Integrating Sphere

Sphere Signals **SPHRSIGS. WPS 7/29/99 (scanned and modified 11/7/05)**

Function		Name	Pin no.	Signal desc.
PMT Prog	input	AO	1	PMT signal gain 1 to 1024 0 to 10V bandwidth 10Hz
PMT Log	input	AI	2	0 to 10 v PMT signal Log scale 5V(+-)3.8 for 4 decades 1.9V/decade 5V=100nA
PMT Raw	input	A2	3	PMT signal 1 V = 1 uA 0 to 10V bandwidth 20K Hz
PMT HVin	input	A3	4	PMT HV feedback 1V = -1000V
PMT raw ref	input (reference)	Asense	9	PMT gnd reference use differentially for PMT Raw
Analog gnd		Agnd	11	Ground reference for Analog signals (except raw)
HV Comm. output		DACO	10	Sets PMT high voltage 10V = -1000V
Digital Gnd		Dgnd	13	
VCC		+5V	49	
PMT Gain set	output	PAO	14	Digital code to set gain
"	"	PAI	15	Decimal 0 = gain 1 1 =2, 2=4
"	"	PA2	16	5=8 6=16 8=32 9=64 10=
"	"	PA3	17	128, 12=256, 13=512, 15=1024

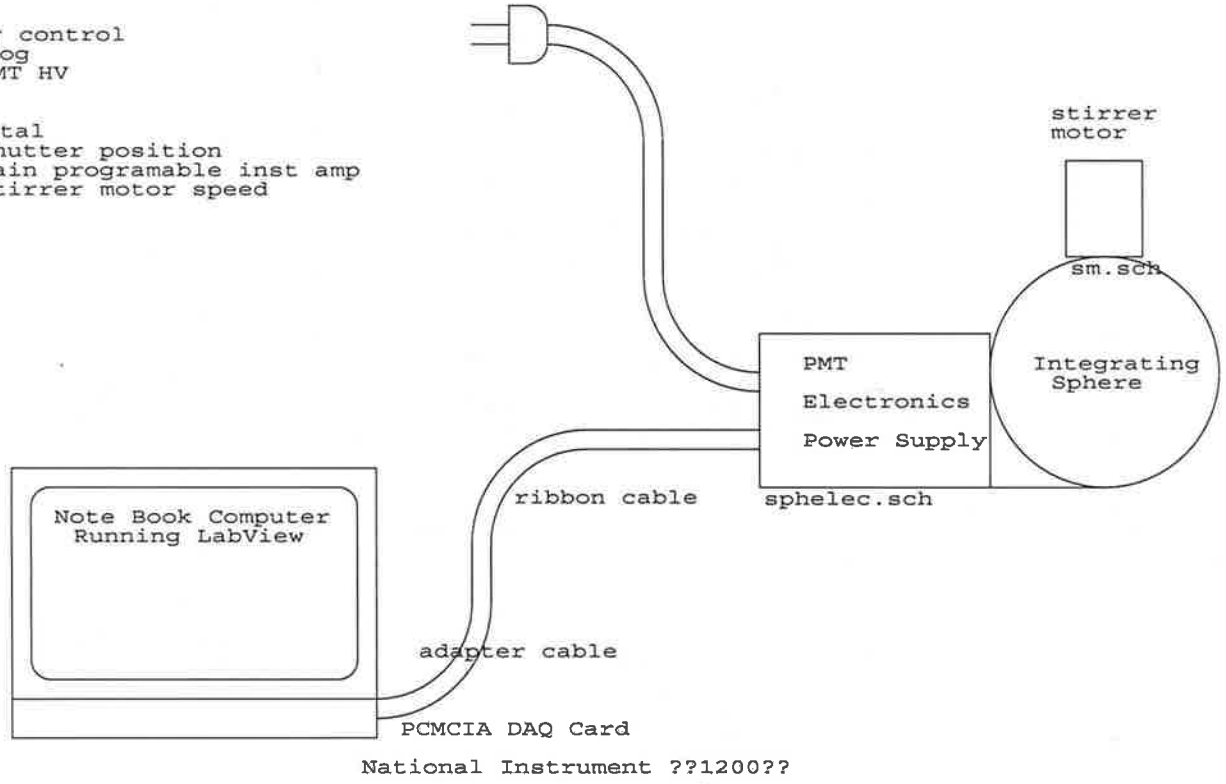
Shutter Contr. out.		PA4	18	Shutter pos.	PA4	PA5	PA6
"		PA5	19	Open	1	1	0
				first(ND.6)	0	1	0
				second(ND) 1	1	0	0
				third(ND2)	0	0	0
				close	X	X	1
(close shutter)	output	PA6	20	when 1 always command to closed			

Stirrer Motor	output	PCO	30	8bits to control speed
to	"	PC7-	37	decimal 0 or 255 = 0 rpm 40 to 1250 RPM
Door Closed	input	PBO	22	When hi = sphere door closed
Stirrer MotorOK	input	PB 1	23	

Data:

Signals to computer
- Analog
  - PMT
    - LOG Amp .
    - Programmable Amp
    - Raw out from PMT
  - PMT HV
- Digital
  - Door Open

Computer control
- Analog
  - PMT HV
- Digital
  - Shutter position
  - Gain programable inst amp
  - Stirrer motor speed



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Size A	Document Number sphere.sch	REV
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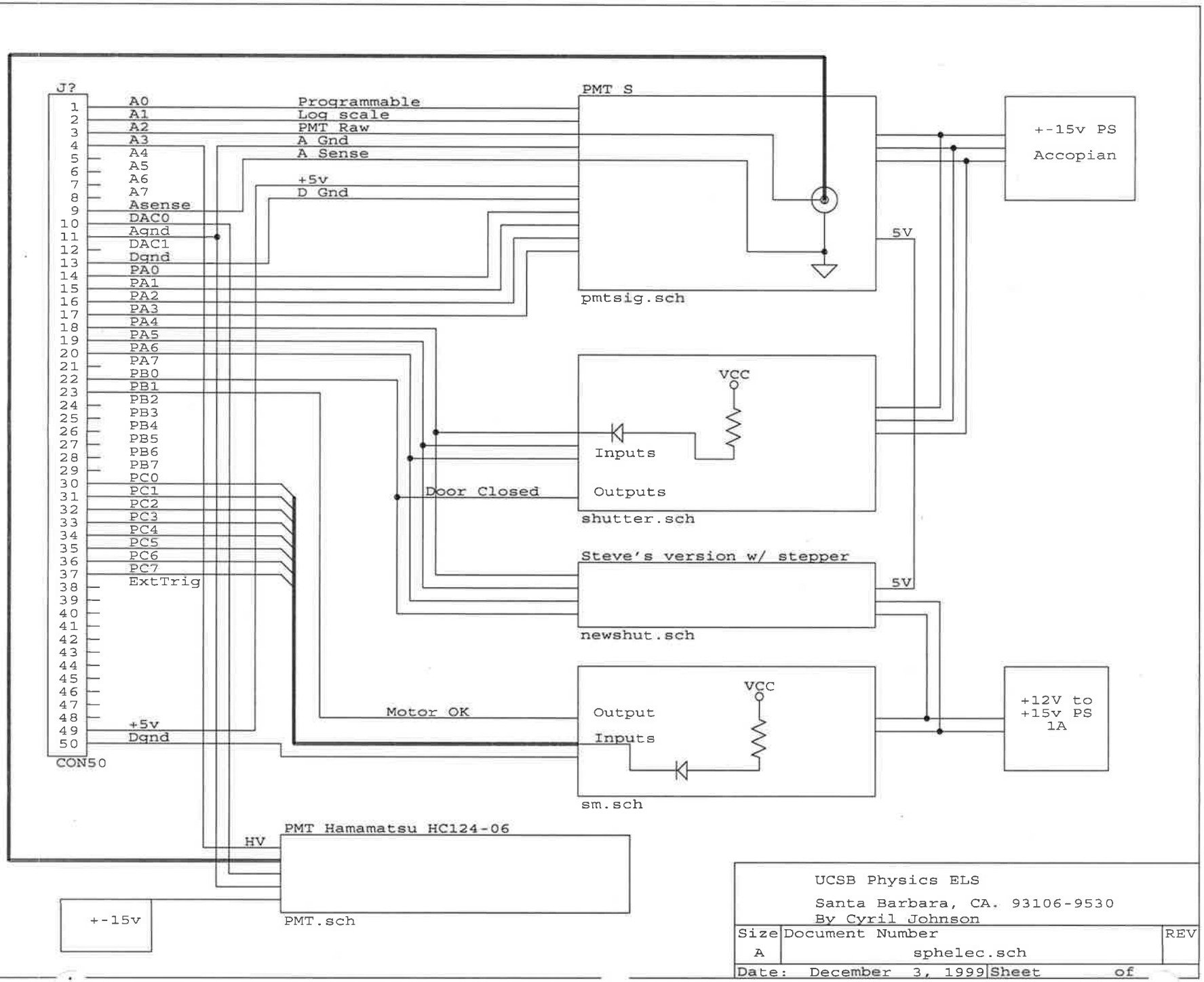
Integrating Sphere


J?
1 A0
2 A1
3 A2
4 A3
5 A4
6 A5
7 A6
8 A7
9 Asense
10 DAC0
11 Agnd
12 DAC1
13 Dgnd
14 PA0
15 PA1
16 PA2
17 PA3
18 PA4
19 PA5
20 PA6
21 PA7
22 PB0
23 PB1
24 PB2
25 PB3
26 PB4
27 PB5
28 PB6
29 PB7
30 PC0
31 PC1
32 PC2
33 PC3
34 PC4
35 PC5
36 PC6
37 PC7
38 ExtTrig
39
40
41
42
43
44
45
46
47
48
49 +5v
50 Dgnd
CON50
Programmable
Log scale
PMT Raw
A Gnd
A Sense
+5v
D Gnd
PMT S
pmtsig.sch
+-15v PS
Accopian
5V
VCC
Inputs
Outputs
Door Closed
shutter.sch
Steve's version w/ stepper
newshut.sch
5V
VCC
Output
Inputs
Motor OK
sm.sch
+12V to
+15v PS
1A
PMT Hamamatsu HC124-06
HV
PMT.sch
+-15v
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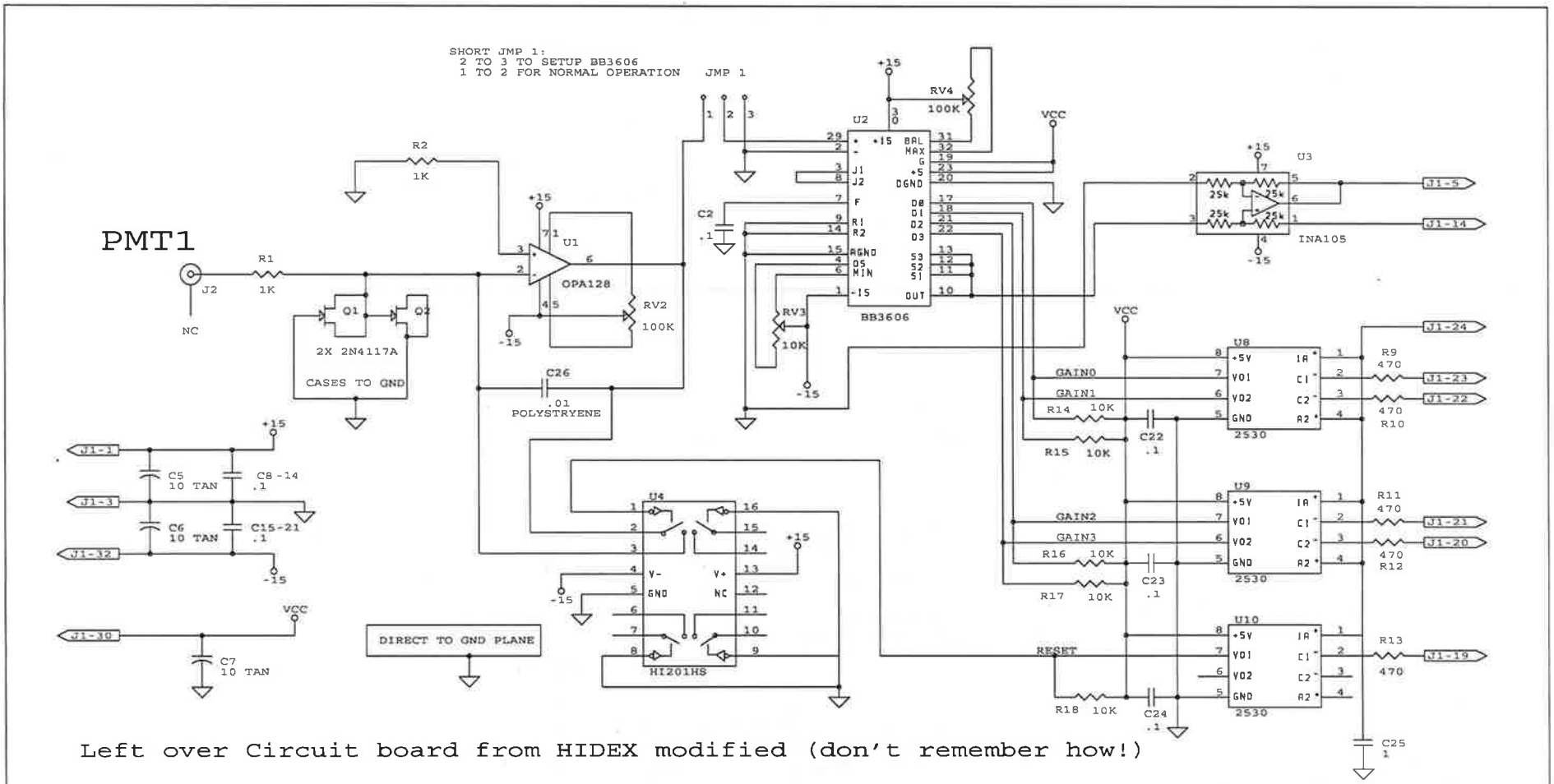
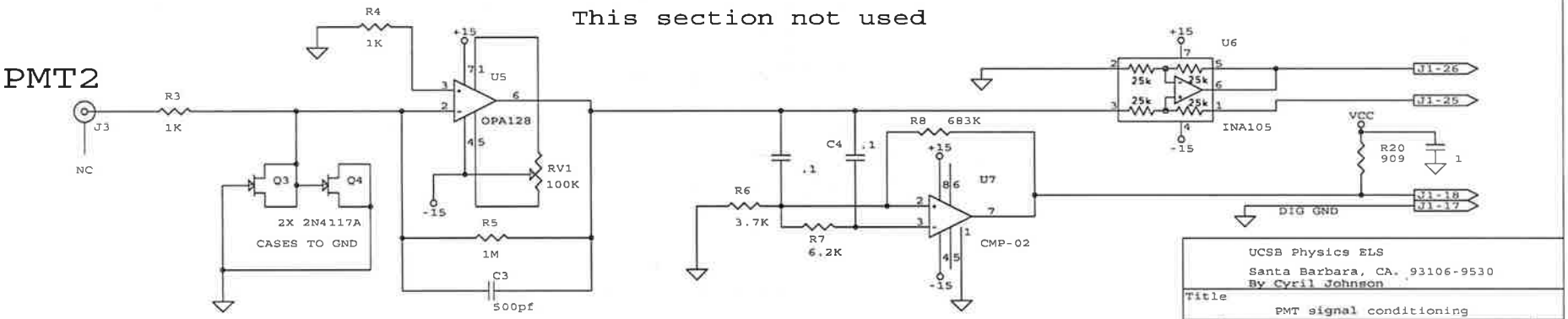


Left over Circuit board from HIDEX modified (don't remember how!)

This section not used



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Title PMT signal conditioning		
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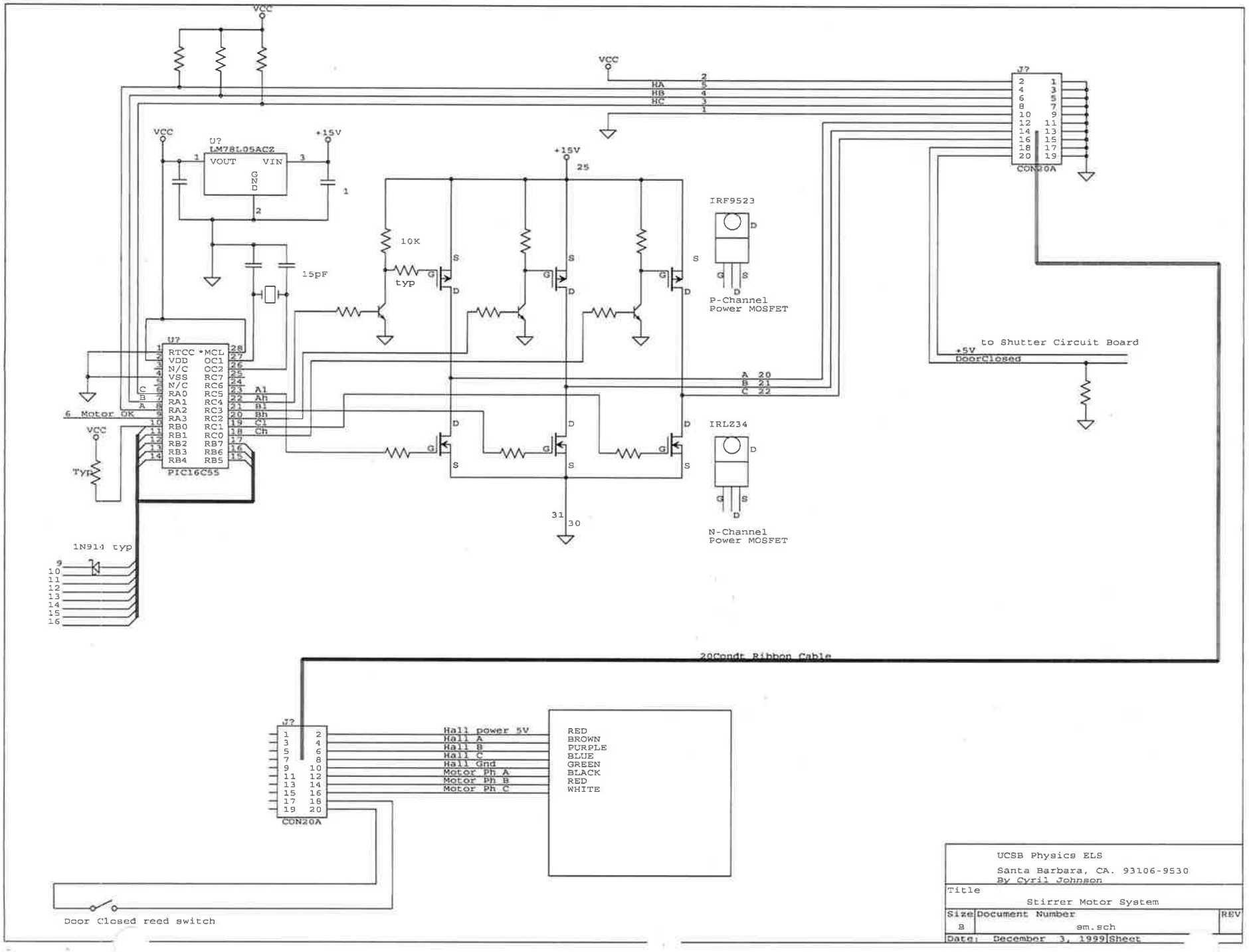
VCC
HA 2
HB 5
HC 4
3
1
J?
CON20A
U?
LM78L05ACZ
VOUT
VIN
GND
+15V
15pF
10K
typ
IRF9523
P-Channel
Power MOSFET
IRLZ234
N-Channel
Power MOSFET
to Shutter Circuit Board
+5V
DoorClosed
A 20
B 21
C 22
6 Motor OK
Typ
1N914 typ
PIC16C55
RTCC *MCL
VDD OC1
N/C OC2
VSS RC7
N/C RC6
RA0 RC5
RA1 RC4
RA2 RC3
RA3 RC2
RB0 RC1
RB1 RC0
RB2 RB7
RB3 RB6
RB4 RB5
Al
Ah
Bl
Bh
Cl
Ch
25
31
30
20Condt Ribbon Cable
Hall power 5V
Hall A
Hall B
Hall C
Hall Gnd
Motor Ph A
Motor Ph B
Motor Ph C
RED
BROWN
PURPLE
BLUE
GREEN
BLACK
RED
WHITE
Door Closed reed switch
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Title
Stirrer Motor System
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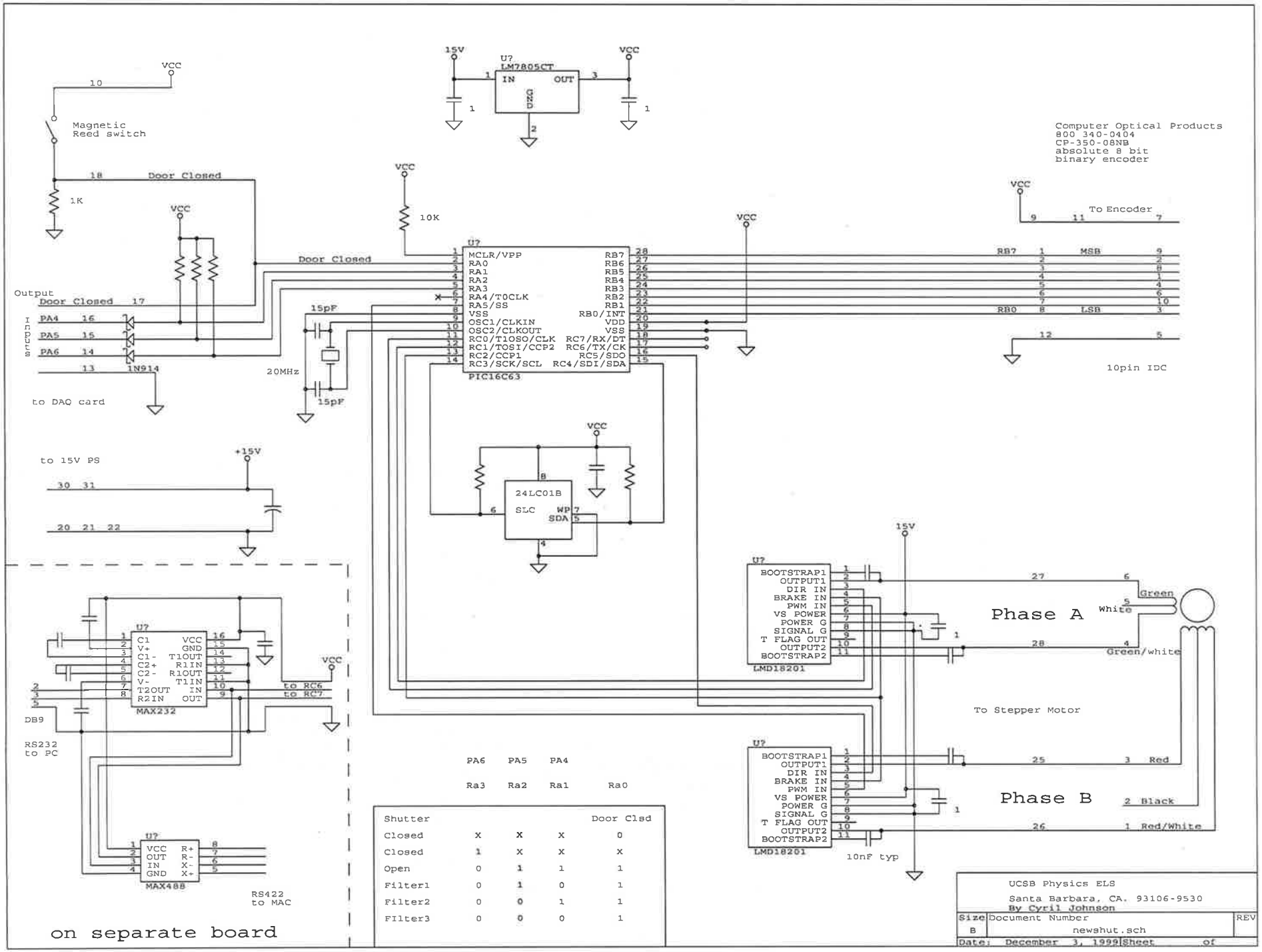

	PA6	PA5	PA4	
	Ra3	Ra2	Ra1	Ra0
Shutter				Door Clsd
Closed	X	X	X	0
Closed	1	X	X	X
Open	0	1	1	1
Filter1	0	1	0	1
Filter2	0	0	1	1
Filter3	0	0	0	1

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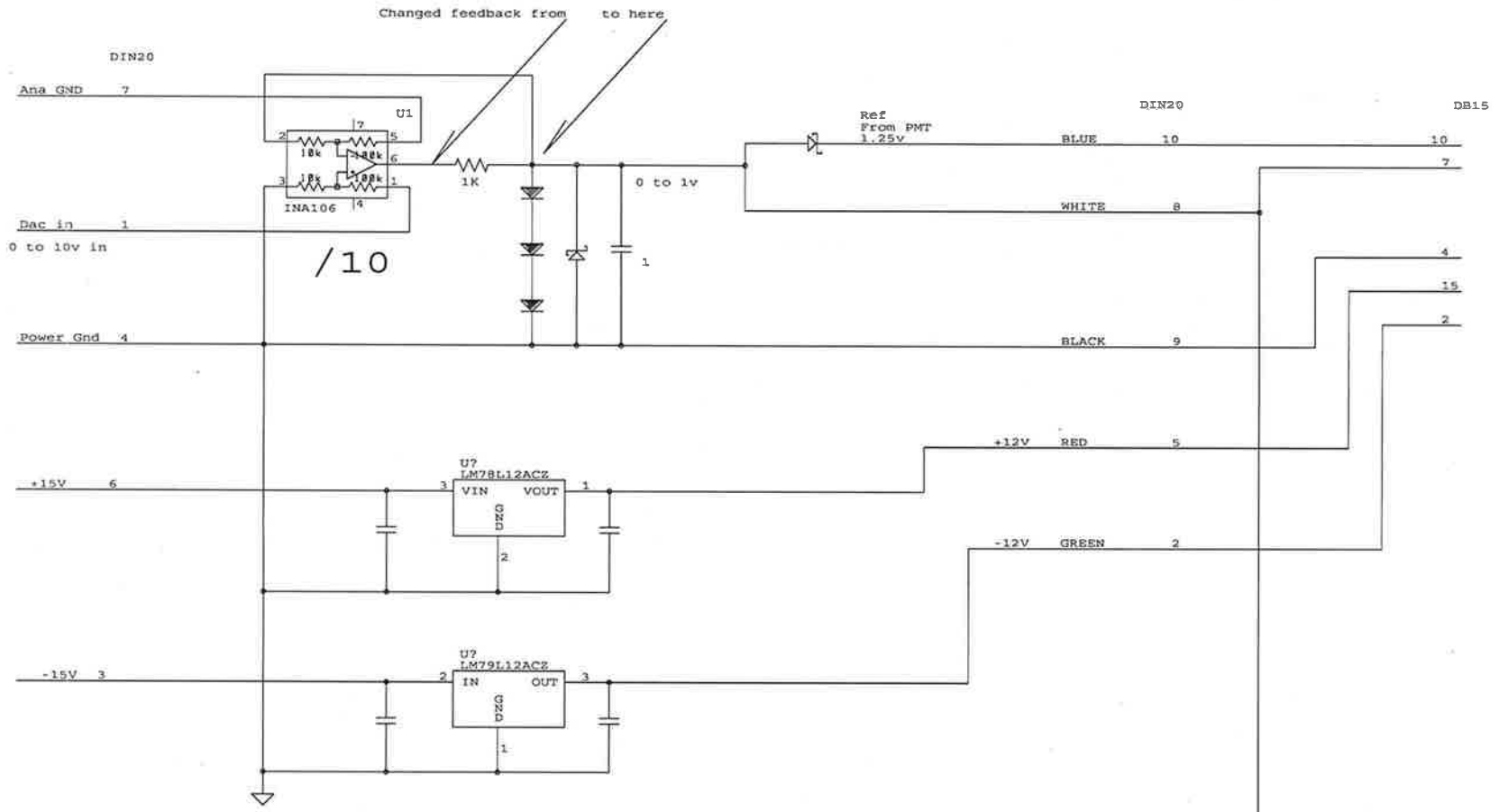

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