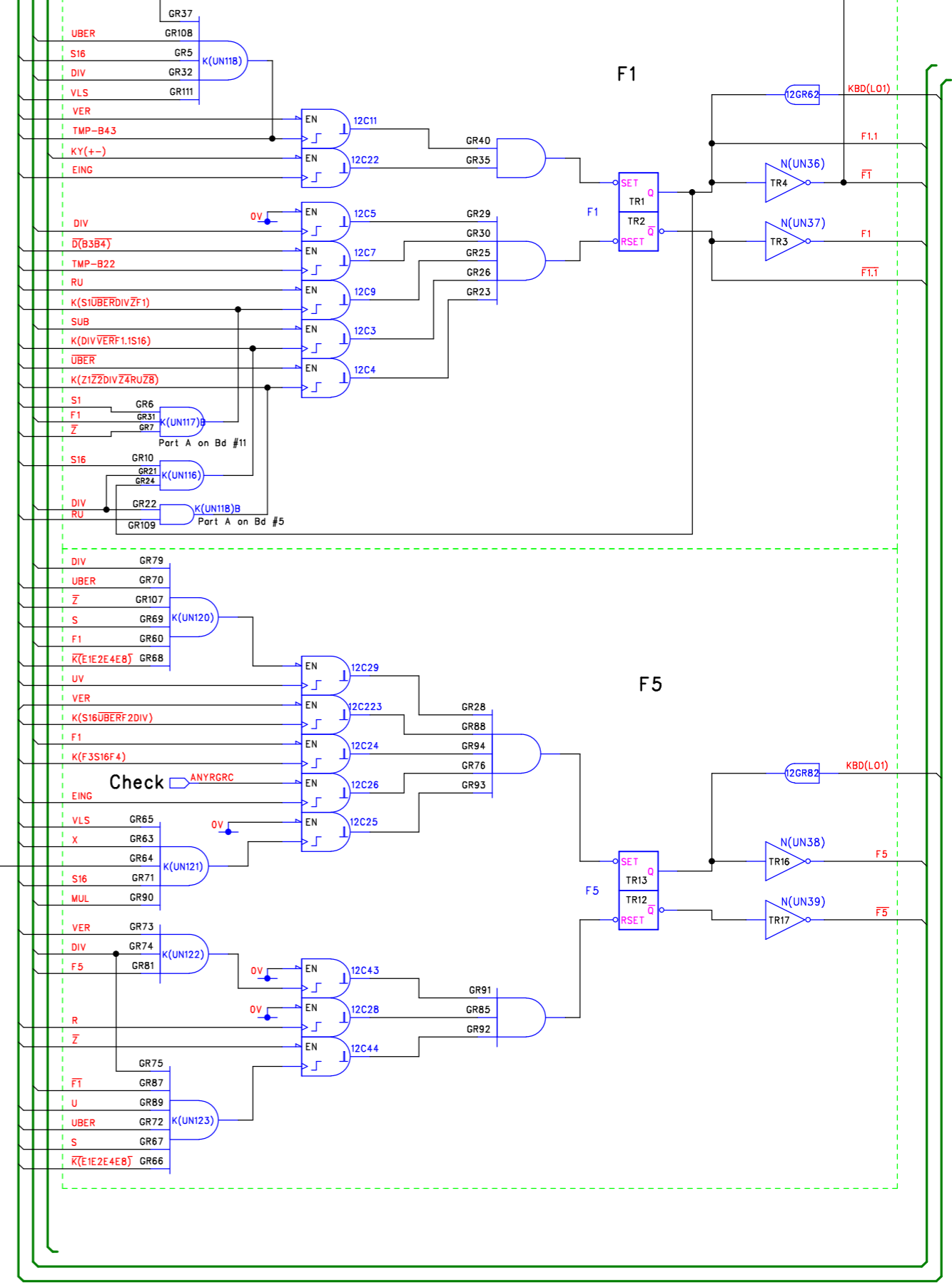
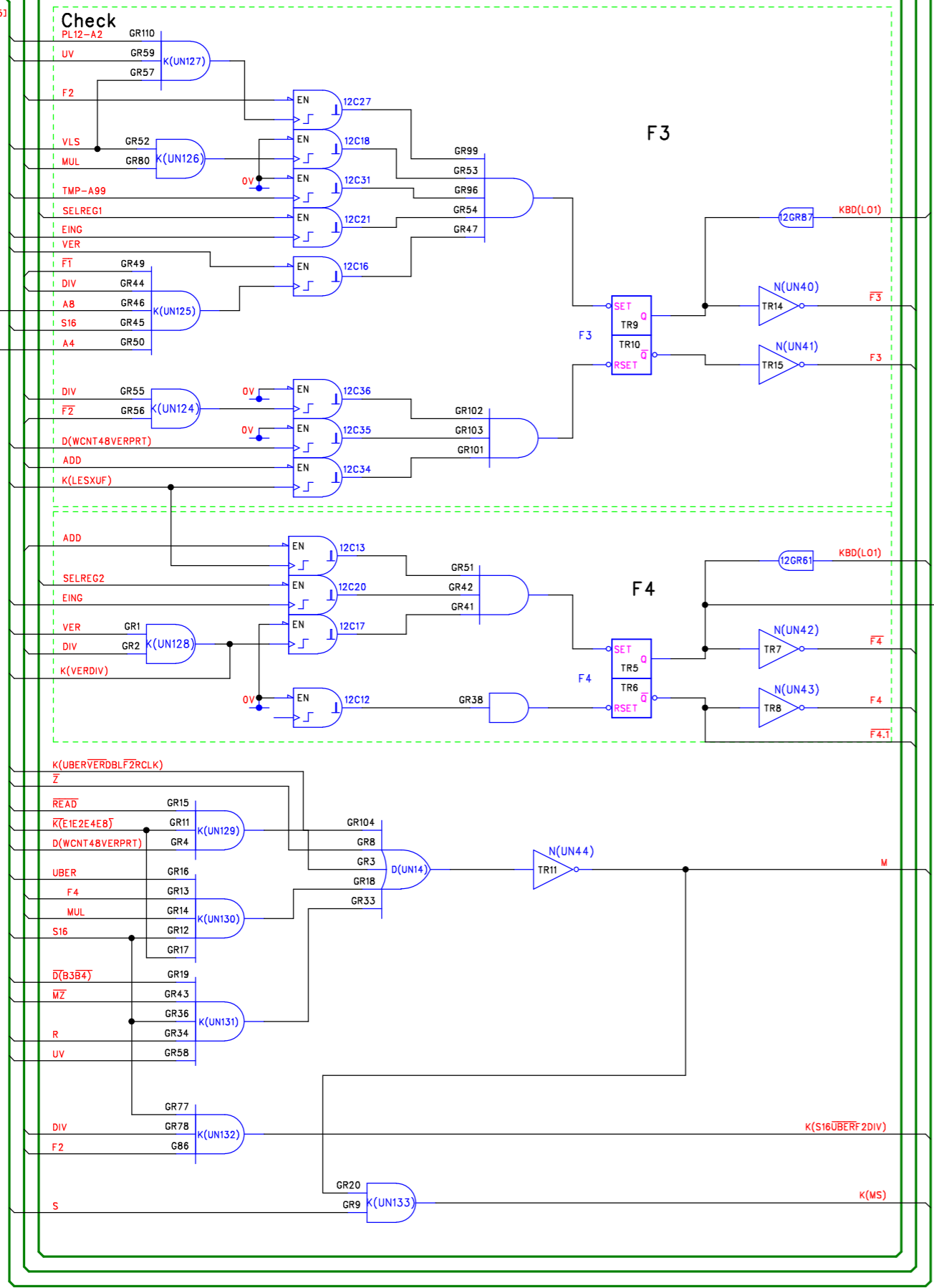
Title
 Soemtron ETR 220 Calculator
 #11 - UBER, F2, VER, DOUBLE, Gating
 Logic Diagram
 A2 Issue A

Negative logic referenced to 0V - Logical 1 = -12v, logical 0 = 0v

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RevNo	Revision note	Date	By	Checked
-	-	-	-	-

ENCODED-FUNCTION [3,5,6,10,11,13,15]
 FUNCTIONS [2,3,4,5,6,7,8,9,10,11,15]
 CONTROL [1,2,3,4,5,6,7,8,9,10,11,14,15,16]
 A-BUSS [1,3,6,7,8,10,11,14,15]



Negative logic referenced to 0V - Logical 1 = -12v, logical 0 = 0v



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Pcb Dwg # =		Scale	Nts	Title	
Drawn	Name	Date	Sheet	Soemtron ETR 222 Calculator	
Checked	MD Hatch	12/03/2021	Next Sheet	#12 - F1, F3, F4 and F5 Latches	
			Drawing Number	Soemtron 222 Logic	
				A2 Issue	A

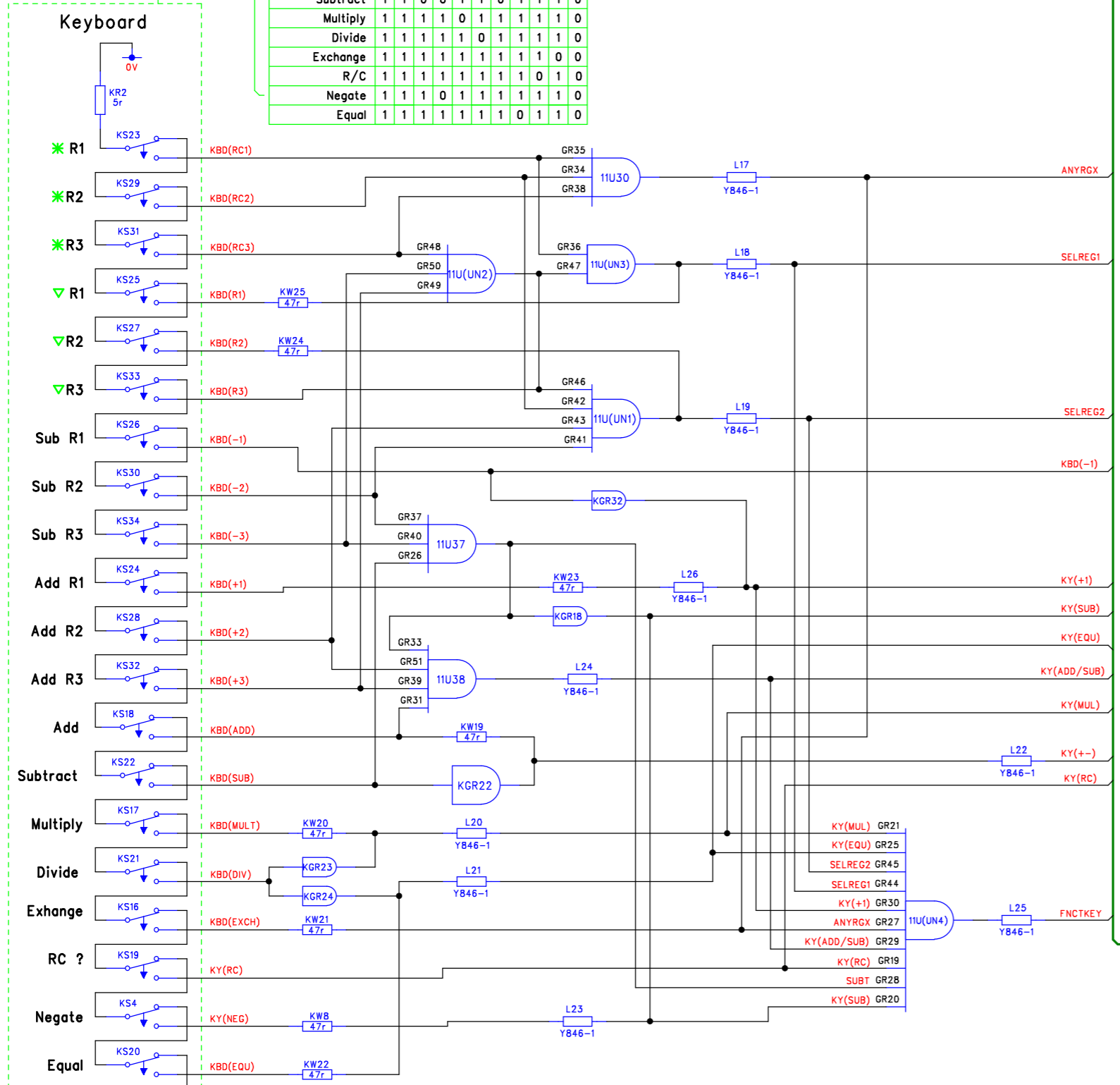
ENCODED-NUMBER [11,15]
 ENCODED-FUNCTION [3,5,6,10,11,12,15]

RevNo	Revision note	Date	By	Checked
-	-	-	-	-

Signal	SELREG1	SELREG2	KY(ADD/SUB)	KY(SUB)	KY(MUL)	KY(DIV)	KY(+)	KY(EQU)	KY(RC)	ANYRGX	FUNCTKEY
Any key Reg 1	0	1	1	1	1	1	1	1	1	1	0
Any key Reg 2	1	0	1	1	1	1	1	1	1	1	0
Any key Reg 3	0	0	1	1	1	1	1	1	1	1	0
Any Reg + Key	x	x	0	1	1	1	1	1	1	1	0
Any Reg - Key	x	x	1	0	1	1	1	1	1	1	0
Any Reg *Key	x	x	1	1	1	1	1	1	1	1	0
Any Reg /Key	x	x	1	1	1	1	1	1	1	1	0
Add	1	1	0	1	1	1	0	1	1	1	0
Subtract	1	1	0	0	1	1	0	1	1	1	0
Multiply	1	1	1	0	1	1	1	1	1	1	0
Divide	1	1	1	1	0	1	1	1	1	1	0
Exchange	1	1	1	1	1	1	1	1	0	1	0
R/C	1	1	1	1	1	1	1	0	1	0	0
Negate	1	1	1	0	1	1	1	1	1	1	0
Equal	1	1	1	1	1	1	1	0	1	1	0

0 = Key pressed (= 0V)
 1 / x = No key (-12V)

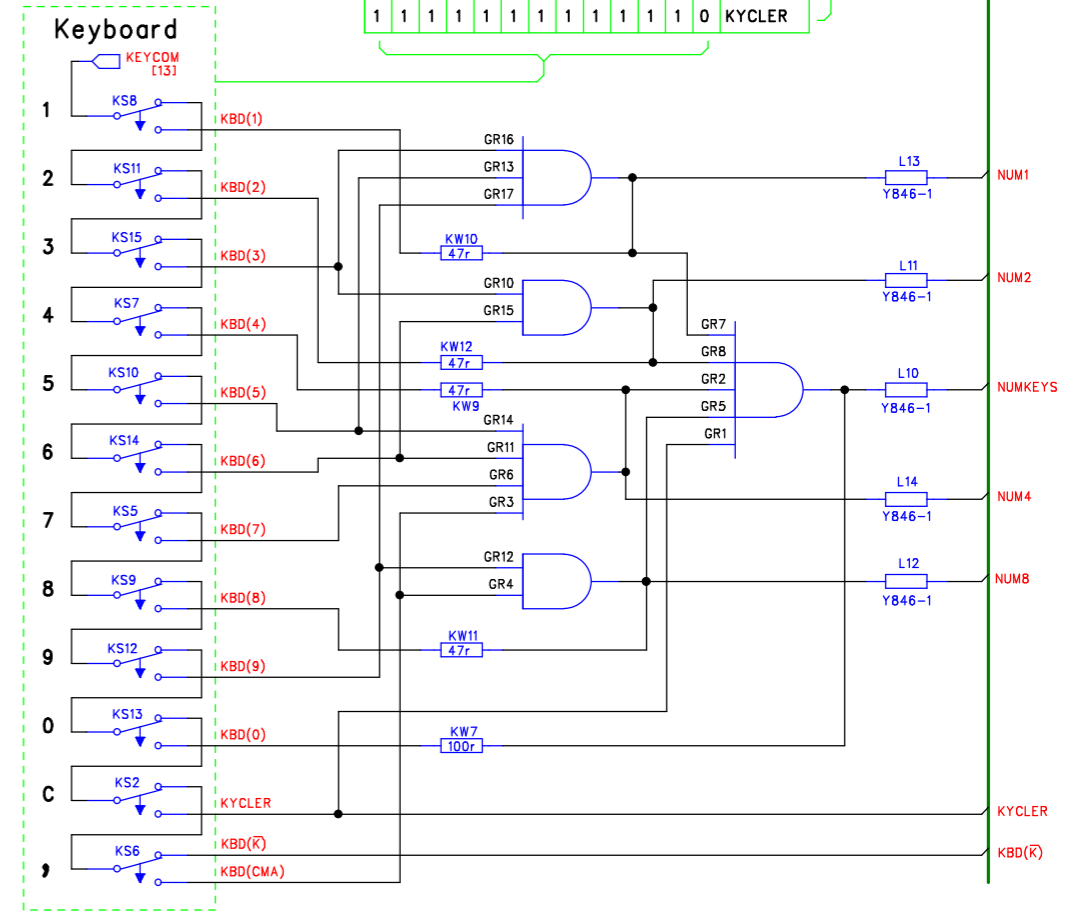
Keys are ordered for this diagram, not as they are wired, see circuit.



KEYCOM [13]

0 = Key pressed (= 0V)
 1 = no key (-12V)

Keys are ordered for this diagram, not as they are wired, see circuit.



X	0	1	2	3	4	5	6	7	8	9	Comma	Clear	Key Code
1	1	0	1	0	1	0	1	0	1	0	1	1	NUM1
1	1	1	0	0	1	1	0	0	1	1	1	1	NUM2
1	1	1	1	1	0	0	0	0	1	1	0	1	NUM4
1	1	1	1	1	1	1	1	1	0	0	0	1	NUM8
1	0	0	0	0	0	0	0	0	0	0	0	0	NUMKEYS
1	1	1	1	1	1	1	1	1	1	1	0	0	KYCLER

Next is K(UN134)
 Next is N(UN45)
 Next is D(UN15)
 Next is 11U(UN5)

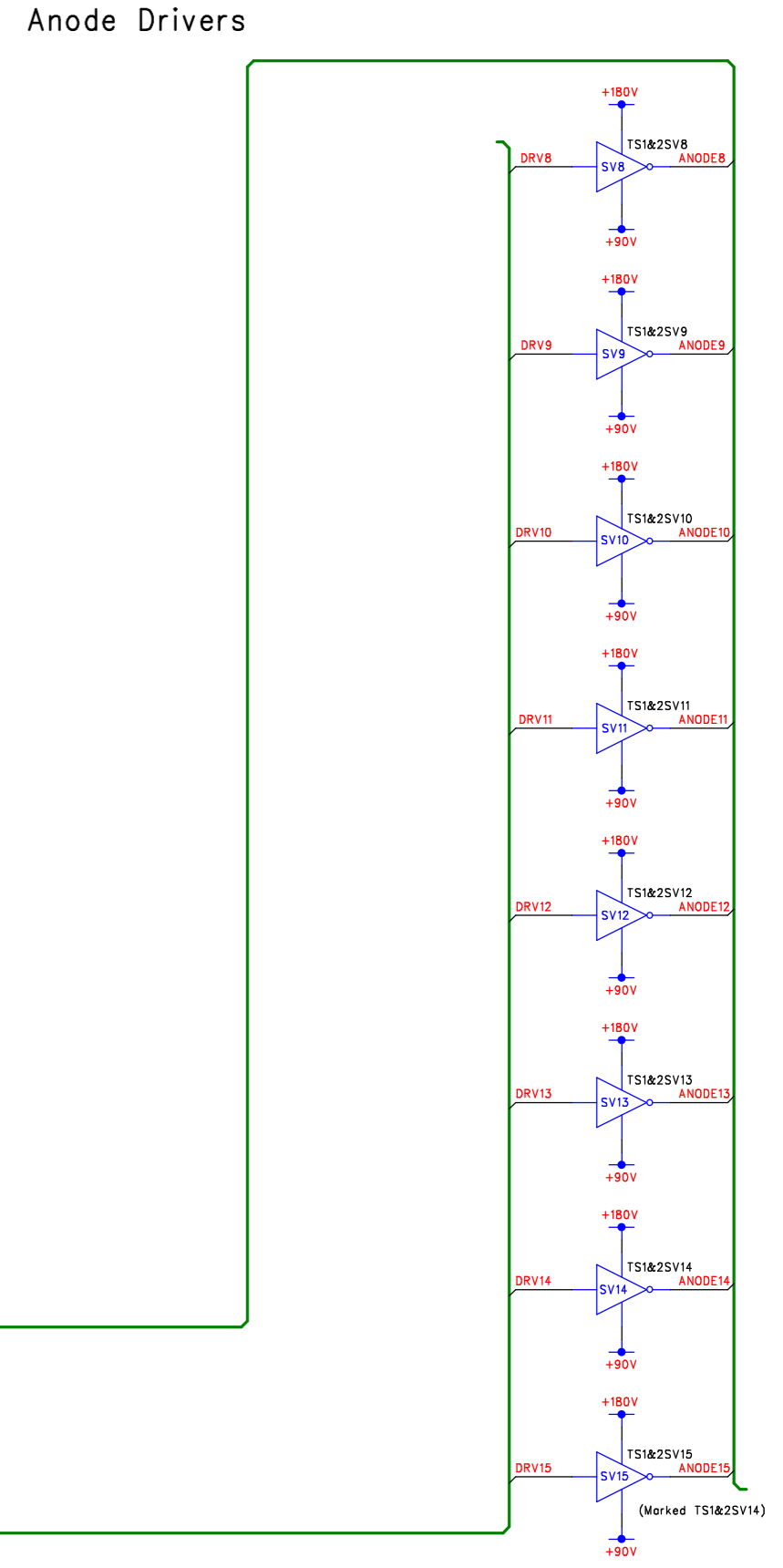
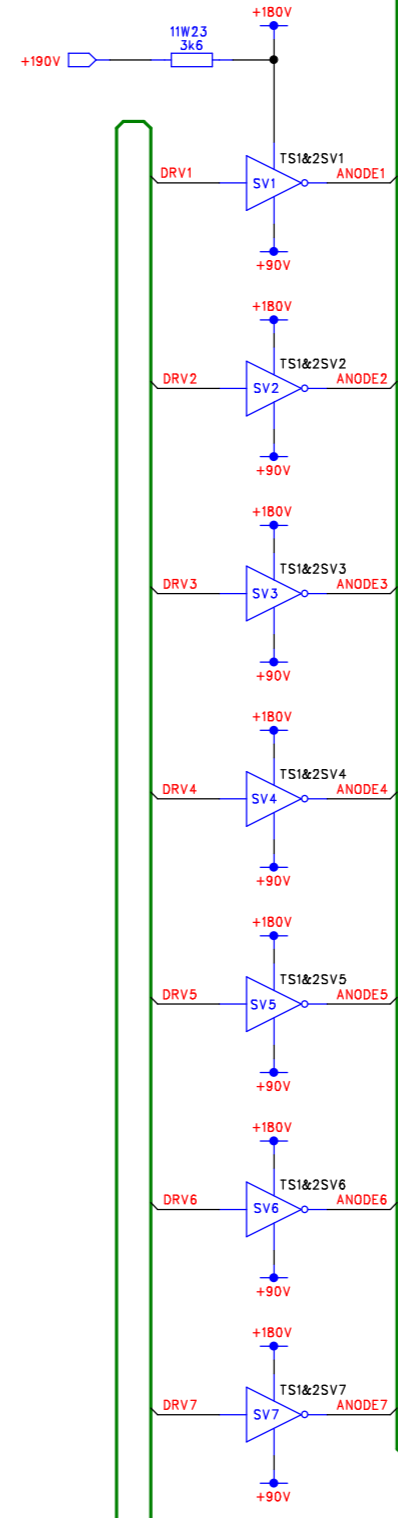
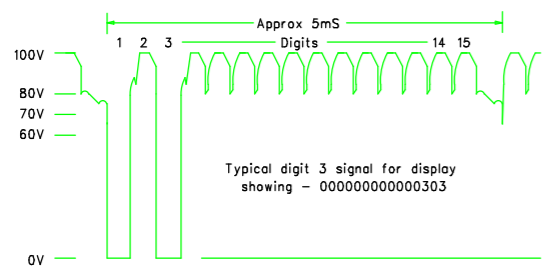
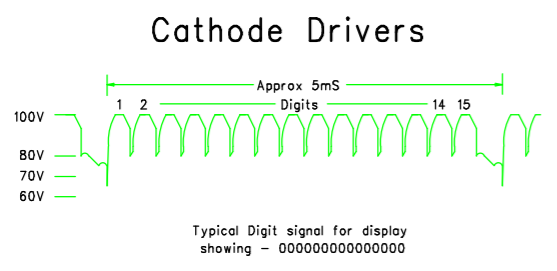
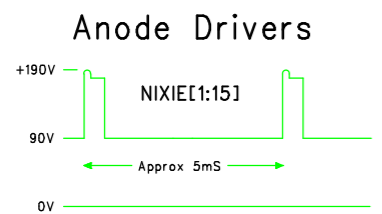
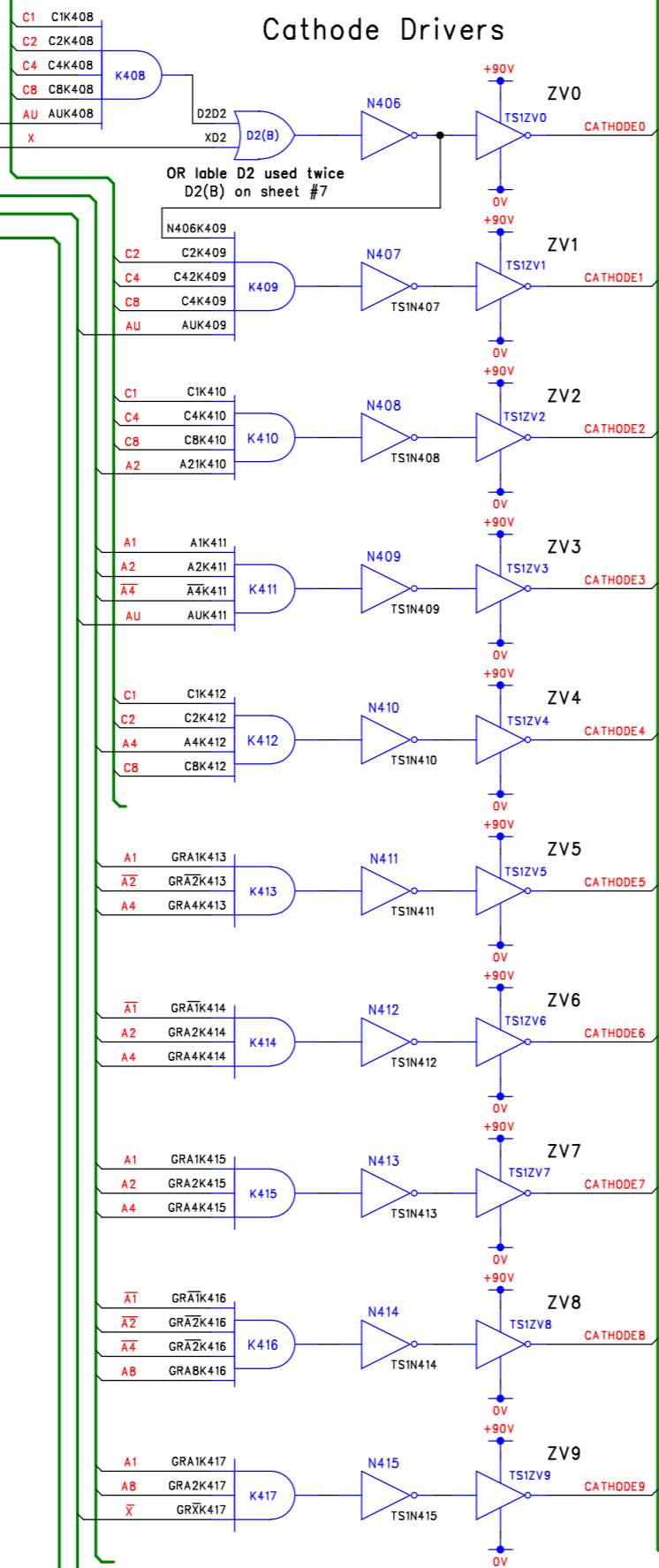
Negative logic referenced to 0V - Logical 1 = -12v, logical 0 = 0v



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Pcb Dwg # =		Scale	Nts	Title
Drawn	Name MD Hatch	Date	Sheet 13	Soemtron ETR 222 Calculator #13 - Keyboard & Encoding Logic Diagram
Checked	Date 16/03/2021	Next Sheet 14	Drawing Number	
		Soemtron 222 Logic		A2 Issue A

DISPLAY-BUSS [16]
 C-BUSS [1,2,7,8]
 A-BUSS [1,3,6,7,8,10,11,12,15]
 CONTROL [1,2,3,4,5,6,7,8,9,10,11,12,15,16]
 NIXIEDRV [5]



RevNo	Revision note	Date	By	Checked
-	-	-	-	-

Negative logic referenced to 0V - Logical 1 = -12v, logical 0 = 0v

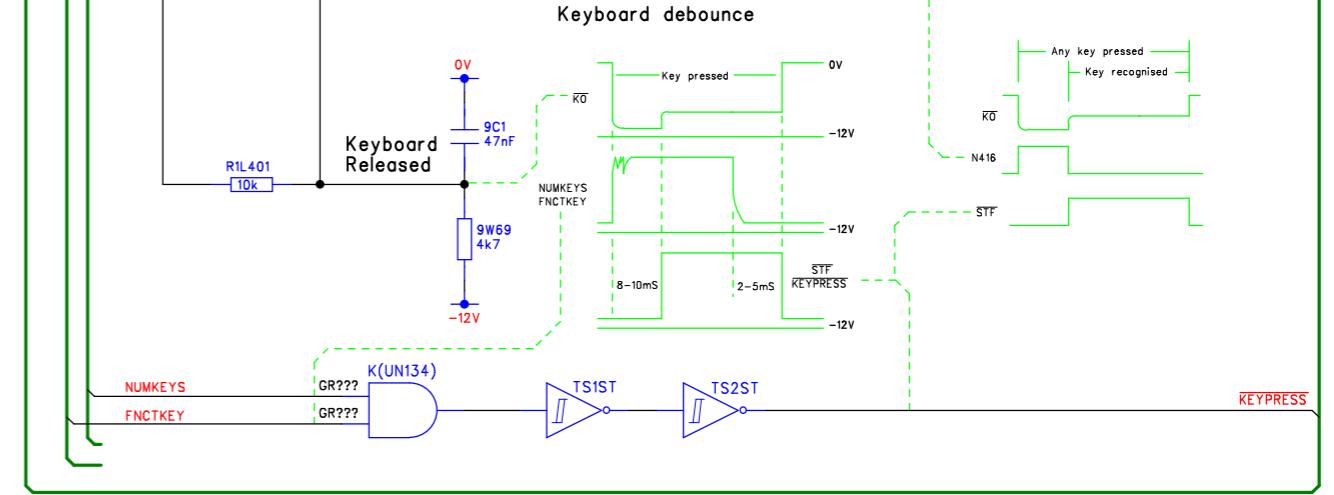
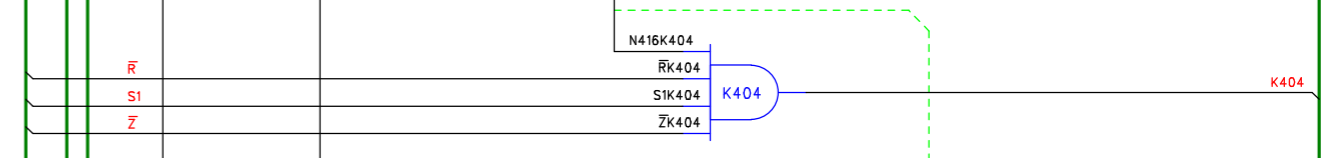
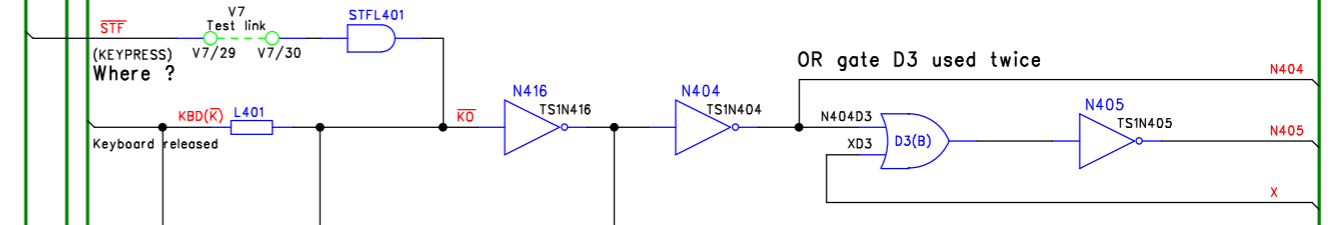
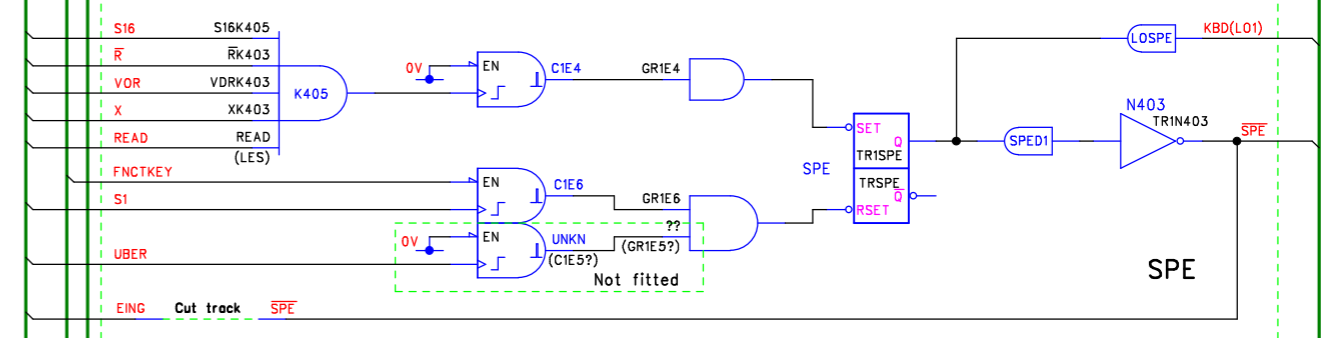
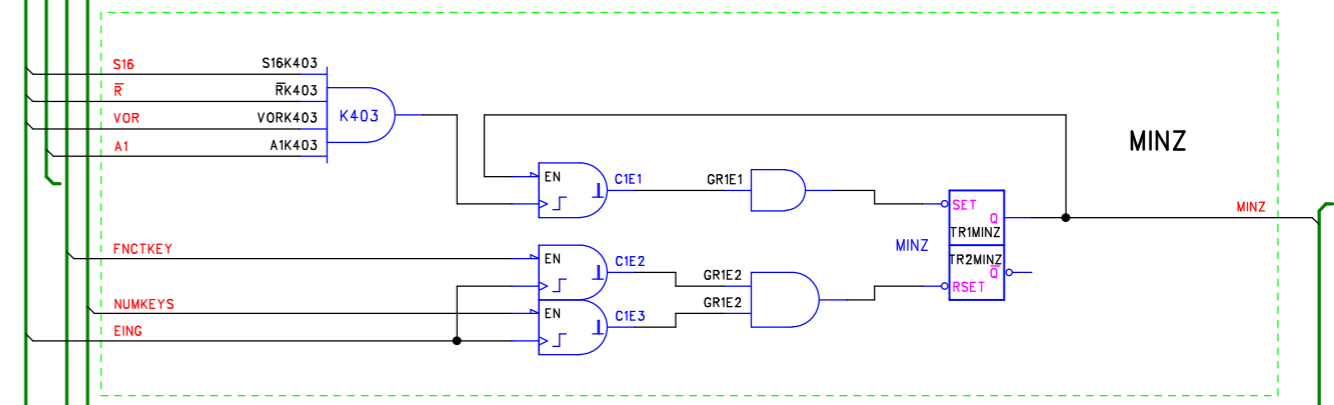
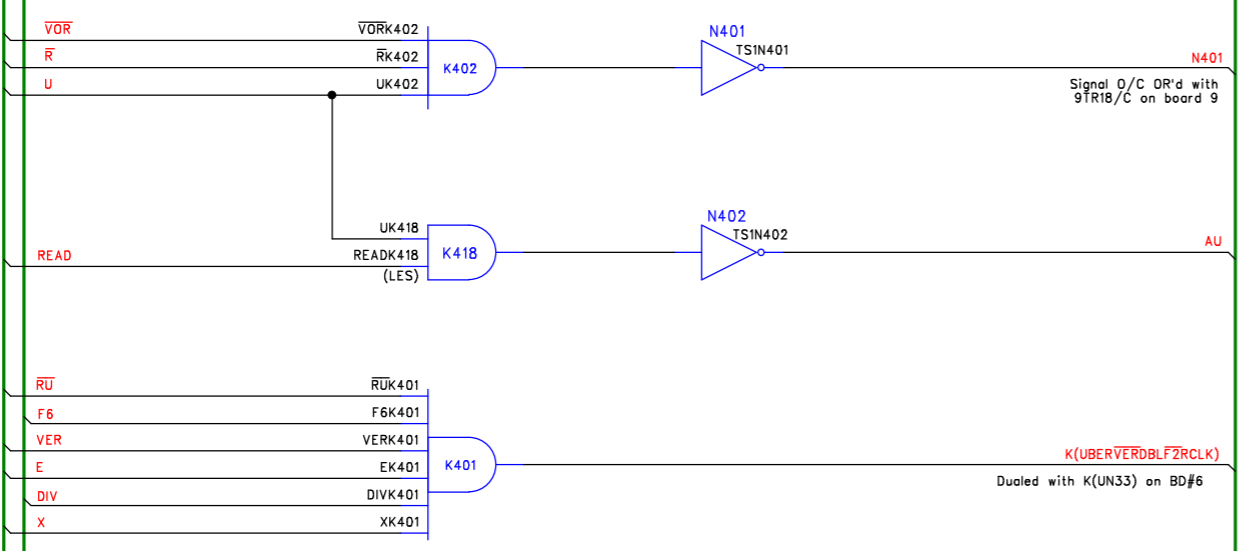


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Pcb Dwg # =		Scale	Nts	Title	
Drawn	MD Hatch	Sheet	14	Soemtron ETR 222 Calculator #14/1 - Nixie drivers Logic Diagram	
Checked	-	Next Sheet	15	Soemtron 222 Logic	
		Drawing Number	A2	Issue	A

RevNo	Revision note	Date	By	Checked
-	-	-	-	-

ENCODED-NUMBER [1,13]
 ENCODED-FUNCTION [3,5,6,10,11,12,13]
 A-BUSS [1,3,6,7,8,10,11,12,14]
 FUNCTIONS [2,3,4,5,6,7,8,9,10,11,12]
 CONTROL [1,2,3,4,5,6,7,8,9,10,11,12,14,16]



Next is K(UN135)
 Next is N(UN45)
 Next is D(UN15)
 Negative logic referenced to 0V - Logical 1 = -12v, logical 0 = 0v



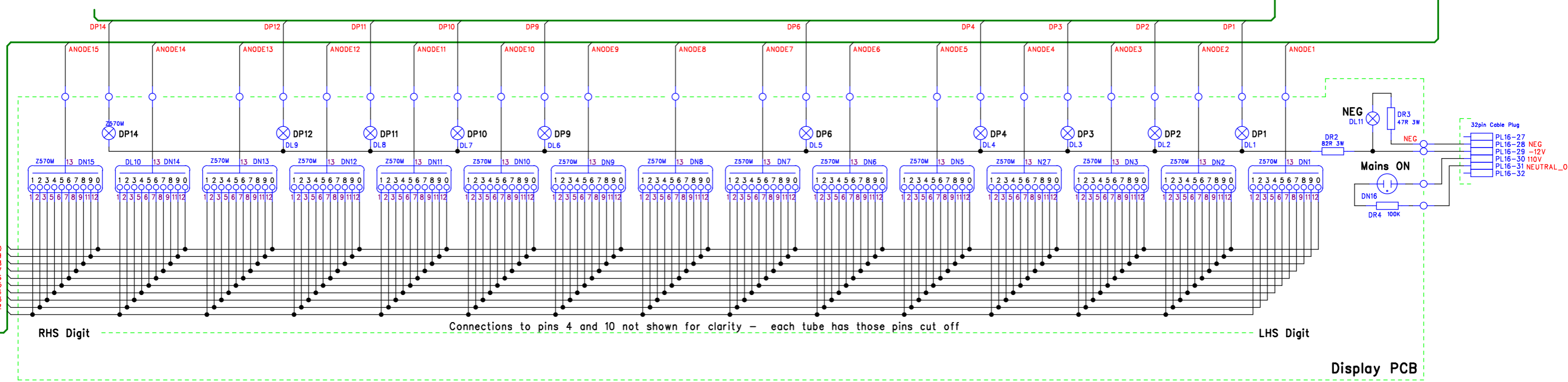
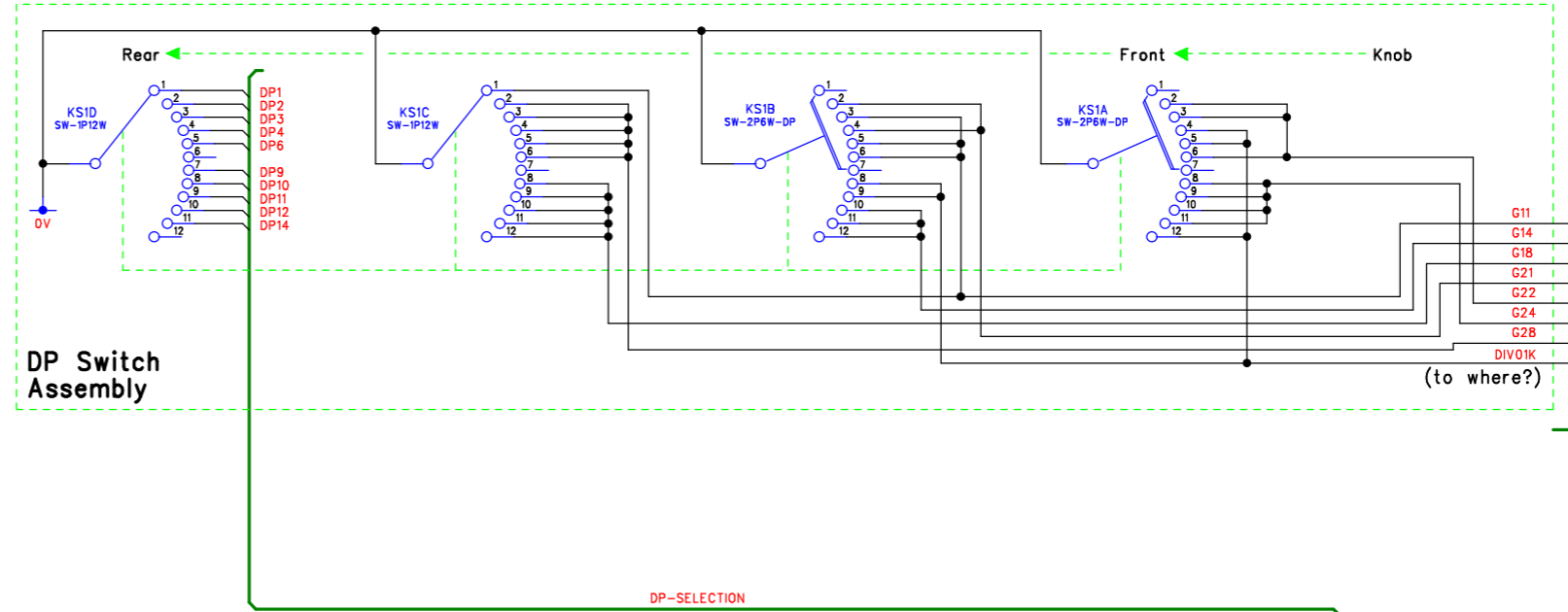
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Pcb Dwg # =		Scale	Nts	Title	
Drawn	Name	Date	Sheet	Soemtron ETR 222 Calculator	
Checked	MD Hatch	19/03/2021	Next Sheet	#14/2 - MINZ, SPE	
			Drawing Number	Soemtron 222 Logic	
				A2 Issue	A

DISPLAY-BUSS [14]
CONTROL [1,2,3,4,5,6,7,8,9,10,11,12,14,15]

Decimal Point Switch Wiring Table (X=0V)

Switch position ->	1	2	3	4	5	6	7	8	9	10	11	12
Pin	Function	0	1	2	3	4	6	Z	9	10	11	12
PL4/1	2		X									
PL4/2	3		X									
PL4/3	4			X								
PL4/4	5				X							
PL4/5	6					X						
PL4/6	8						X					
PL4/7	9							X				
PL4/8	10								X			
PL4/9	11									X		
PL4/10	12										X	
PL3/1	G11	X								X		X
PL3/2	G14		X			X	X			X	X	X
PL3/3	G18			X		X			X	X	X	X
PL3/4	G21		X		X				X	X	X	X
PL3/5	G22		X	X			X		X	X	X	X
PL3/6	G24		X	X	X			X	X	X	X	X
PL3/7	G28		X	X	X	X		X	X	X	X	X
PL3/9	DIV01K		X	X	X	X		X	X	X	X	X



CATHODE9
CATHODE8
CATHODE7
CATHODE6
CATHODE5
CATHODE4
CATHODE3
CATHODE2
CATHODE1

32pin Cable Plug
PL16-27
PL16-28 NEG
PL16-29 -12V
PL16-30 110V
PL16-31 NEUTRAL_ON
PL16-32

These diagrams are referenced to 0V - Logical 1 = -12v, logical 0 = 0V



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Pcb Dwg # =		Scale	Nts	Title	
Drawn	Name	Sheet	16	Soemtron ETR 222 Calculator DP Selection and Nixi Display Logic Diagram	
Checked	Date	Next Sheet	-	Soemtron 222	
Drawing Number		A2 Issue		A	

