

LAB BOOK

50 SHEETS • 5 X 5 QUAD
10 1/2" x 7 1/4" • 53-110



AMITY

Made in USA

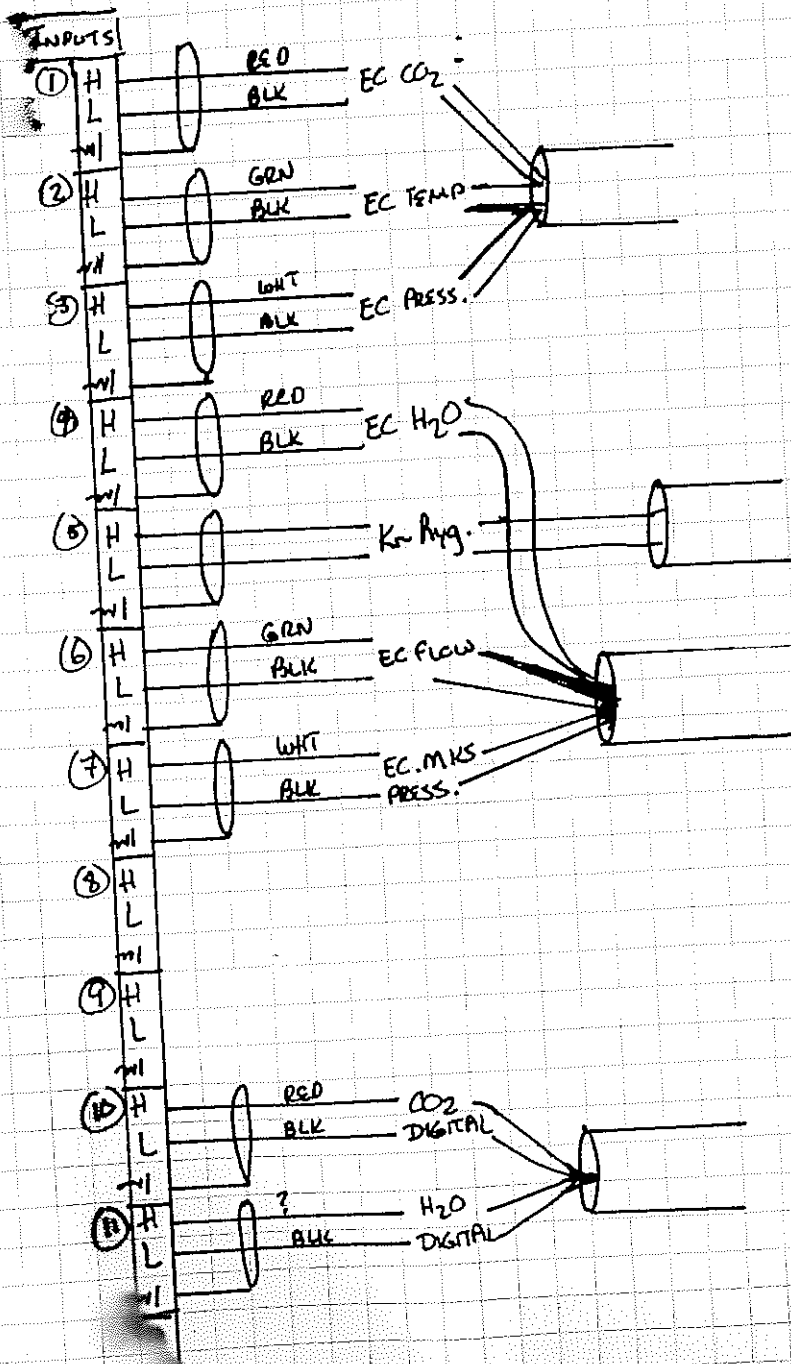


0 73333 53110 7

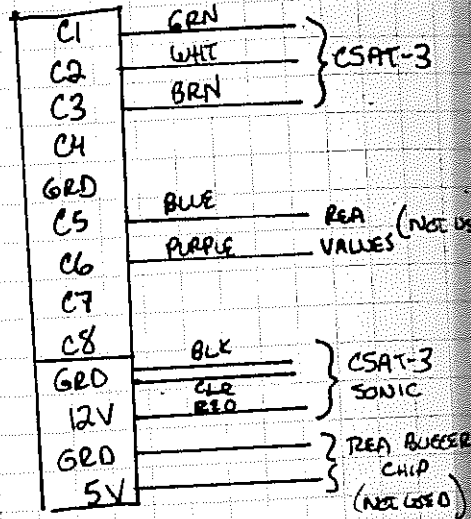
AMITY DESIGNER OFFICE PRODUCTS, SIMMONS, CA

DATA LOGGER WIRING (AS OF 2/11/99)

PR23x ⇒ "FAST DATA"
PROGRAM C7 H2FA.CSI

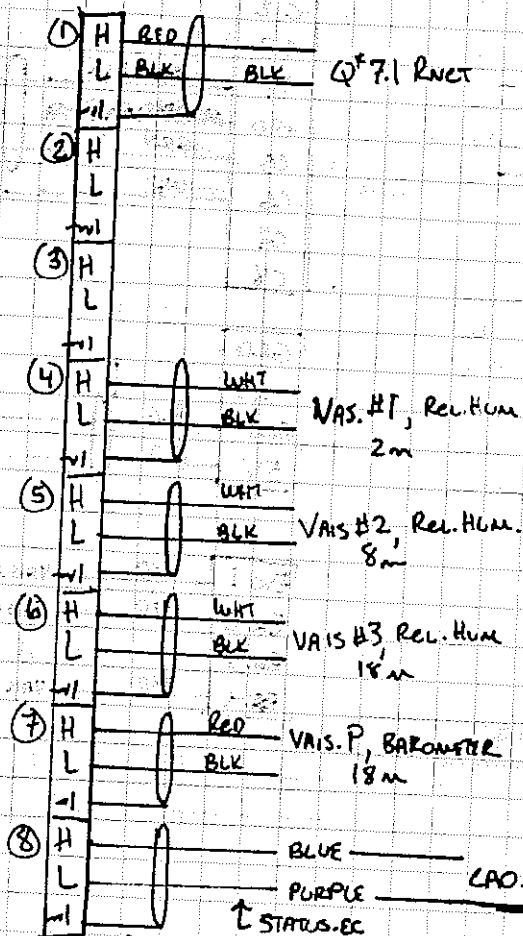


CONTROL I/O



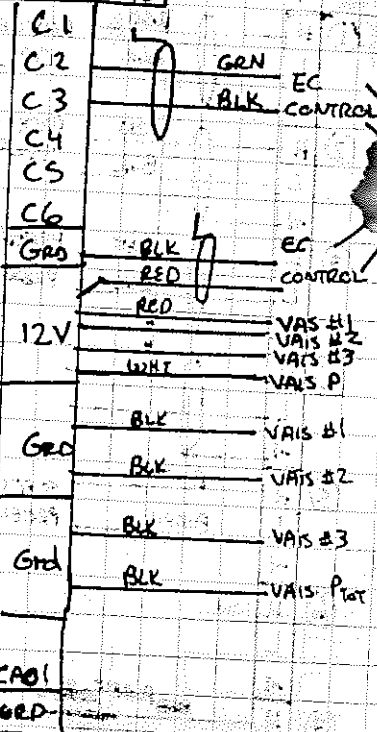
2. CR21L => "LIGHT"
PROGRAM => LIGHT.CS

INPUTS:



→ CORRECTION
NO SHIELD !!

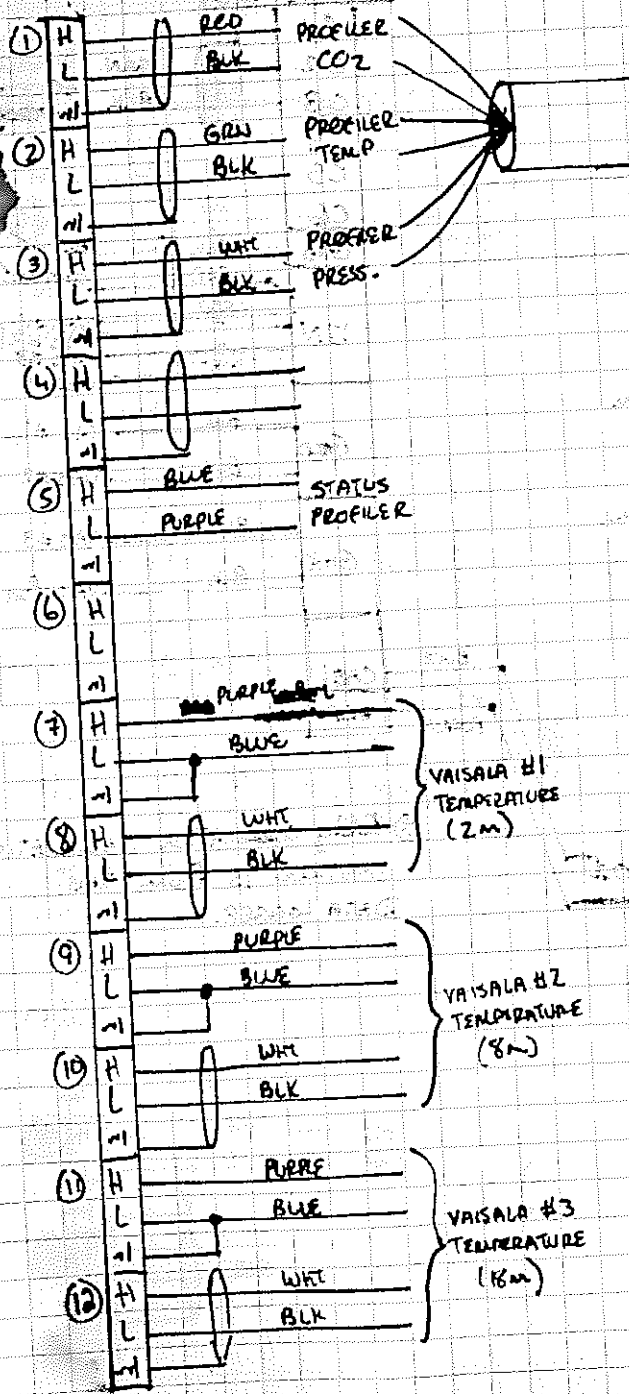
CONTROL I/O



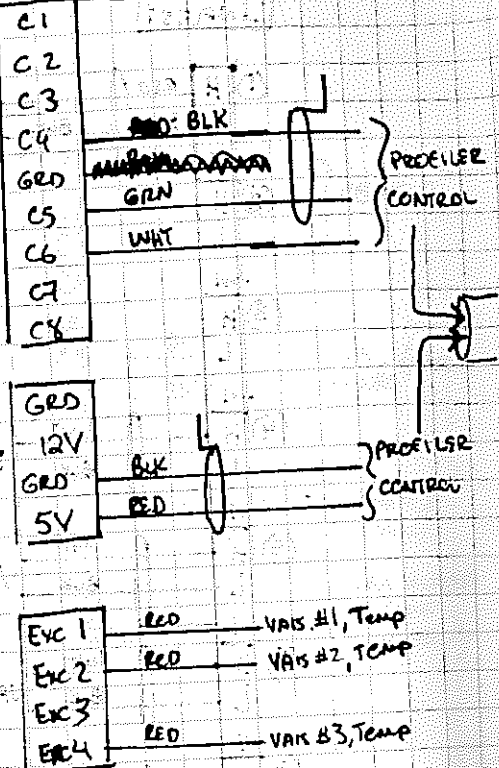
Ⓢ Eddy correlation CALIBRATION
CONTROL IS FROM THIS
DATA LOGGER.

23x "PROFILER"
 PROGRAM: "PROF23x"

INPUTS

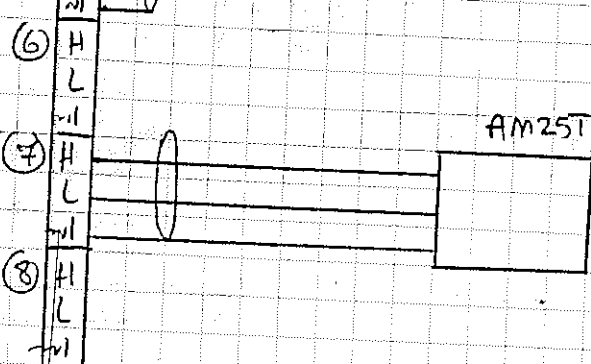
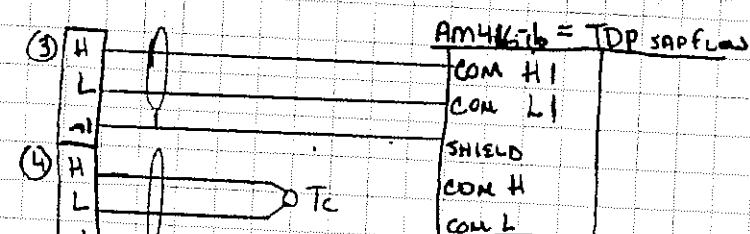
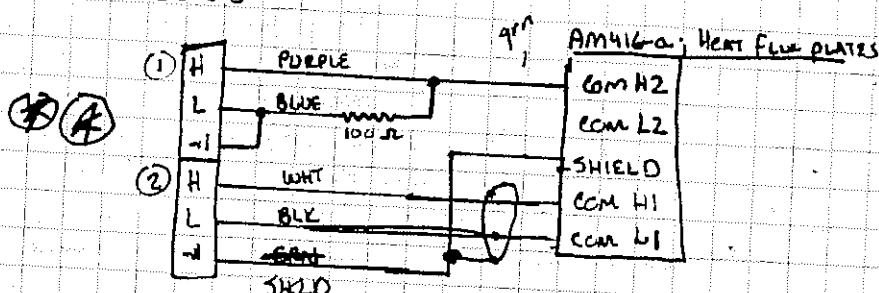


CONTROL I/O

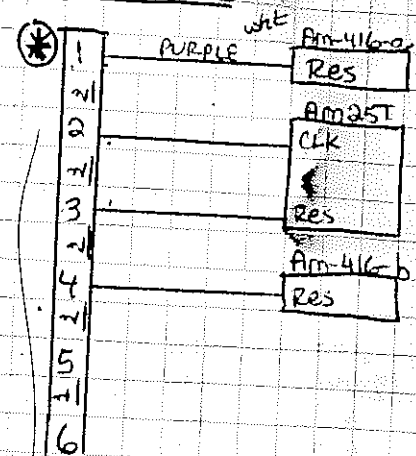


4. CR21x "SOIL-TOP"
PROGRAM → SOIL-TOP.CSI

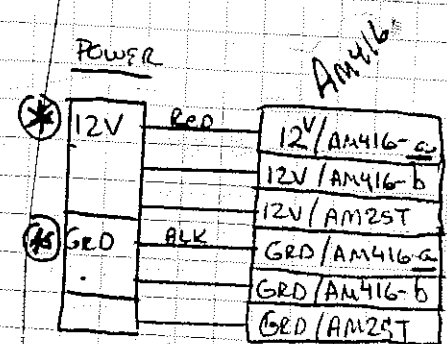
INPUTS



CONTROL I/O

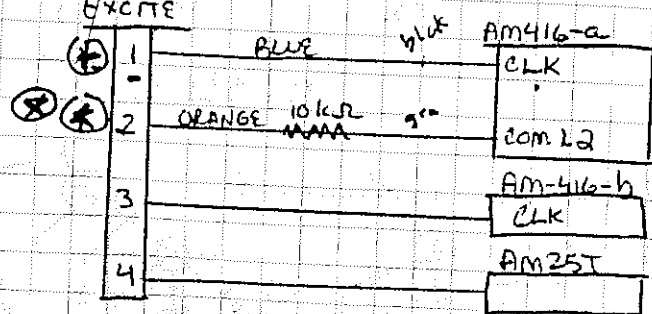


POWER

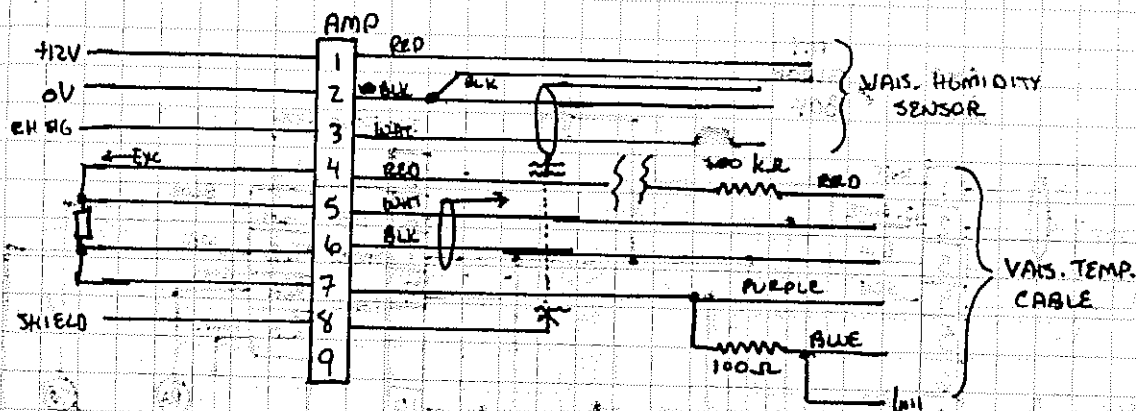


21x

EXCITE

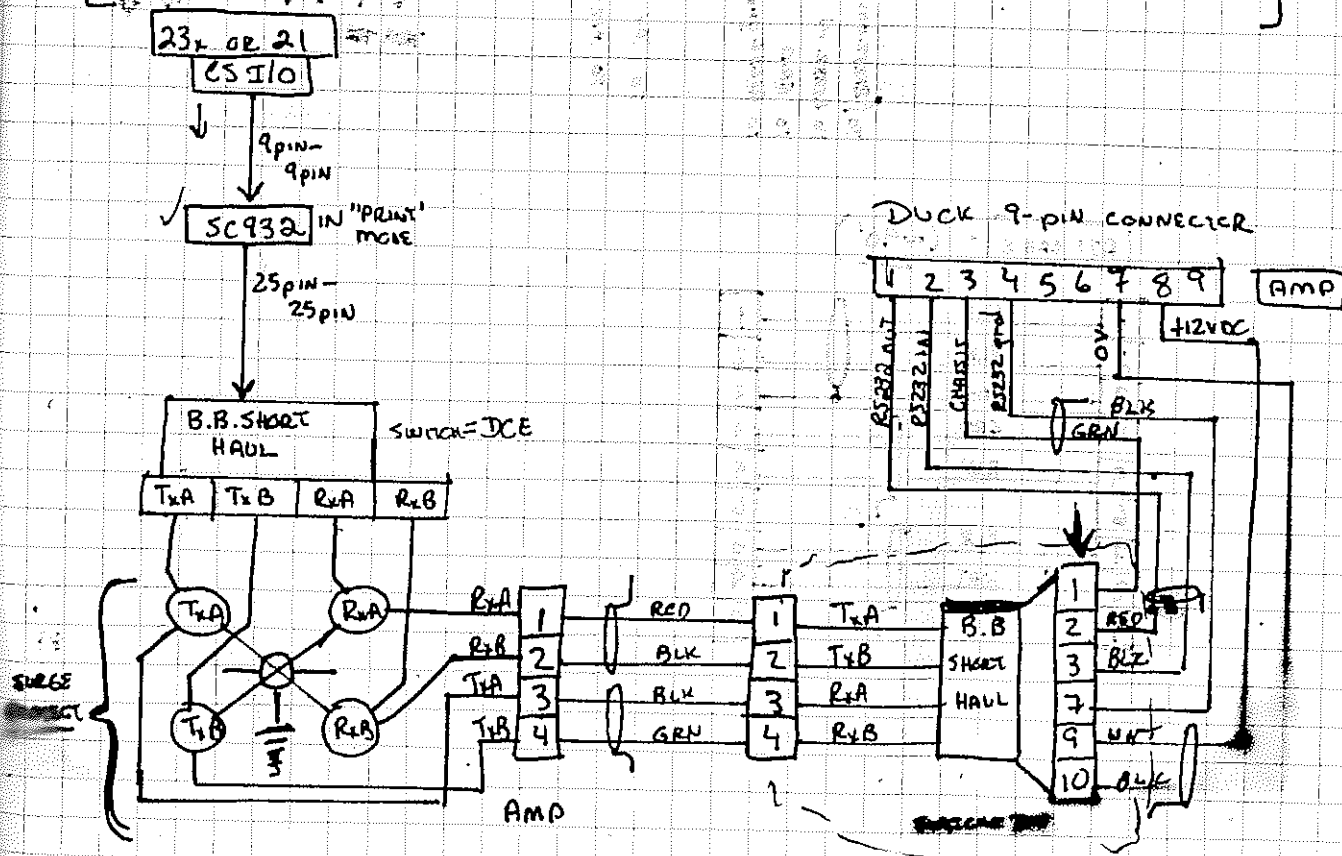


VAISALA RH/Temp sensor HMP350

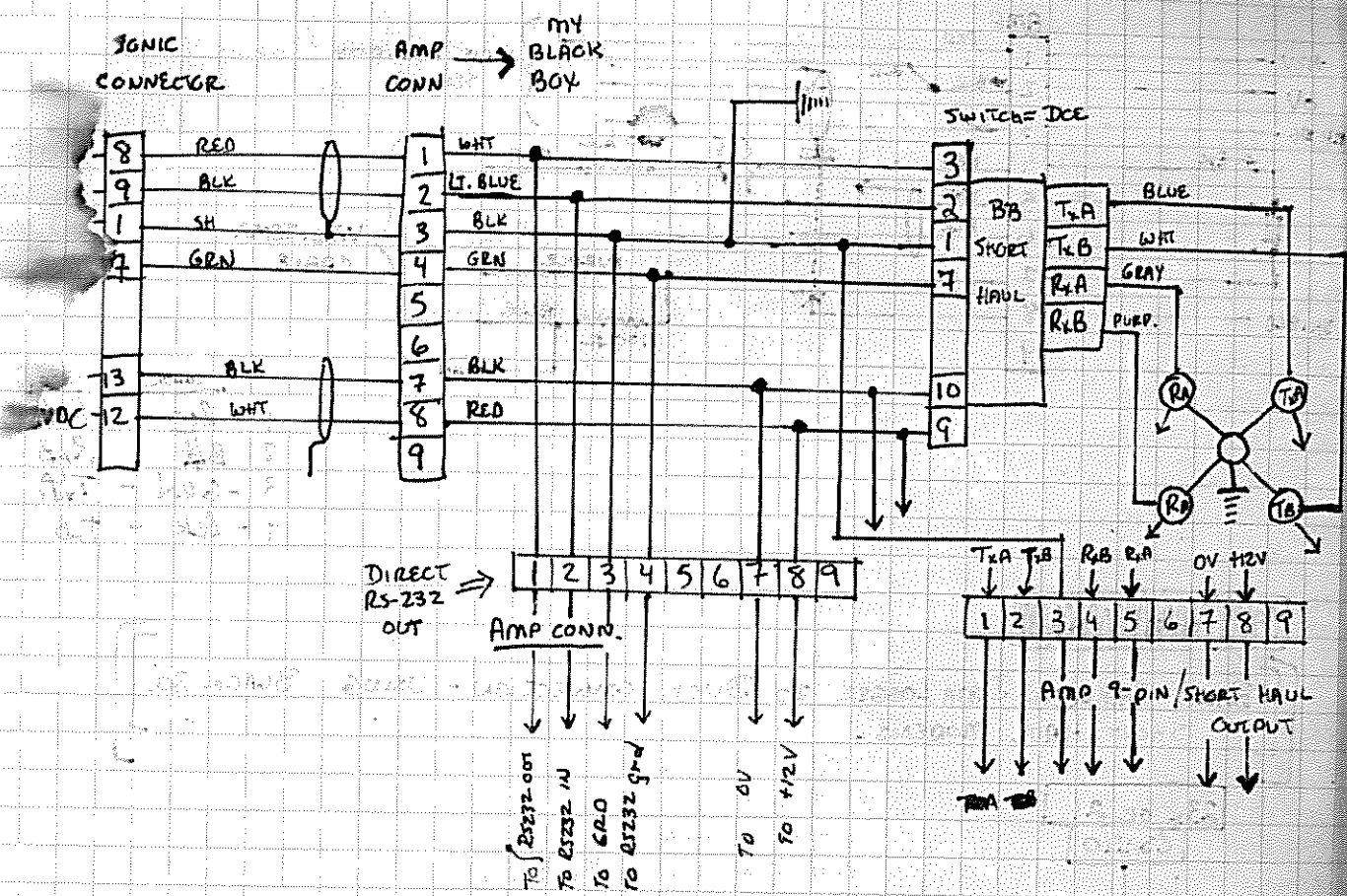


	COLOR	CABLE
1	RED	R _A
2	BLK	R _B
3	GRN	T _A
4	BLK	T _B

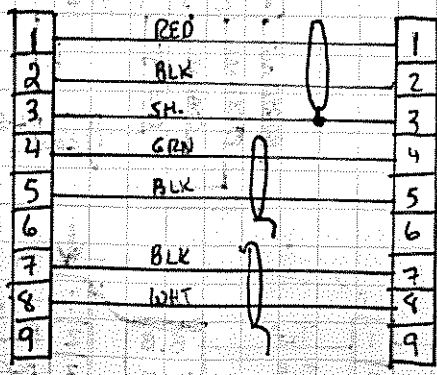
BASIC CAMPBELL DATA LOGGER TO DUCK CONNECTION - USING BLACK BOX



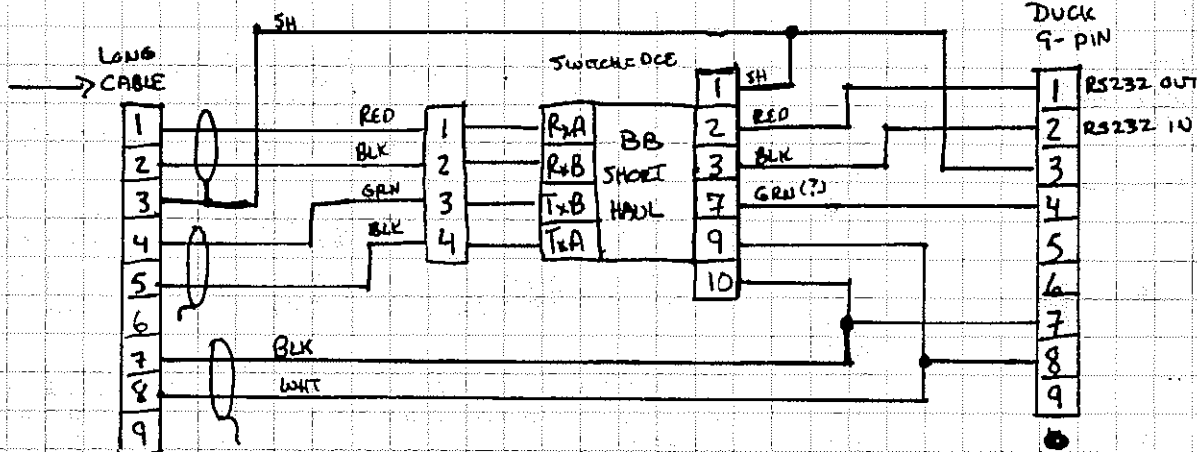
NEW ATI SONIC



ATI CABLE (~90')



ATI SONIC: SHORE HALL AT DUCK END:



?? see pg 3-2 should be $F(V \frac{P_0}{P})$

LI-6251 CO₂ ANALYZER CALIBRATION DATA

DATE: 19 Nov 1996

Serial Number IRG1-362

Technician _____

Calibration Function: CO₂ = $F(v P/P_0) [(T + 273)/(T_0 + 273)]$ where $F(v) = [a_1 v + a_2 v^2 + a_3 v^3]$

$308.95 K$
 $T_0 = 35.8$

$K = 18200$

$P_0 = 101.3 kPa$

Low Range (0 - 1000 ppm)

$a_1 = .1387$

$a_2 = 2.085E-05$

$a_3 = 2.176E-09$

High Range (0 - 3000 ppm)

$a_1 = .1457$

$a_2 = 1.686E-05$

$a_3 = 2.642E-09$

$$CO_2 \frac{T_0}{T} = V \frac{P_0}{P}$$

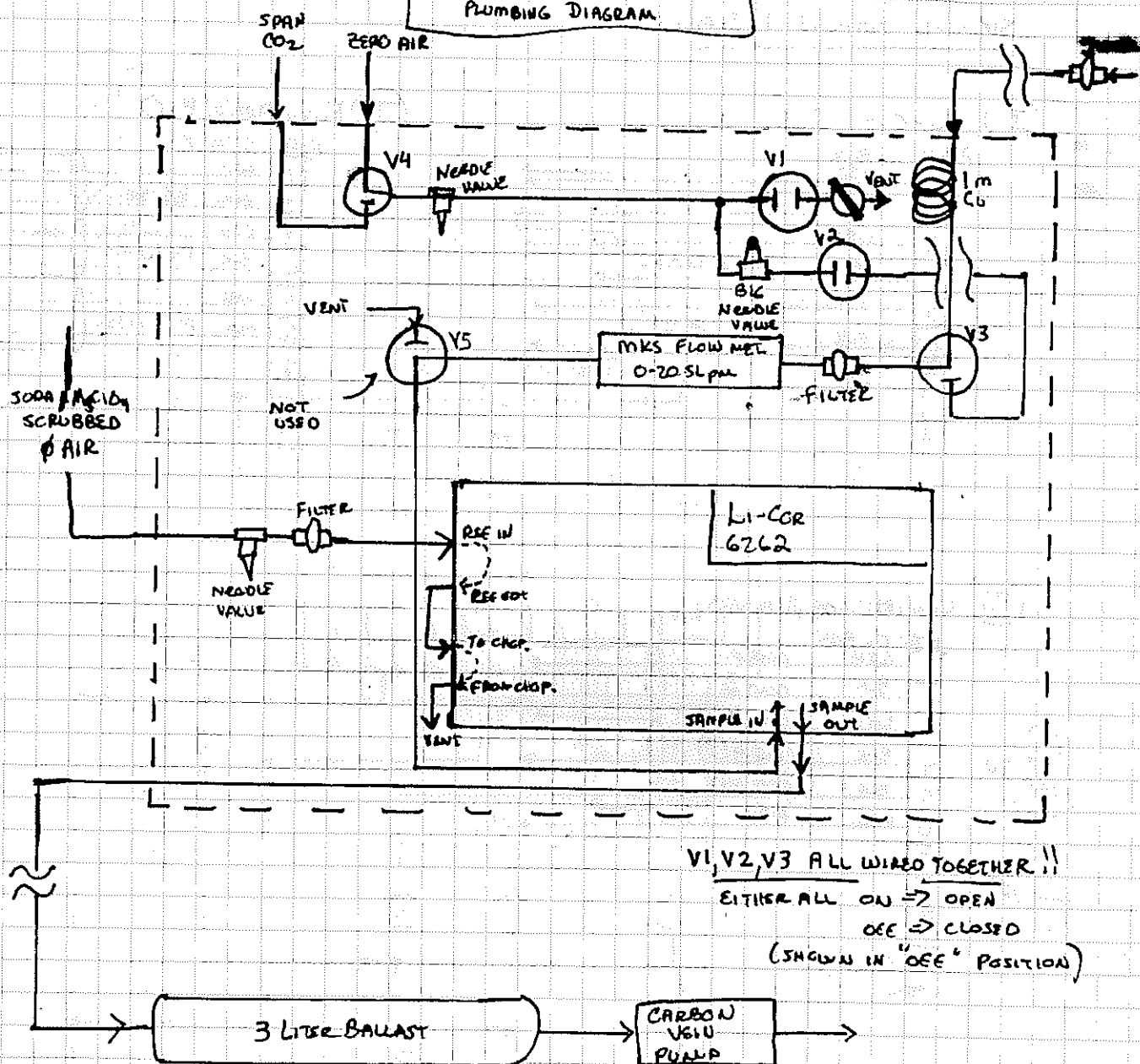
In the table below, V is signal in mV, PPM = F(v), SLOPE = dF(v)/dv, and G = (1 - v/K).

V	PPM	SLOPE	G	V	PPM	SLOPE	G	V	PPM	SLOPE	G	V	PPM	SLOPE	G
0	0.0	0.139	1.000	1000	161.7	0.187	0.945	2000	378.2	0.248	0.890	3000	662.5	0.323	0.835
20	2.8	0.140	0.999	1020	165.5	0.188	0.944	2020	383.2	0.250	0.889	3020	669.0	0.324	0.834
40	5.6	0.140	0.998	1040	169.2	0.189	0.943	2040	388.2	0.251	0.888	3040	675.5	0.326	0.833
60	8.4	0.141	0.997	1060	173.0	0.190	0.942	2060	393.2	0.252	0.887	3060	682.0	0.327	0.832
80	11.2	0.142	0.996	1080	176.8	0.191	0.941	2080	398.3	0.254	0.886	3080	688.6	0.329	0.831
100	14.1	0.143	0.995	1100	180.7	0.192	0.940	2100	403.4	0.255	0.885	3100	695.2	0.331	0.830
120	16.9	0.144	0.993	1120	184.5	0.194	0.938	2120	408.5	0.256	0.884	3120	701.8	0.332	0.829
140	19.8	0.145	0.992	1140	188.4	0.195	0.937	2140	413.6	0.258	0.882	3140	708.5	0.334	0.827
160	22.7	0.146	0.991	1160	192.3	0.196	0.936	2160	418.8	0.259	0.881	3160	715.2	0.336	0.826
180	25.7	0.146	0.990	1180	196.3	0.197	0.935	2180	424.0	0.261	0.880	3180	721.9	0.337	0.825
200	28.6	0.147	0.989	1200	200.2	0.198	0.934	2200	429.2	0.262	0.879	3200	728.7	0.339	0.824
220	31.5	0.148	0.988	1220	204.2	0.199	0.933	2220	434.5	0.263	0.878	3220	735.5	0.341	0.823
240	34.5	0.149	0.987	1240	208.2	0.200	0.932	2240	439.8	0.265	0.877	3240	742.3	0.342	0.822
260	37.5	0.150	0.986	1260	212.2	0.202	0.931	2260	445.1	0.266	0.876	3260	749.1	0.344	0.821
280	40.5	0.151	0.985	1280	216.3	0.203	0.930	2280	450.4	0.268	0.875	3280	756.0	0.346	0.820
300	43.5	0.152	0.984	1300	220.3	0.204	0.929	2300	455.8	0.269	0.874	3300	763.0	0.347	0.819
320	46.6	0.153	0.982	1320	224.4	0.205	0.927	2320	461.2	0.271	0.873	3320	769.9	0.349	0.818
340	49.7	0.154	0.981	1340	228.5	0.206	0.926	2340	466.6	0.272	0.871	3340	776.9	0.351	0.816
360	52.7	0.155	0.980	1360	232.7	0.207	0.925	2360	472.1	0.273	0.870	3360	784.0	0.353	0.815
380	55.8	0.155	0.979	1380	236.8	0.209	0.924	2380	477.5	0.275	0.869	3380	791.0	0.354	0.814
400	59.0	0.156	0.978	1400	241.0	0.210	0.923	2400	483.1	0.276	0.868	3400	798.1	0.356	0.813
420	62.1	0.157	0.977	1420	245.2	0.211	0.922	2420	488.6	0.278	0.867	3420	805.3	0.358	0.812
440	65.2	0.158	0.976	1440	249.5	0.212	0.921	2440	494.2	0.279	0.866	3440	812.5	0.359	0.811
460	68.4	0.159	0.975	1460	253.7	0.213	0.920	2460	499.8	0.281	0.865	3460	819.7	0.361	0.810
480	71.6	0.160	0.974	1480	258.0	0.215	0.919	2480	505.4	0.282	0.864	3480	826.9	0.363	0.809
500	74.8	0.161	0.973	1500	262.3	0.216	0.918	2500	511.1	0.284	0.863	3500	834.2	0.365	0.808
520	78.1	0.162	0.971	1520	266.6	0.217	0.916	2520	516.8	0.285	0.862	3520	841.5	0.366	0.807
540	81.3	0.163	0.970	1540	271.0	0.218	0.915	2540	522.5	0.287	0.860	3540	848.8	0.368	0.805
560	84.6	0.164	0.969	1560	275.4	0.220	0.914	2560	528.2	0.288	0.859	3560	856.2	0.370	0.804
580	87.9	0.165	0.968	1580	279.8	0.221	0.913	2580	534.0	0.290	0.858	3580	863.6	0.372	0.803
600	91.2	0.166	0.967	1600	284.2	0.222	0.912	2600	539.8	0.291	0.857	3600	871.1	0.373	0.802
620	94.5	0.167	0.966	1620	288.7	0.223	0.911	2620	545.7	0.293	0.856	3620	878.6	0.375	0.801
640	97.9	0.168	0.965	1640	293.1	0.225	0.910	2640	551.5	0.294	0.855	3640	886.1	0.377	0.800
660	101.2	0.169	0.964	1660	297.6	0.226	0.909	2660	557.4	0.296	0.854	3660	893.6	0.379	0.799
680	104.6	0.170	0.963	1680	302.2	0.227	0.908	2680	563.4	0.297	0.853	3680	901.2	0.381	0.798
700	108.0	0.171	0.962	1700	306.7	0.228	0.907	2700	569.3	0.299	0.852	3700	908.9	0.382	0.797
720	111.5	0.172	0.960	1720	311.3	0.230	0.905	2720	575.3	0.300	0.851	3720	916.5	0.384	0.796
740	114.9	0.173	0.959	1740	315.9	0.231	0.904	2740	581.3	0.302	0.849	3740	924.2	0.386	0.795
760	118.4	0.174	0.958	1760	320.6	0.232	0.903	2760	587.4	0.304	0.848	3760	932.0	0.388	0.793
780	121.9	0.175	0.957	1780	325.2	0.234	0.902	2780	593.5	0.305	0.847	3780	939.7	0.390	0.792
800	125.4	0.176	0.956	1800	329.9	0.235	0.901	2800	599.6	0.307	0.846	3800	947.6	0.391	0.791
820	128.9	0.177	0.955	1820	334.6	0.236	0.900	2820	605.7	0.308	0.845	3820	955.4	0.393	0.790
840	132.5	0.178	0.954	1840	339.3	0.238	0.899	2840	611.9	0.310	0.844	3840	963.3	0.395	0.789
860	136.1	0.179	0.953	1860	344.1	0.239	0.898	2860	618.1	0.311	0.843	3860	971.2	0.397	0.788
880	139.7	0.180	0.952	1880	348.9	0.240	0.897	2880	624.4	0.313	0.842	3880	979.2	0.399	0.787
900	143.3	0.182	0.951	1900	353.7	0.242	0.896	2900	630.7	0.315	0.841	3900	987.2	0.401	0.786
920	146.9	0.183	0.949	1920	358.6	0.243	0.895	2920	637.0	0.316	0.840	3920	995.2	0.403	0.785
940	150.6	0.184	0.948	1940	363.4	0.244	0.893	2940	643.3	0.318	0.838	3940	1003.3	0.404	0.784
960	154.3	0.185	0.947	1960	368.3	0.246	0.892	2960	649.7	0.319	0.837	3960	1011.4	0.406	0.782
980	158.0	0.186	0.946	1980	373.3	0.247	0.891	2980	656.1	0.321	0.836	3980	1019.5	0.408	0.781

LI-COR

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CO₂ Eddy Covariance System PLUMBING DIAGRAM

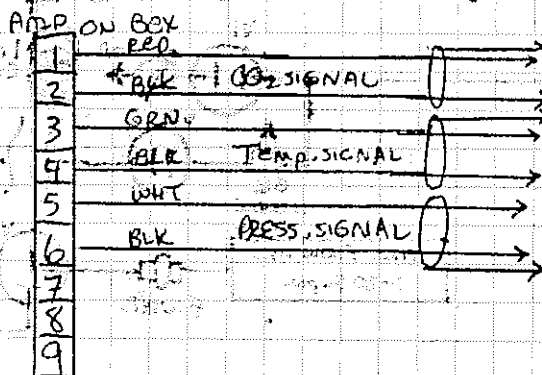


V1 => CALIBRATE/VENT
 V2 => CALIBRATE SHUTOFF
 V3 => SAMPLE/CALIBRATE
 V4 => ZERO/SPAN
 V5 => VENT (ZERO FLOW METER)

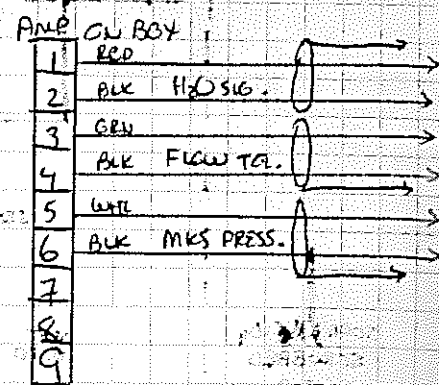
EDDY CORRELATION

SIGNAL OUTPUTS & CABLES

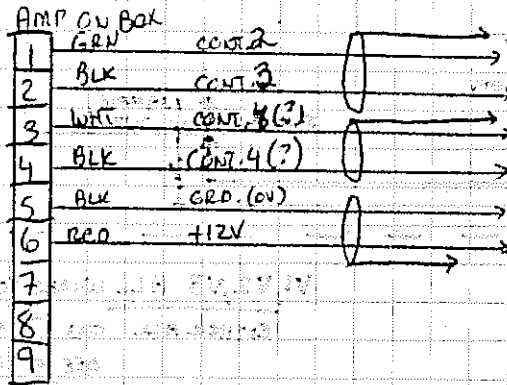
(F) 4-COR 6262 OUTPUTS



(IV) FLOW METER / H₂O

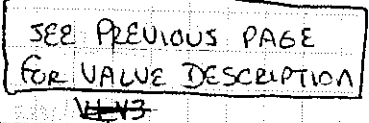


(III) CONTROL OF VALVES



(?)
NEED TO
CHECK
THIS
CIRCUIT

45, Cent. Per.

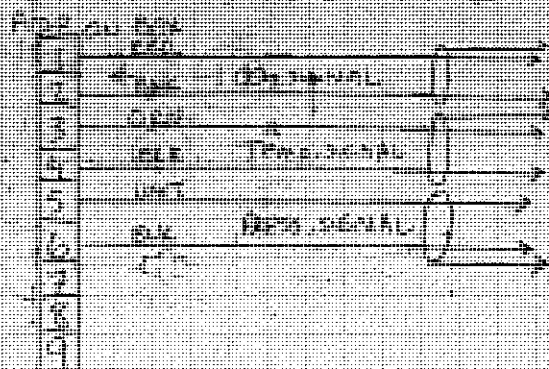


⊛ VALUES 1, 2 & 4 ALSO HAVE green
gnd. WIRES

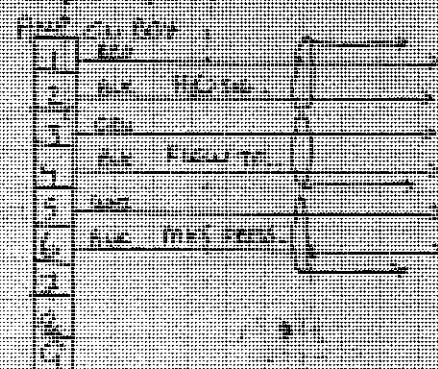
ENTRY CORRELATION

SIGNAL OUTPUTS & CABLES

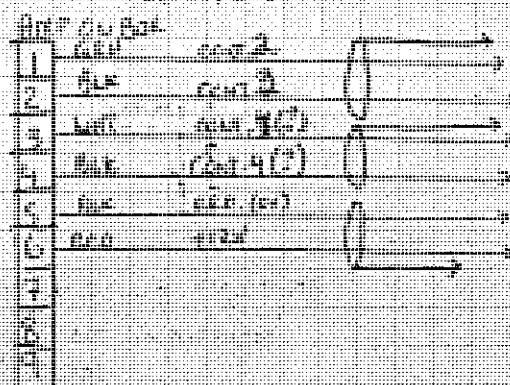
(I) 11-CAB G202 OUTPUTS



(II) Furnace/H₂O

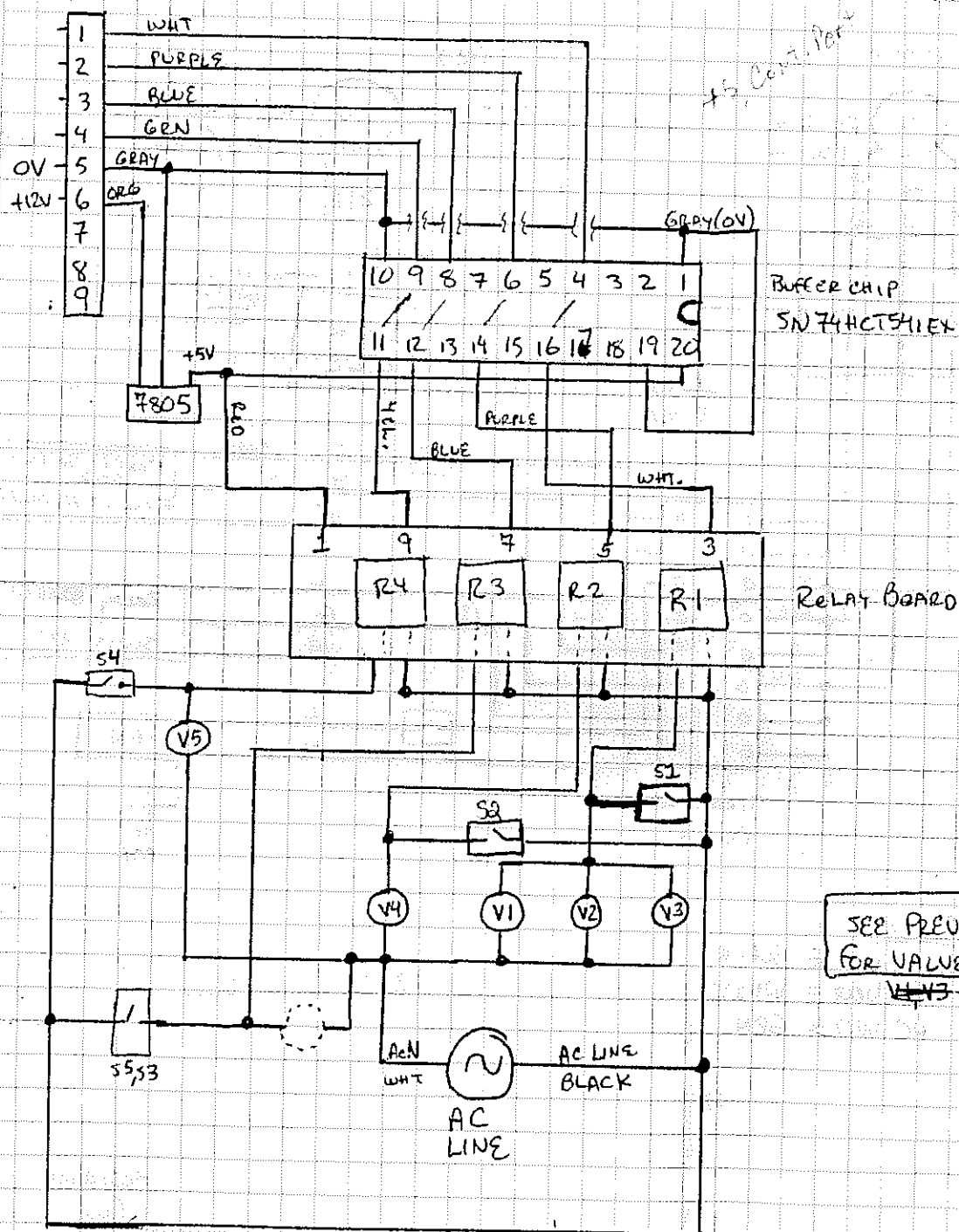


(III) CONTROL OF VALVES



(2)
NEED TO
CHECK
THIS
CAB

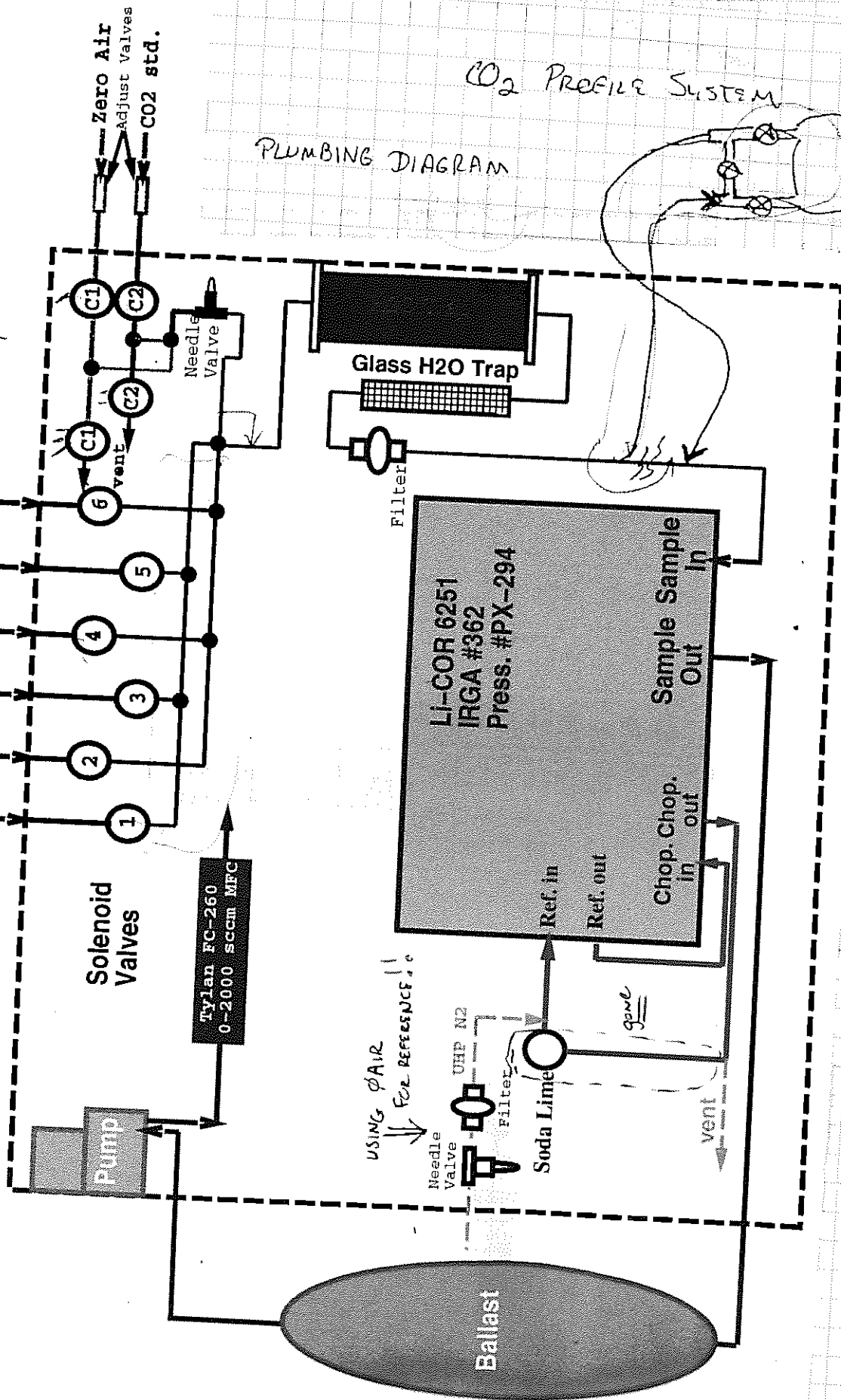
EDDY CORRELATION VALVE CONTROL



⊕ VALUES 1, 2 & 4 ALSO HAVE green
gnd. WIRES

Six Different Levels

Plumbing Diagram



PROFILER
INLETS

LICQF
FILTERS

TO PROFILER
BOX

INLET VALVES
L1

L2

L3

L4

L5

L6

~8"

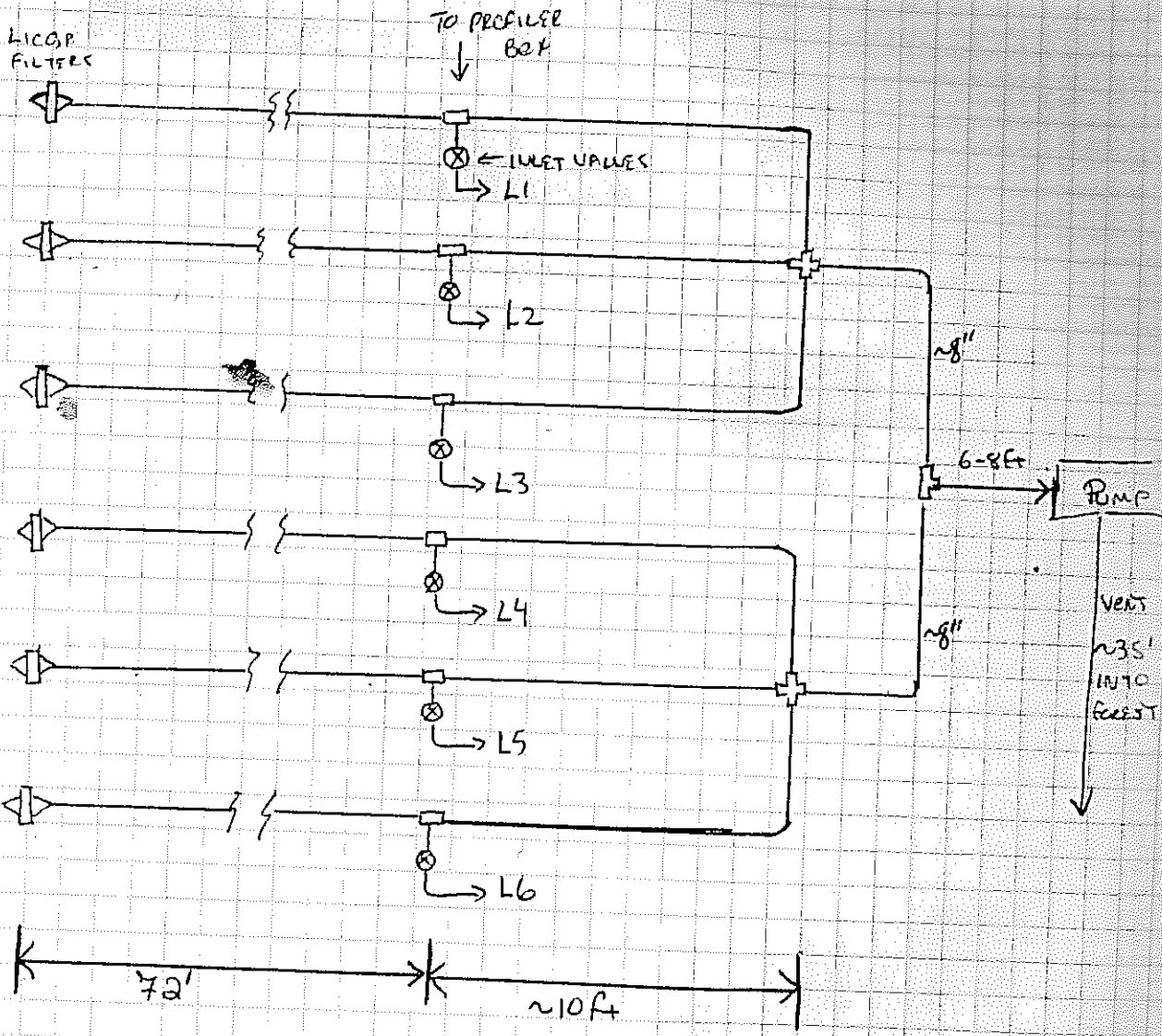
6-8ft

PUMP

VERT
~35'
INTO
FOREST

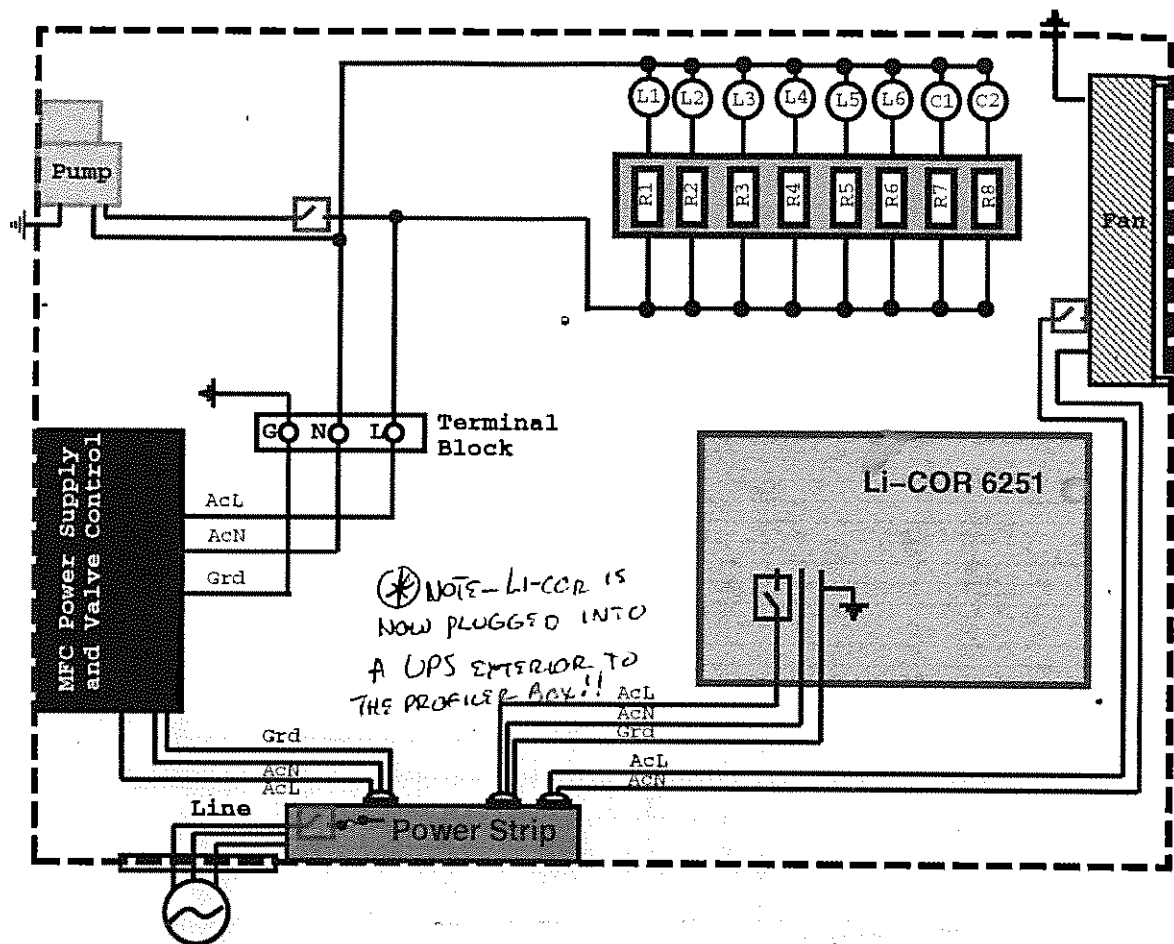
72'

~10ft



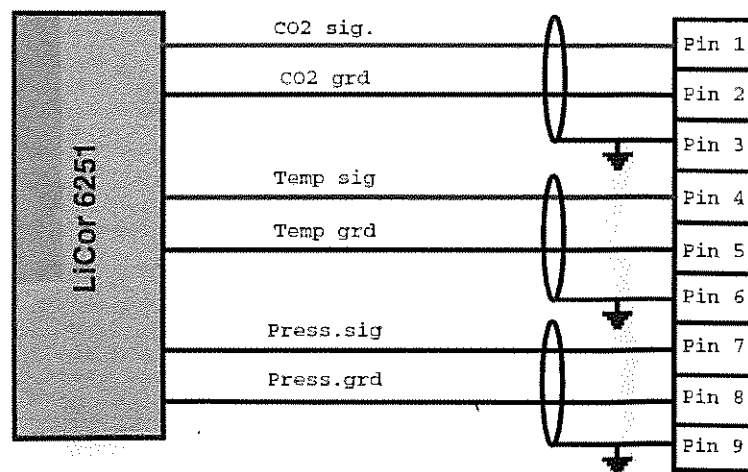
CO2 Profiler

AC Power Distribution



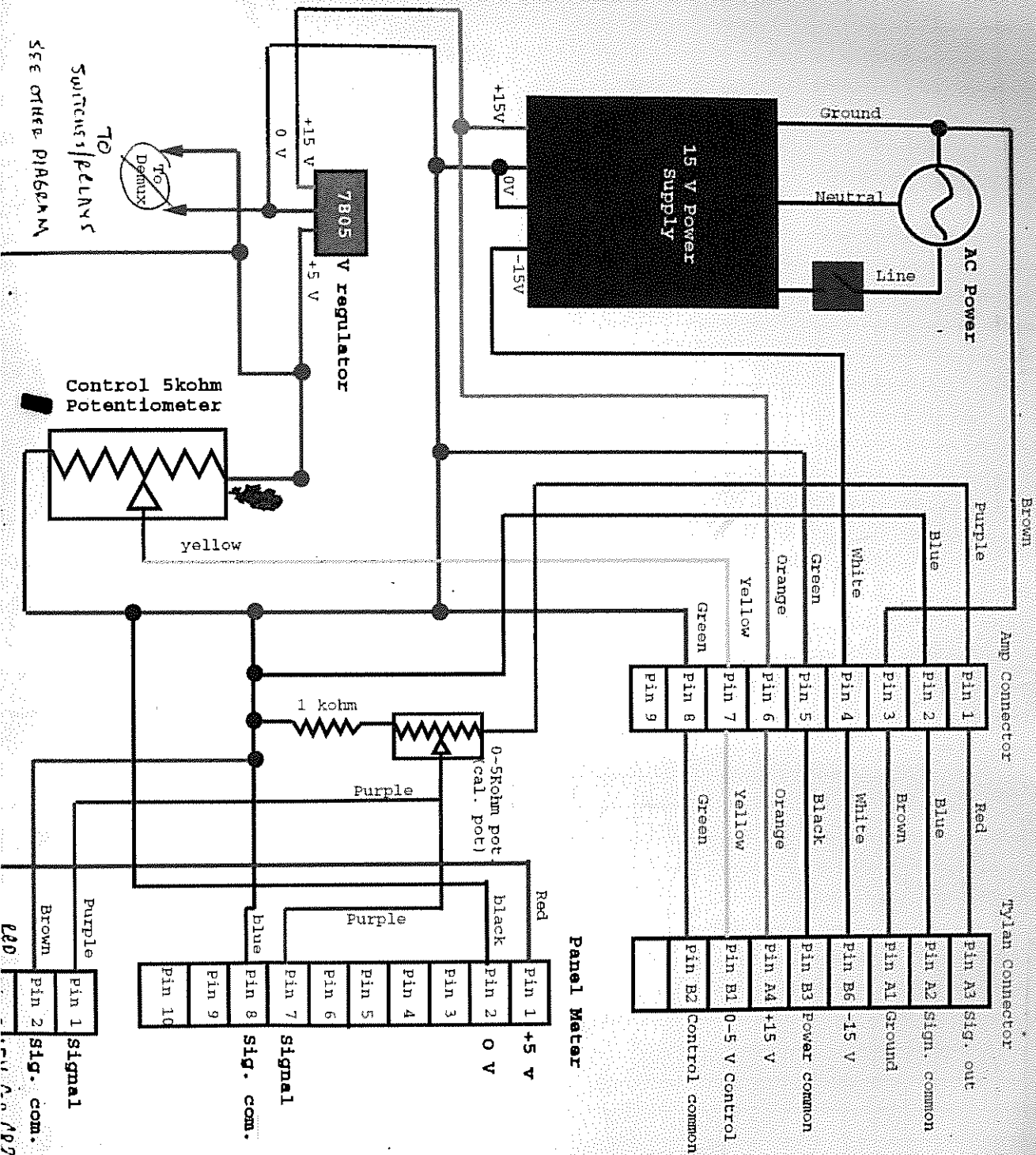
Li-Cor Signals

Amp connector



note-shields connected to box ground

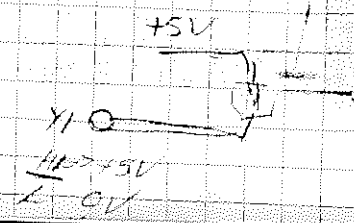
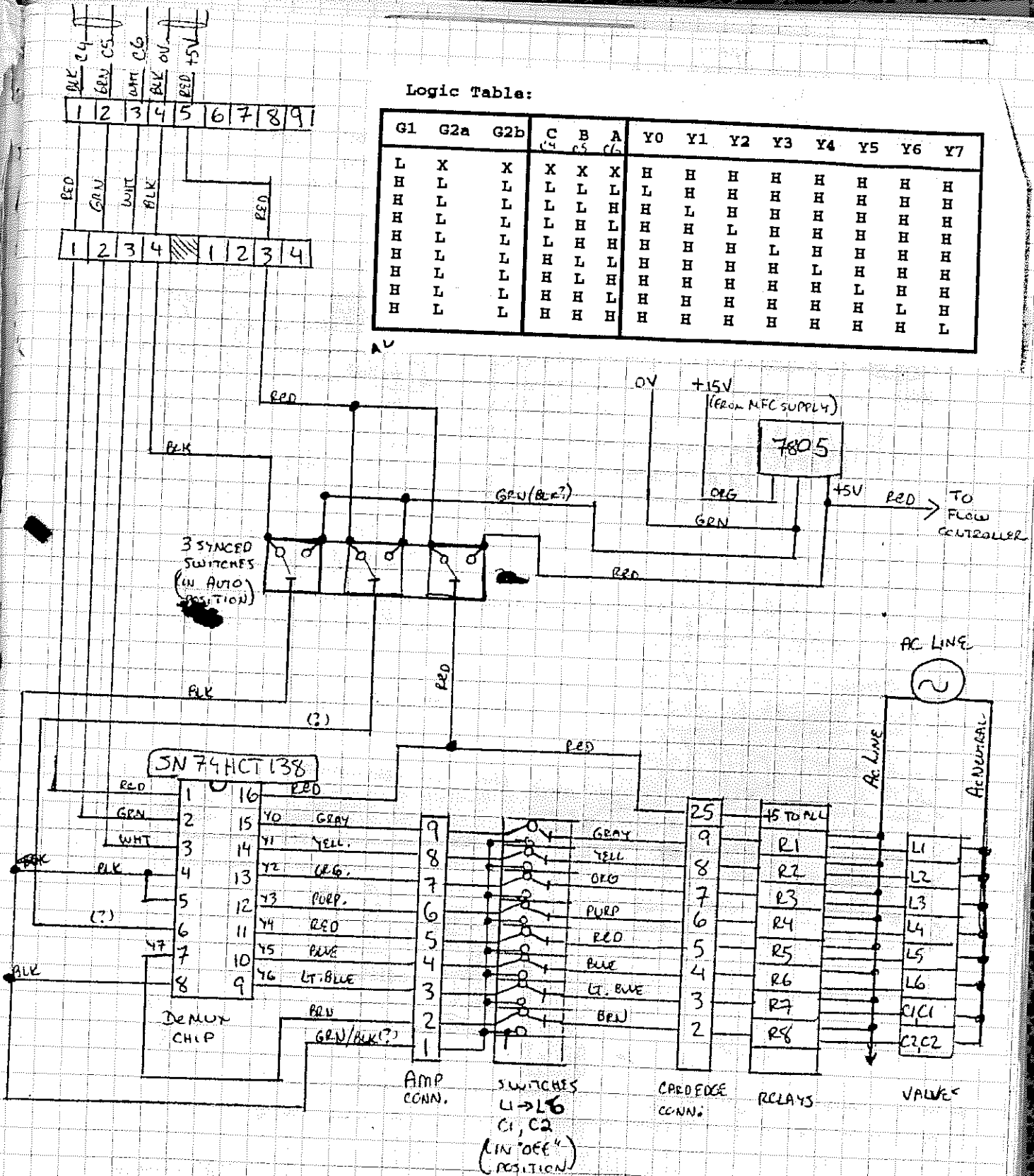
TRIGGER - MASS FLOW CONTROLLER POWER SUPPLY



LED T-10 A-01073x

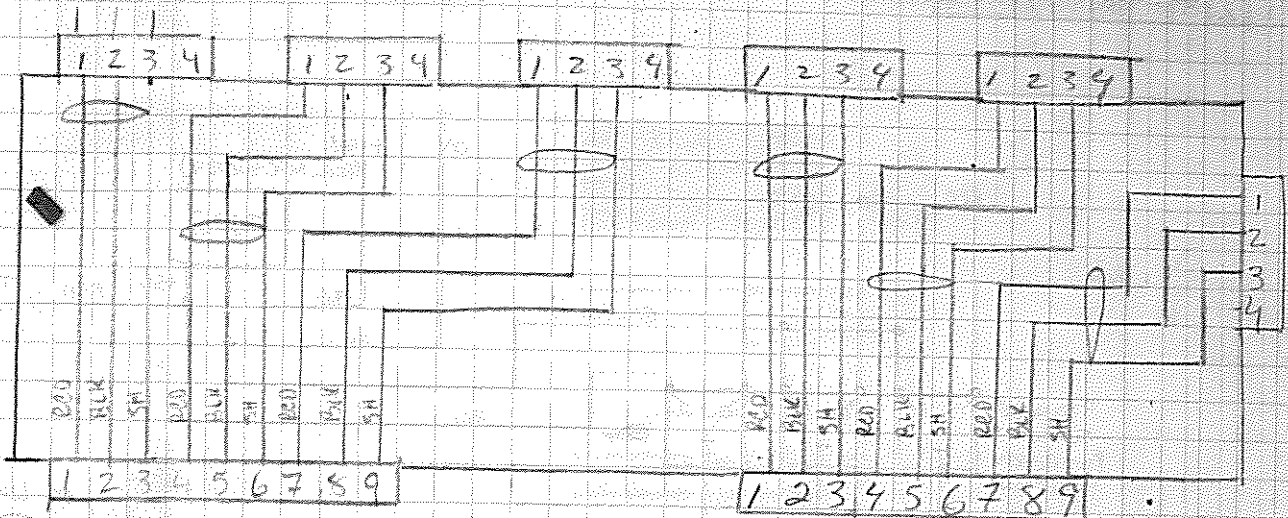
Logic Table:

G1	G2a	G2b	C (C4)	B (C5)	A (C6)	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7
L	X	X	X	X	X	H	H	H	H	H	H	H	H
H	L	L	L	L	L	L	L	L	L	L	L	L	L
H	L	L	L	L	H	H	H	H	H	H	H	H	H
H	L	L	L	H	L	H	H	H	H	H	H	H	H
H	L	L	L	L	L	H	H	L	H	H	H	H	H
H	L	L	L	L	H	H	H	H	H	L	H	H	H
H	L	L	L	H	L	H	H	H	H	H	L	H	H
H	L	L	L	H	H	H	H	H	H	H	H	L	L
H	L	L	L	H	H	H	H	H	H	H	H	H	L



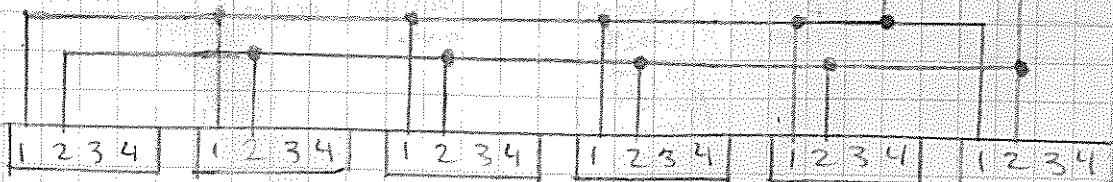
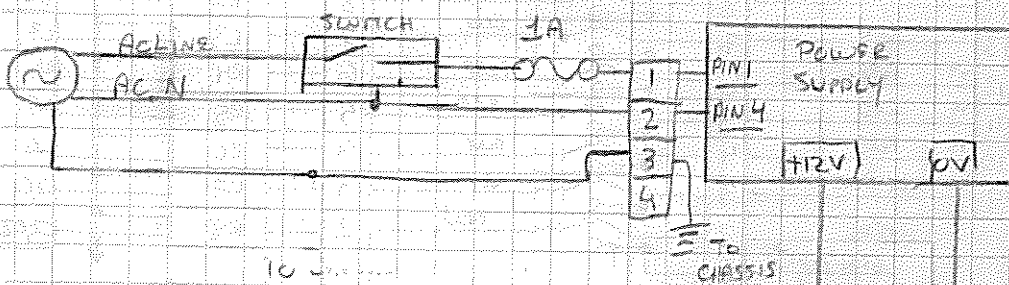
3/8/77 - JUNCTION BOX FOR NET RELIOMETER SIGNALS

Inputs - Amp 4-pin connectors



Outputs - Amp 9-pin conn.

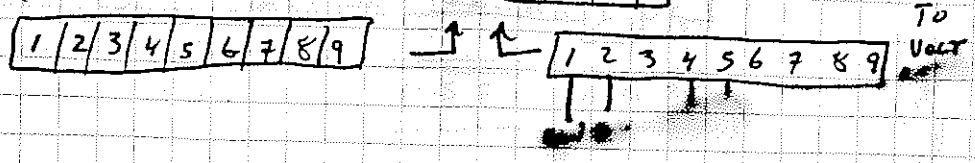
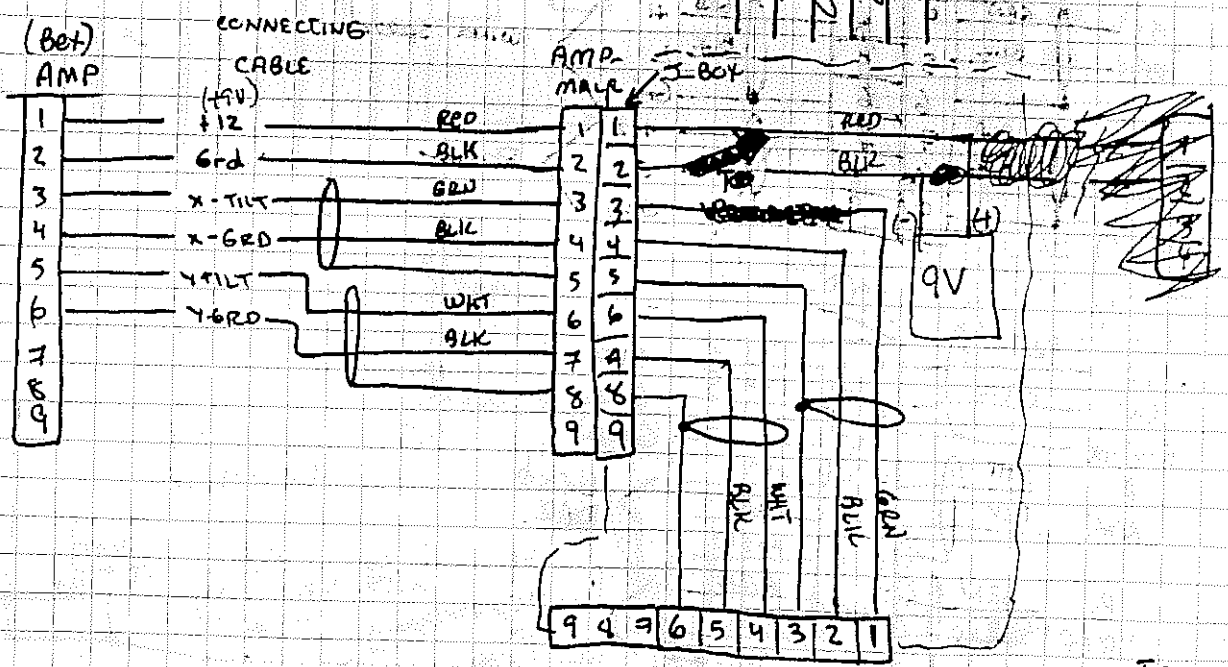
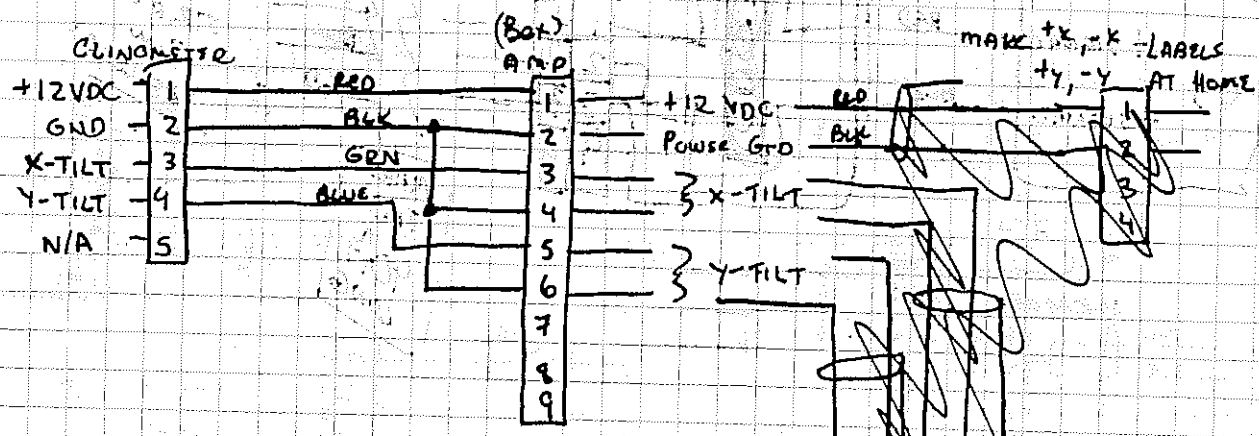
DC POWER SUPPLY



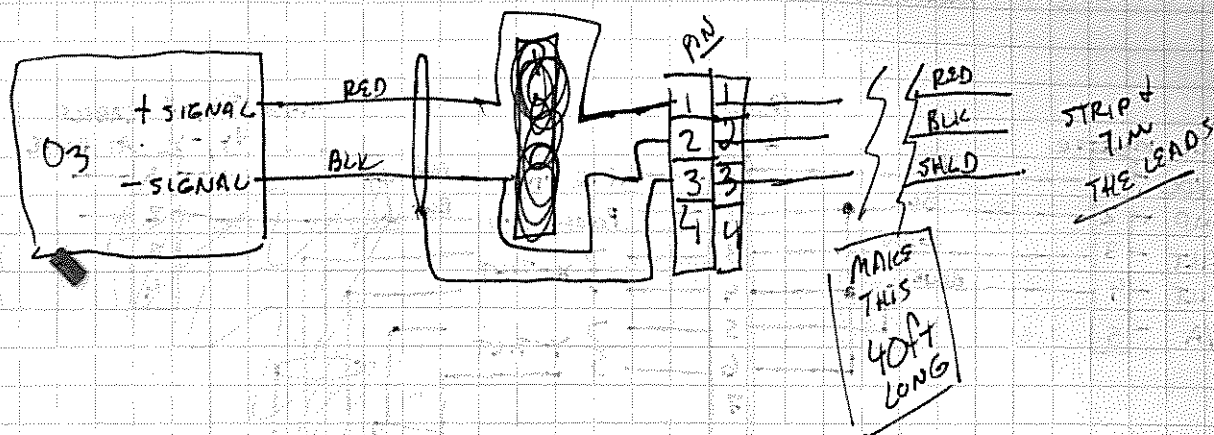
Outputs - Amp 4-pin connector
PIN 1 : +12V
PIN 2 : 0V

4/15/99

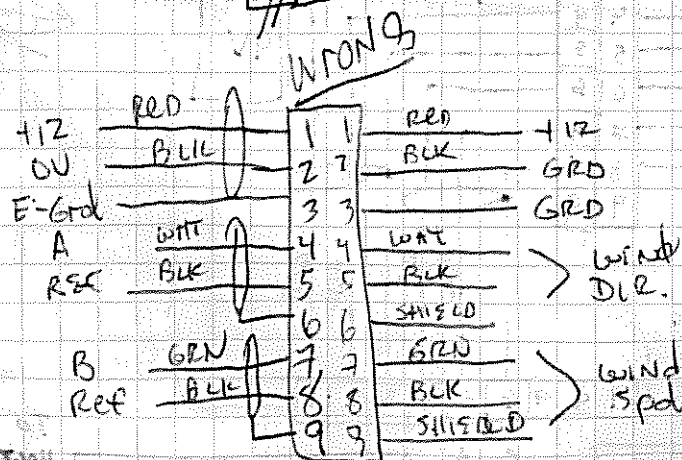
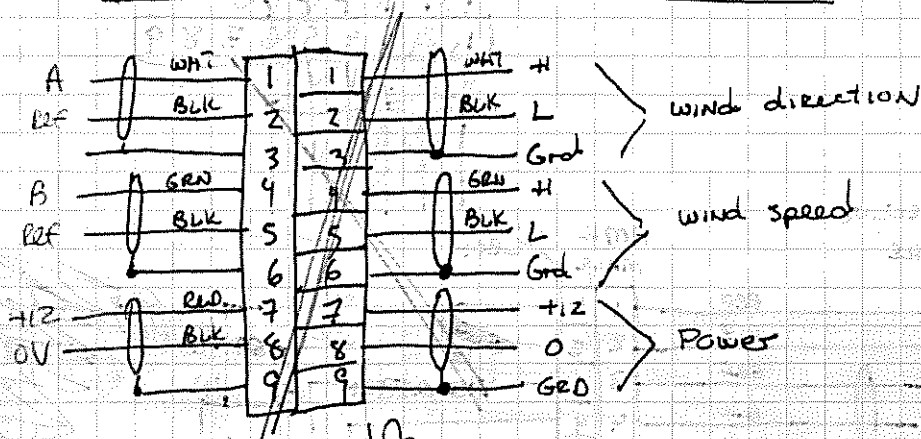
Appl. Geomechanics CLINOMETERS MODEL 900



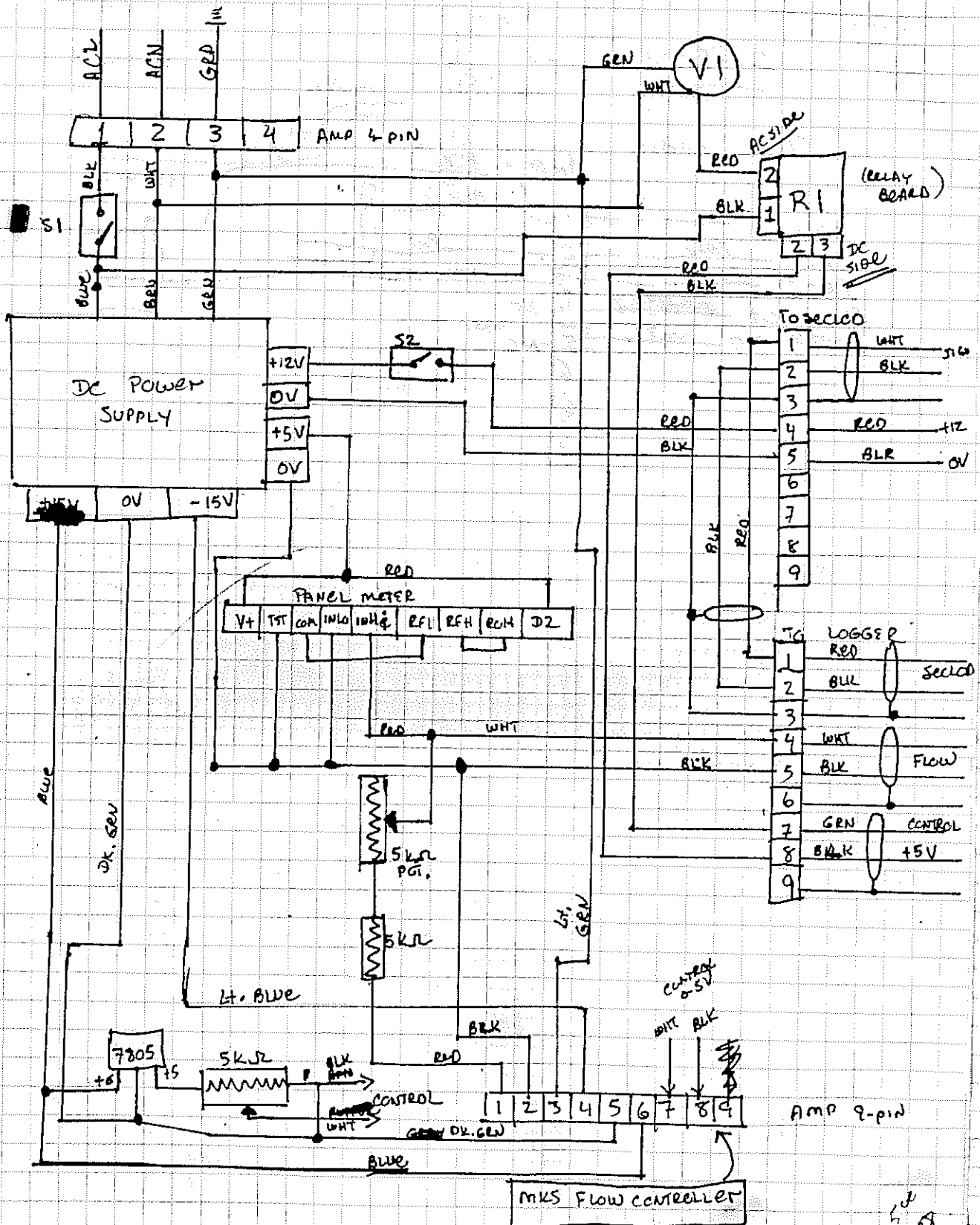
TECO O₃ CABLE



RM Young Extension Cables: (Proprietary)

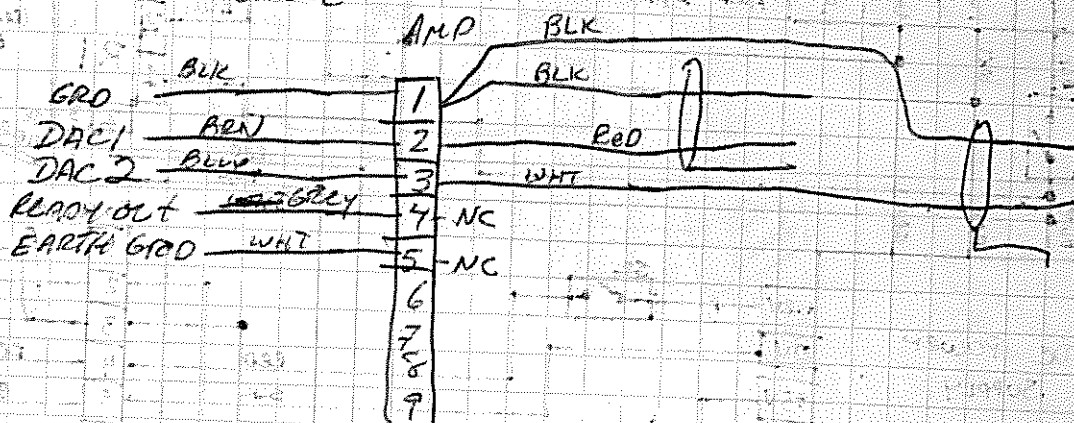


4/15/00 SECLOD FLOW CONTROLLER -



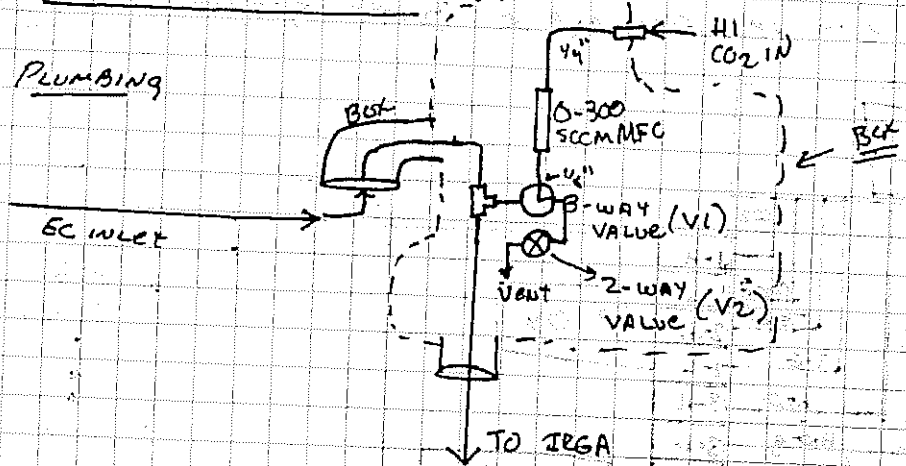
Li7500

DAC CABLE



CO₂ Injection system

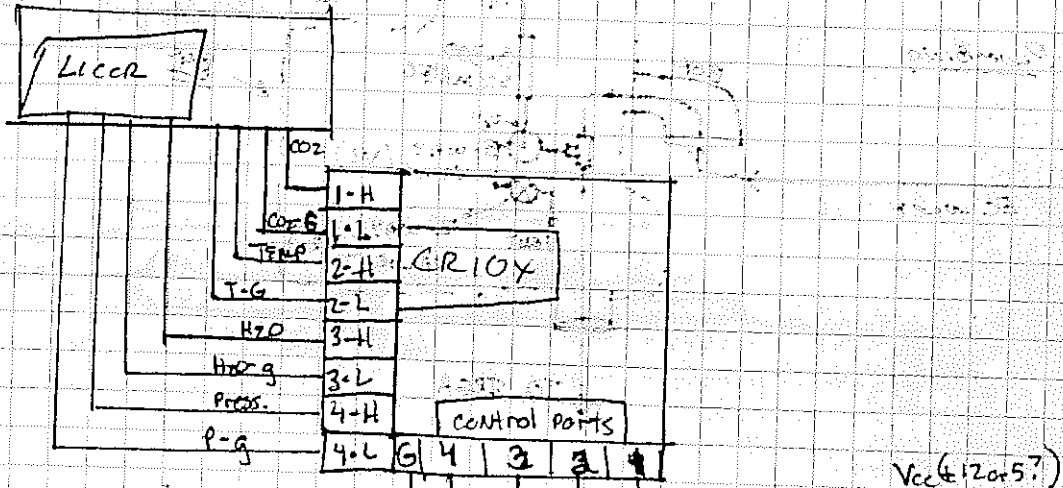
PLUMBING



5/24/01

Double Profile - Modification of Brett's system

ELECTRICAL



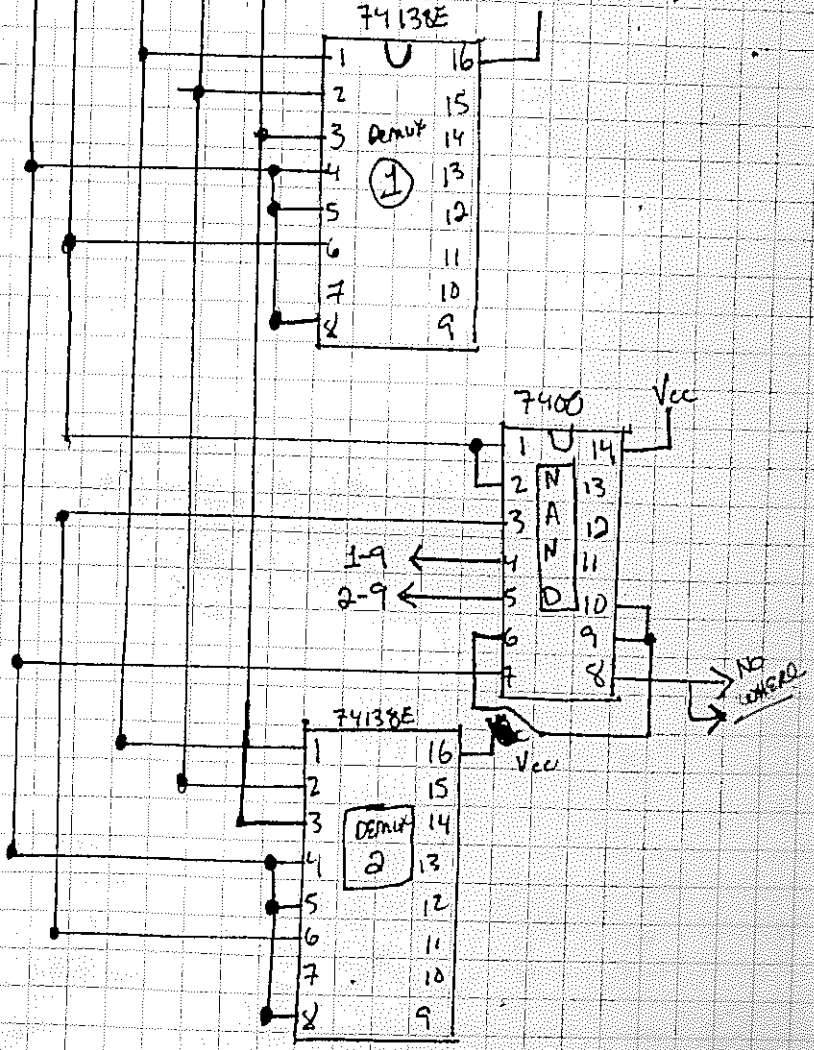
AMP CONNECTOR
POWER

- | | |
|---|-------------------------|
| 1 | — AC LINE |
| 2 | — AC Neut. |
| 3 | — AC (?) Back of valves |
| 4 | — GND |

AMP CONNECTOR
SIGNALS

- | |
|---|
| 1 |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |
| 7 |
| 8 |

3.5A
36V
7400
1440V
1680V
378V
36V
36V



Note - Ed Swiatek program
prc36.csi
(JRMINE)

Dsmux outputs (Dsmux # - PIN)

(on Demux Board)
20 PIN conn

Relay BOARD PIN (T=TOP, B=BOTTOM, B-#)

1-15	1
1-14	2
1-13	3
1-12	4
1-11	5
1-10	6
2-15	7
2-14	8
2-13	9
2-12	10
2-11	11
2-10	12
1-9	13
2-9	14
1-7	15
C-2 (control port on logger)	16
2-7	17
C1	18
C4	19
C3	20

T-1-B-2
T-1-B-3
T-1-B-4
T-1-B-5
T-1-B-6
T-1-B-7
T-1-B-8
T-1-B-9
B-1-B-2
B-1-B-3
B-1-B-4
B-1-B-5
B-1-B-6
B-1-B-7
B-1-B-8
N/C
B-1-B-9

N/C
N/C
N/C

PIN 25 => +5VDC

(1=111)
C4-C1 in program

Relay (T=TOP, B=BOTTOM, #)

LEVEL

Value

AMP
CONNECTOR

1000	T-0	1	51	16
1100	T-1	2	52	15
1010	T-2	3	53	14
1110	T-3	4	54	13
1001	T-4	5	55	12
1101	T-5	6	56	11
0000	T-6	7	57	10
0100	T-7	8	58	9
0010	B-0	9	59	8
0110	B-1	10	510	7
0001	B-2	11	511	6
0101	B-3	12	512	5
1011	B-4	13	513 (New)	4
0011	B-5	14	514 (New)	3
1111	B-6	ZERO (15)	514 + 515	2
0111	B-7	SPAN (16)	516 + 517	1

Campbell programs: DBLPRO3.CSI = 14 lines - cals every 245 min
DBLPRO4.CSI = 12 lines - cals every 240 min

FOR TESTING:

36 + 45 = # of LINES AS ABOVE; 15 sec levels + cals every 10 min.

Problems

6/16/01 - power supply to serial channels in DUCK
went bad \Rightarrow DUCK computer still OK

Mod

115 - 6A

 $+12V - 10A$

Profiler Calibration

6-27-01

1 M - Monson Tower (w/N₂) -2.029

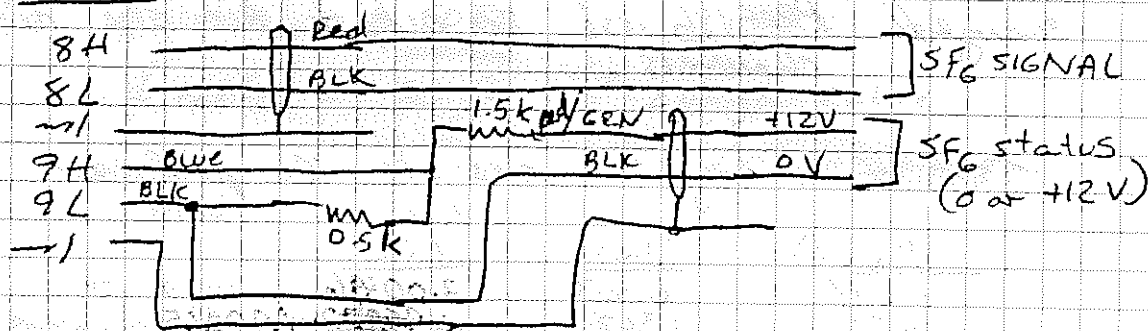
7/20/01 Power Distribution

Bottom - 6A
Med. - 2.4A \Rightarrow PTRAC pump running
Top - 3.0A
Extra - < 1A

7/17/01

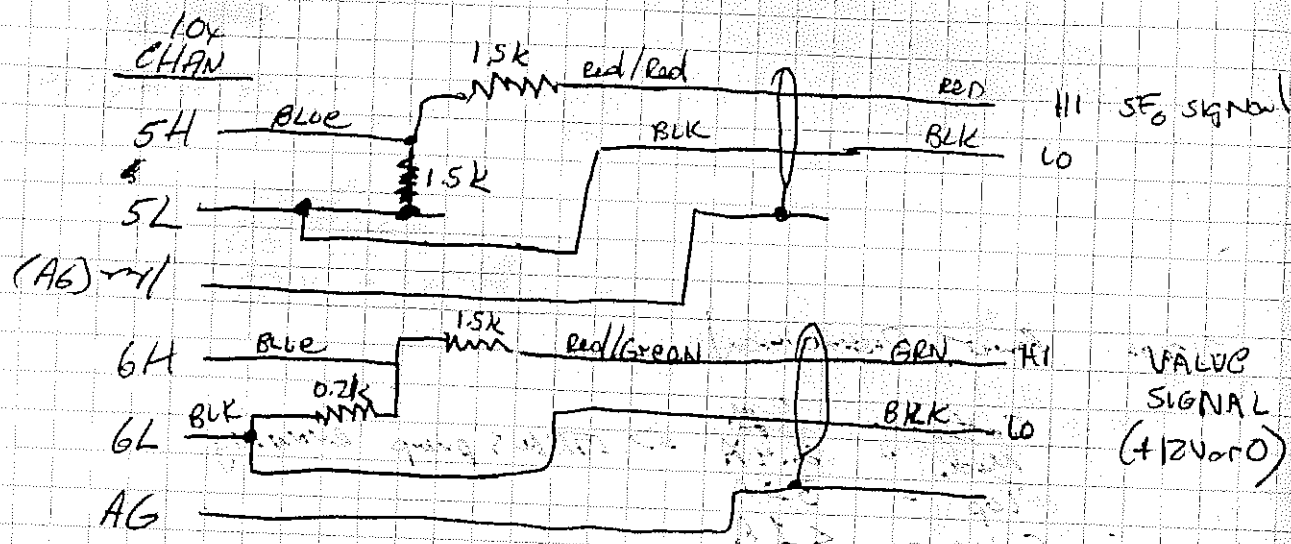
SFG CABLE

Fast 23x



Need to output channels 8+9 (already doing 8)

Double Profiler



changed Fast23x4.csi To output channel 9
(TOTAL OF 19 dids)

changed Prof14b.csi To output all six differential channels.

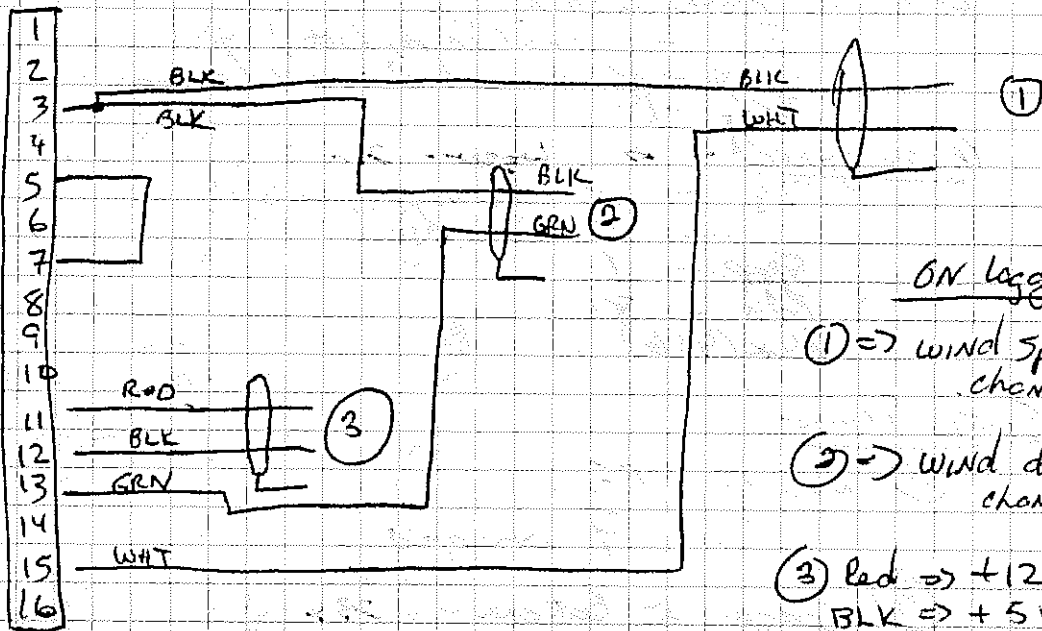
Test of voltage dividers in 10x profiler

$V_{in}(V)$	V_{out}	V_{in}/V_{out}
0.808	0.403	2.0046
2.71	1.362	1.99265 1.99265
-0.012	-0.006	2.000
1.371	0.685	2.00146
1.376	0.686	2.00583

Avg. = 2.001 ± 0.006 (1σ)
(5 meas.)

HANDAR CABLE

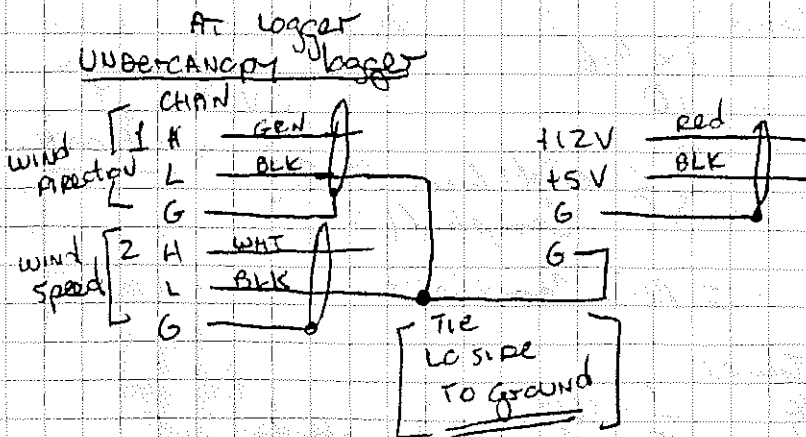
HANDRA connectors



1 cable = 650 ft

$L_{\text{cable}} = 80 \text{ ft}$? ENOUGH cable)

Need TO TIE Lo side of OV (G) Together
Need



8/10/01 Equipment Inventory -

Tc = thermocouples
Pd = photodiodes
SMP = Soil Moisture Probe

Main Tower

- (A) Muxen platform (416)
Tcs - 1 end in box (ref)
Pd's - 5 connected to Mux (Omegas)
Pd's - 14

- (B) ON GROUND - Logger - 21x
Tcs - 10 (B.N. Campbells)
- 5 Omegas
SMP - 1
Pd's - 8
Mux (416)

South Tower

- (A) Mux AT TOP:
Tc - 7 Omegas
(B) Logger AT Bottom - 23x
Mux - 1 416
- 1 AM25T
Tcs - 4 Campbell
- 7 Omegas
SMP - 1
8 sap flow sensors

Middle Tower

- (A) Mux's in Woods
Mux - 2x 416
HFTs - 10
RTDs - 5
Tcs - 1 end here (ref.)
9 Campbell
SMP - 1
UNCONN.
(B) AT 23x
Tcs - 2 Ref. Campbells
(C) BASE OF Tower
Mux - 1x 416
Tcs - 15+ 1 ref Campbell

① Mid. of Tower

21x Logger

Mix - 1x 416

Tcs 4x Campbells

SNP - 1 Omegas

Pds - 13

4 other cables

② Top of Tower

Mix - 416

Tc - 6 + 4 ref. - Omegas

Pds - 15

North Tower

(A) Bottom of Tower

10x DATA LOGGER

Mix 1x 416

1x 25T

Tcs - 12 Campbells

SNP 1 Omegas

8 sap from sensors

Pds 15 (at least)

(B) Top of Tower

Mix 416

Pds - 8

(2 Licor)

AT-BALLER

SNP - 3

OFFICE

Tc - 1

Campbell

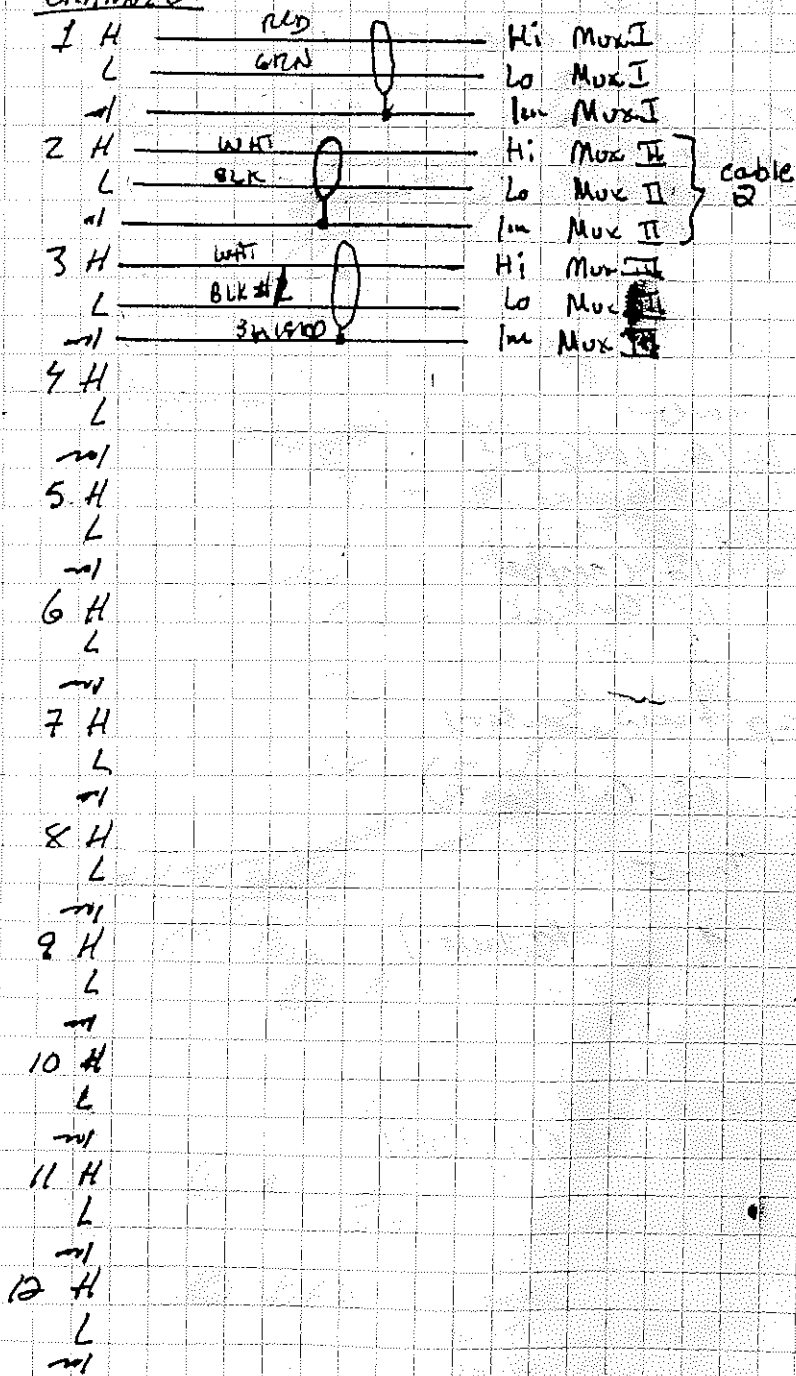
10/8/01

WIRING FOR DATA LOGGERS IN SPRING EXP

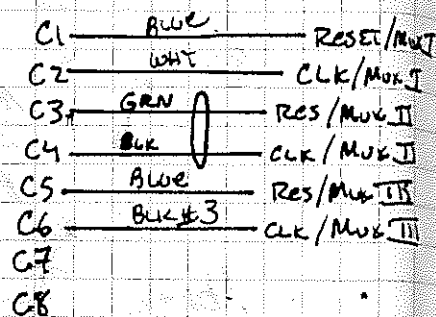
Thermocouple 23x

Program: Tc23x6.csi

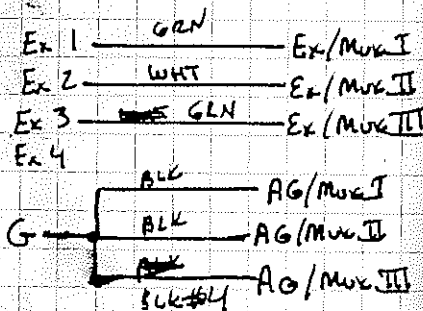
CHANNELS



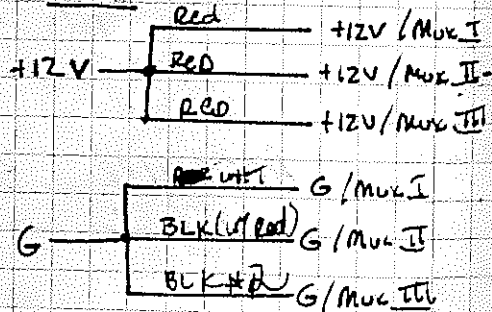
Control Ports



Excite



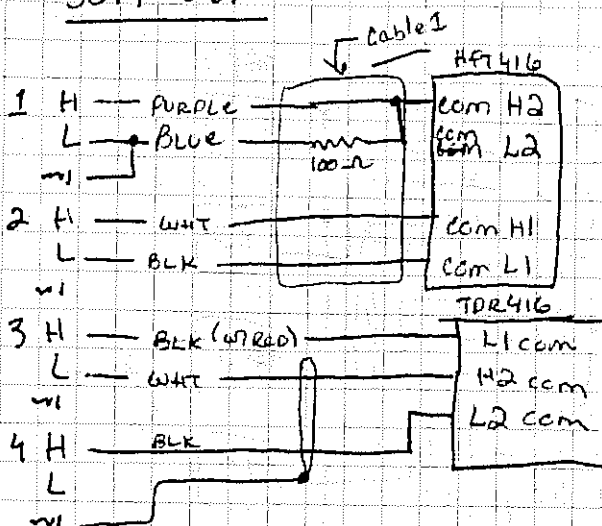
Power



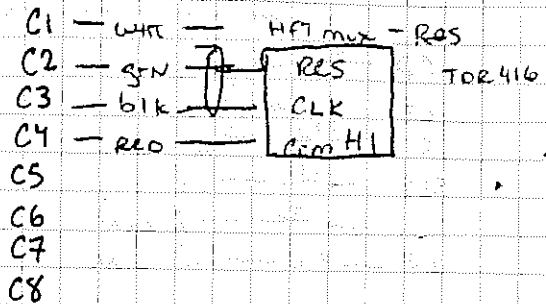
Soil 23x

Program: Soil23x.cs

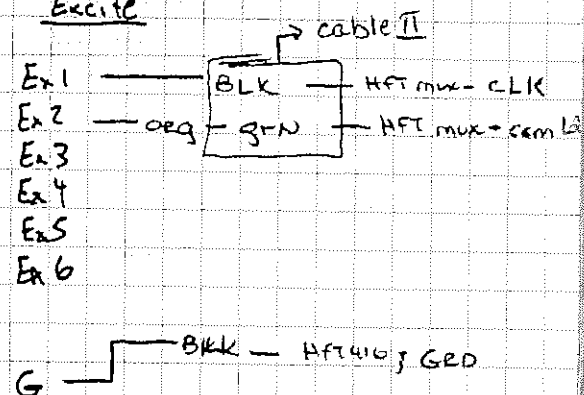
SE



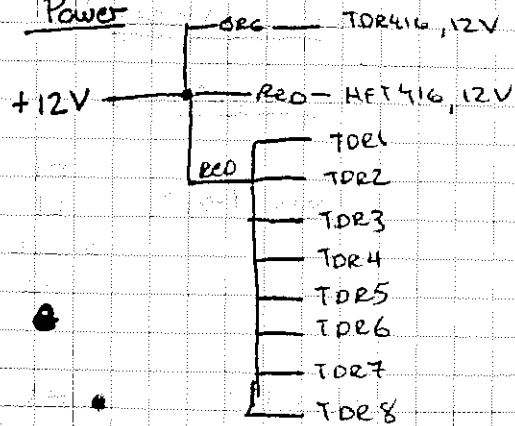
CONTROL PORTS



Excite



Power



5 3 H — BLK (w/Red)

6 L — WHT

7 4 H — BLK

8 L — (blank)

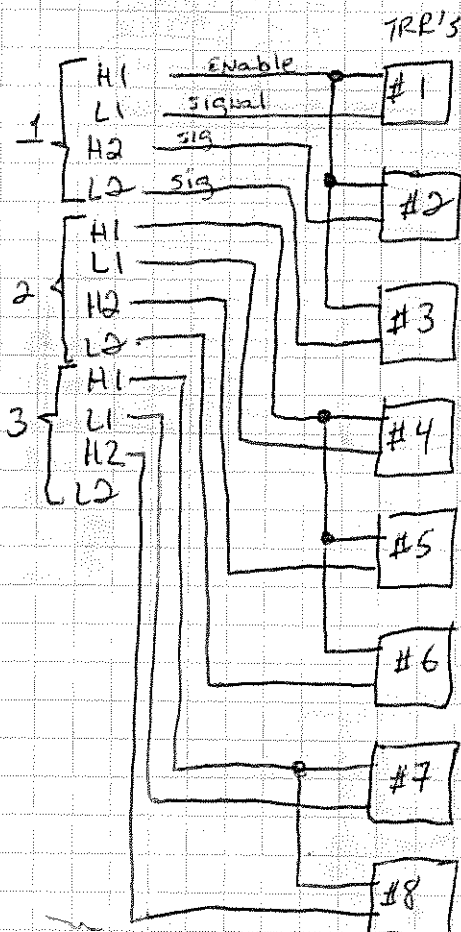
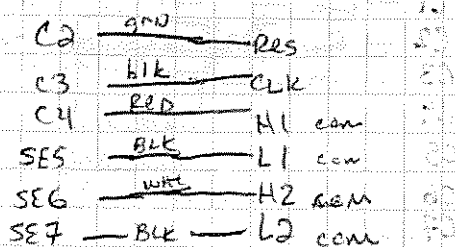
9 H

10 L

11 H

12 L

TOE MUX WIRING

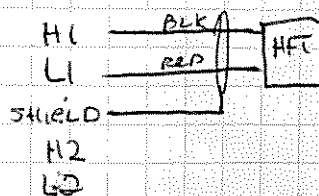


HFT MUX WIRING

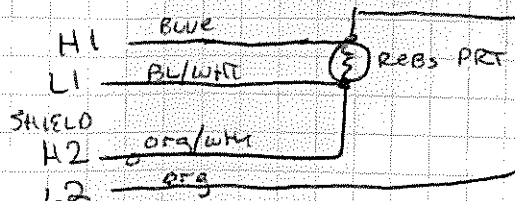
For inputs - see last page

outputs

Sets 1-10



Sets 11-15

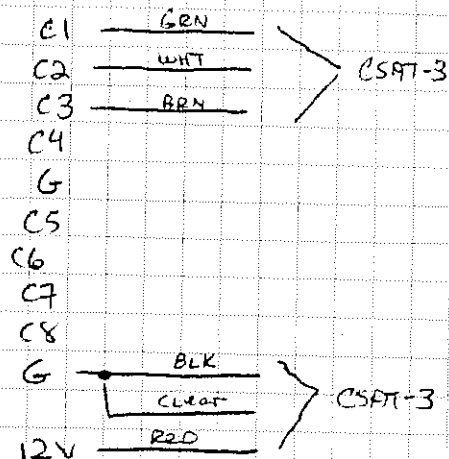
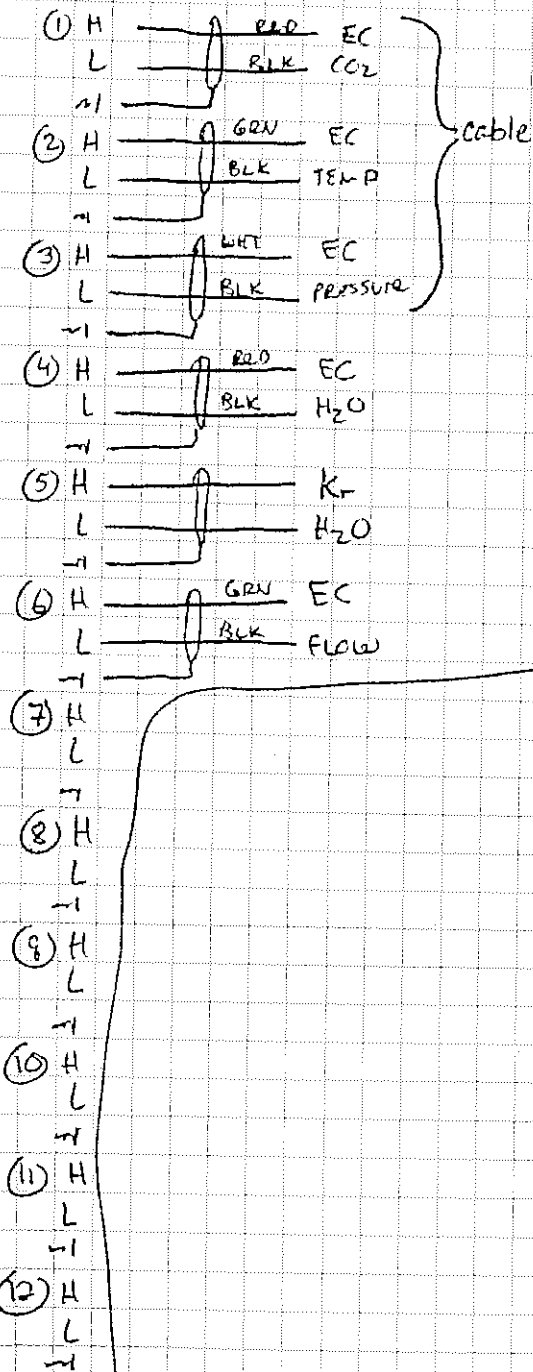


Fast23x

Program: Fast23x4.csi

Input channels

Control Ports



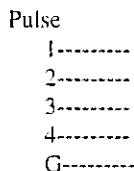
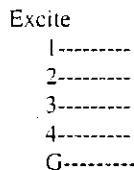
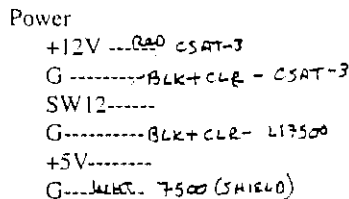
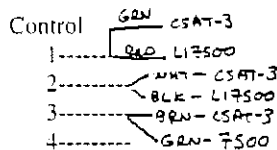
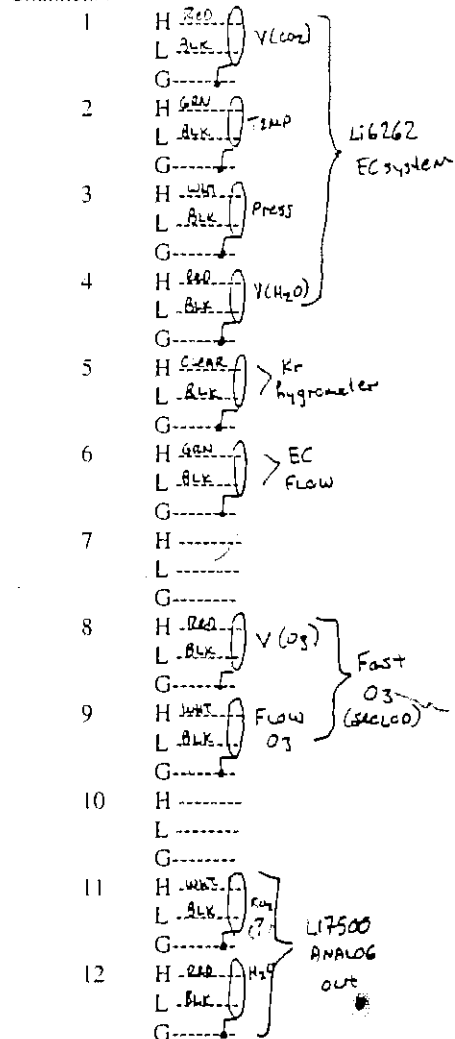
See later page

~~THA~~

DATA LOGGER WIRING A5 OF JAN, Mar, 2002

Logger : Fast23.
Type : 23x
Location : z=17m . Level# 9
Program : fast23x4.csi

Channels :



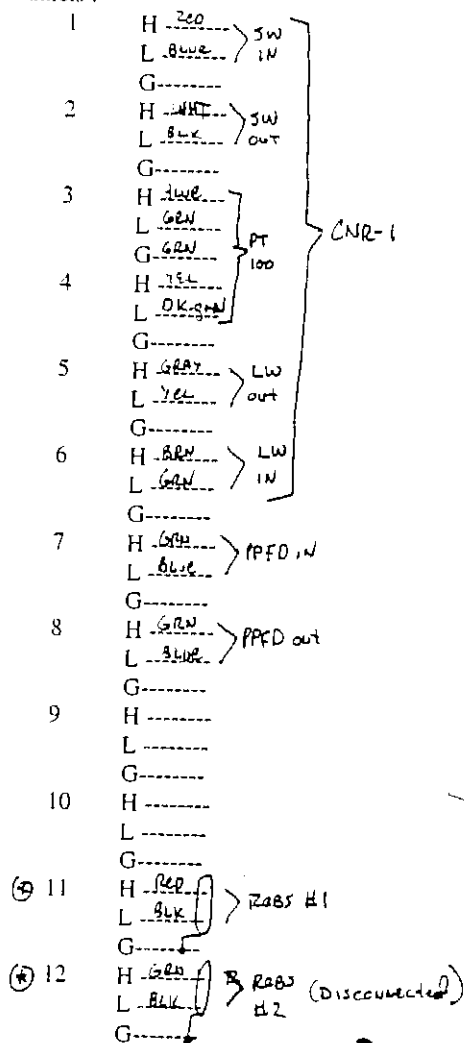
Sensors : CSAT-3 sonic, Li6262 (fast CO2 + q), Kr hyg., LI7500 (open path CO2 + q), Fast O3

CHANNEL 201 outputs

~~g. ec~~
U
V
W
T
ding
O3 stat
CO2.ec
T.ec
P.ec
g.ec
g.kr
Flow.ec
Fast O3
CO2 obs
g. abs
p. kpc
CO2 anal
H2O anal

Logger name : CNR
 Type : 23x
 Location : z = 26m, Level #14
 Program : cnr30.csi

Channels :



Control

1-----
 2-----
 3-----
 4-----
 5-----
 6-----
 7-----
 8-----

Power

+12V-----
 G-----
 SW12-----
 G-----
 +5V-----
 G-----

Excite

1 Red } PT100 - CNR-1
 2-----
 3-----
 4-----
 G Blk

Pulse

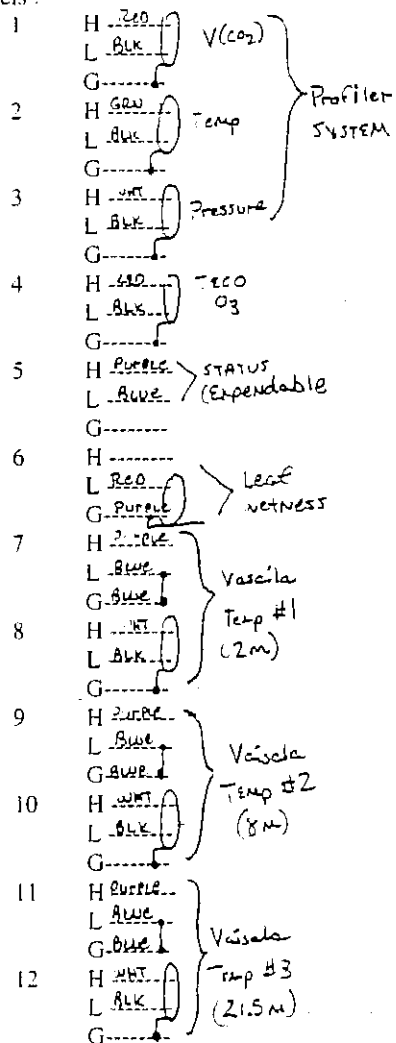
1-----
 2-----
 3-----
 4-----
 G-----

Sensors : CNR-1 radiometer, LiSA190A quantum sensors (3), REBS Q*7.1 radiometer (2)

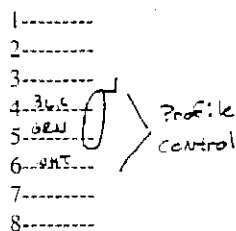
⑪ This cable leads to
 Junction box - 3 possible
 sensor can be connected

Logger name : Profiler: z= 11m, Level #
 Type : 23X
 location : z= 11 m, Level #6
 Program : prof30.csi

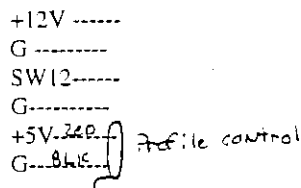
Channels :



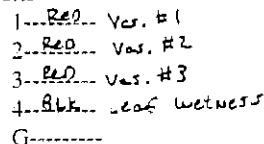
Control



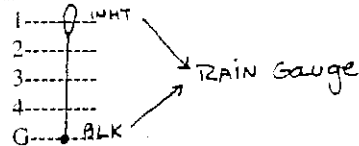
Power



Excite



Pulse



Sensors : Li6251 (Profiler), Leaf Wetness. HMP35D Temperature (3). Rain Gage.

Logger name : MetA.
 Type : 23x
 Location : z=9 m . Level #5
 Program met30bcsi

Channels :

- 1 H WHT } U-dir
L BLK } 2m, 26m
G-----
- 2 H----- } POSSIBLE BAD
L-----
G-----
- 3 H WHT } U-dir
L BLK } RMT, 16m
G-----
- 4 H-----
L-----
G-----
- 5 H WHT } RH #1
L BLK } 2m
G-----
- 6 H WHT } RH #2
L BLK } 8m
G-----
- 7 H WHT } RH #3
L BLK } 21.5m
G-----
- 8 H RED } PT101R
L BLK } Pressure
G-----
- 9 H GEN } 3-sp
L BLK } RMT 26m
G-----
- 10 H GEN } 3-sp
L BLK } RMT, 16m
G-----
- 11 H RED } Handar
L BLK } U-dir (9m)
G-----
- 12 H WHT } Handar
L BLK } 6-sp
G-----

Control

- 1-----
- 2 GEN } EC CONTROL
- 3 BLK }
- 4-----
- 5-----
- 6-----
- 7-----
- 8-----

G BLK EC control

Power

- +12V-----
- G-----
- SW12-----
- G-----
- +5V BLK-----
- G-----

- | | |
|-----|--------|
| RED | HANDAR |
| RED | RMT 26 |
| RED | RMT 16 |
| WT | PRESS |
| RED | EC CON |
| RED | RH # |
| RED | RH # |
| RED | RH # |
| BLK | HAND |
| BLK | RMT |
| BLK | RMT |
| BLK | PRESS |
| BLK | EC CON |
| BLK | RH # |
| BLK | RH # |
| BLK | RH # |

Excite

- 1-----
- 2-----
- 3-----
- 4-----
- G-----

Pulse

- 1-----
- 2-----
- 3-----
- 4-----
- G-----

Sensors : RM Young propvanes (2), HMP-35D humidity sensors (3), Pressure, EC control,
 Handar 2-D sonic (at 9m)

Logger name : Twosonic, small tower
 Type : 23x
 Location : base of small tower
 Program : twosonic.esi

Channels :

1	H <u>GRN</u>	} HANDAR u-dir.
	L <u>BLK</u>	
	G-----	
2	H <u>WHT</u>	} HANDAR 1-spd
	L <u>BLK</u>	
	G-----	
3	H-----	
	L-----	
	G-----	
4	H-----	
	L-----	
	G-----	
5	H-----	
	L-----	
	G-----	
6	H-----	
	L-----	
	G-----	
7	H-----	
	L-----	
	G-----	
8	H-----	
	L-----	
	G-----	
9	H-----	
	L-----	
	G-----	
10	H-----	
	L-----	
	G-----	
11	H-----	
	L-----	
	G-----	
12	H-----	
	L-----	
	G-----	

Control

1-----	GRN	} CSAT-3
2-----	WHT	
3-----	BLN	
4-----		
5-----		
6-----		
7-----		
8-----		

Power

+12V-----	<u>CO</u> CSAT-3	
G-----	<u>GRN</u> HANDAR	
SW12-----	<u>BLK</u> CSAT-3	
	<u>CLR</u>	
G-----		
+5V-BLK-----	HANDAR u-dir	
G-----		

Excite

1-----
2-----
3-----
4-----
G-----

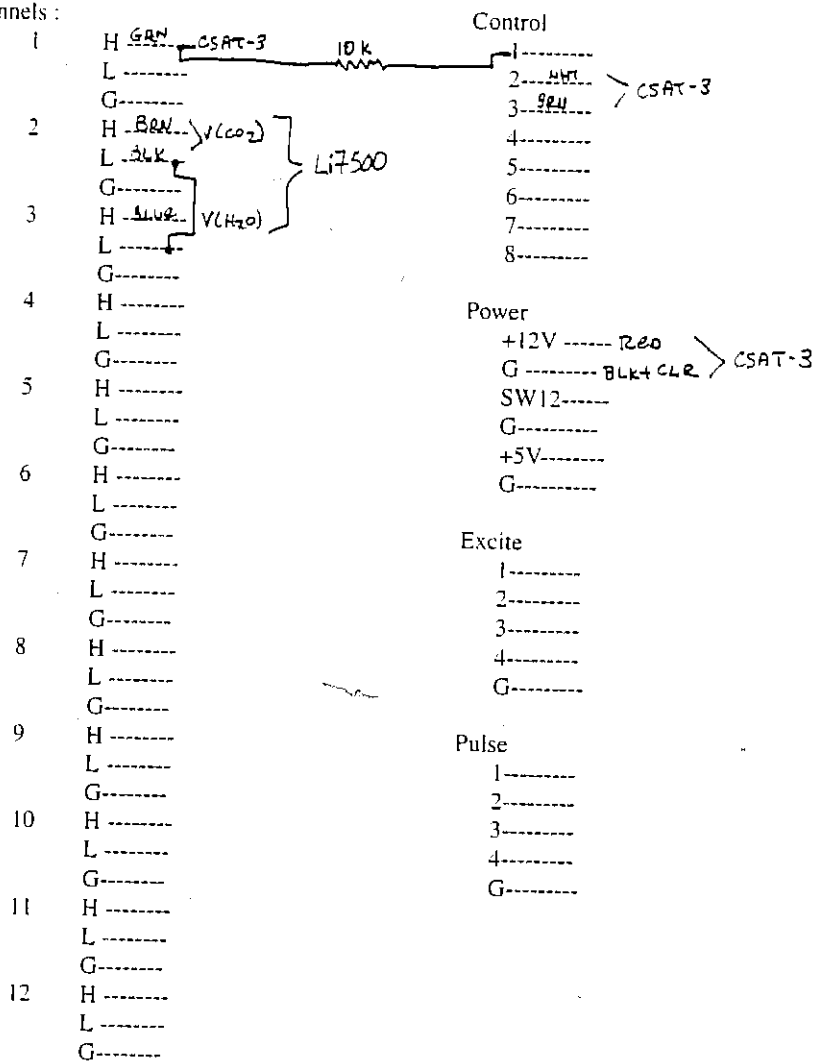
Pulse

1-----
2-----
3-----
4-----
G-----

Sensors : Csat-3 sonic (2), Handar 2-D sonic

Logger name : ~~Profile: 2-11m, Level#~~ UC-EC
 Type : ~~21x~~ 21x
 location : ~~2-11m, Level#6~~ North canopy Access Tower (TRIANG. Tower)
 Program : ~~prof30.ch~~ 21SONIC.CSI

Channels :



Sensors : Li6251 (Profile), Leaf Wetness, HMP35D Temperature (3), Rain Gage.
 CSAT-3, Li7500

Logger name : Soil23xA

Type : 23x

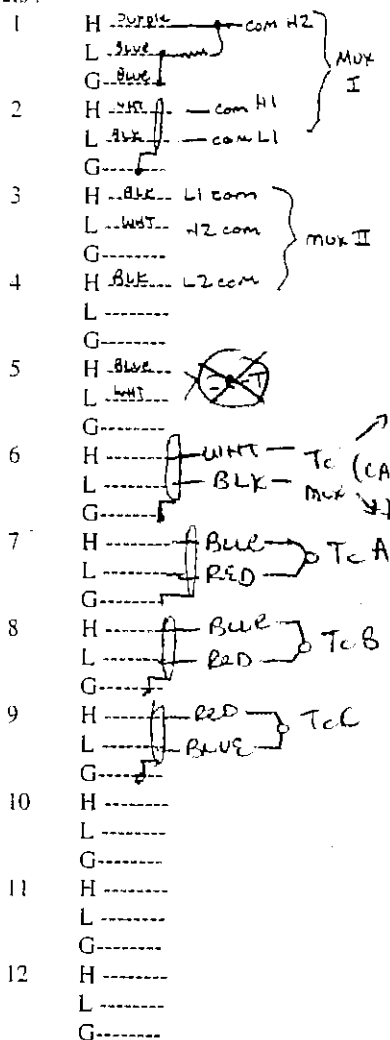
Location : Base of North canopy access tower — ALONG PATH

Program : soil23x.csi → SOILSHOW.CSI

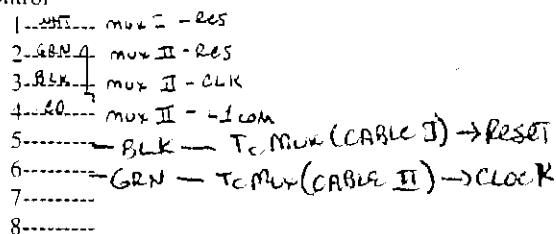
CHANGES IN RED -

Oct 28 2003

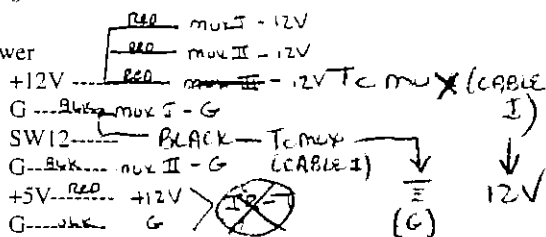
Channels :



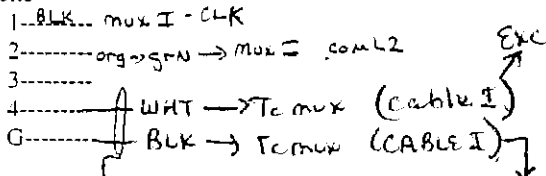
Control



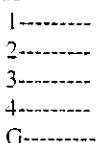
Power



Excite



Pulse



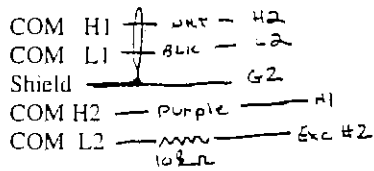
Sensors : HFT-1 soil heat flux (10), STP=1 soil Temp. (5), CS615 soil water reflectometer (8)

1-IR thermometer

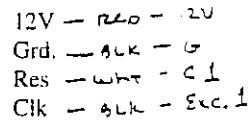
For soil23x => Two AM416 mux's

Mux I. Heat flux plates and soil RTDs

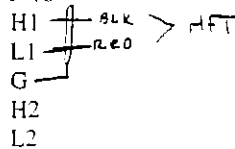
Channels :



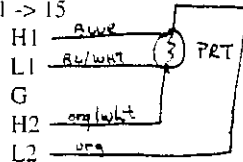
Control



Sets 1 -> 10

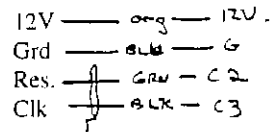
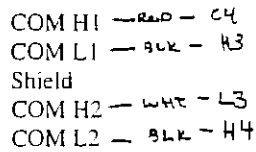


Sets 11 -> 15

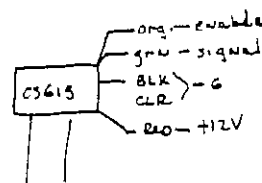
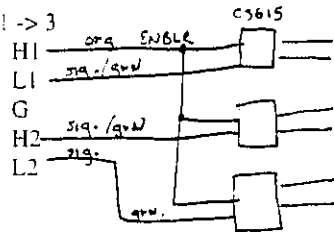


Mux II. CS-615 - soil moisture

Channels :

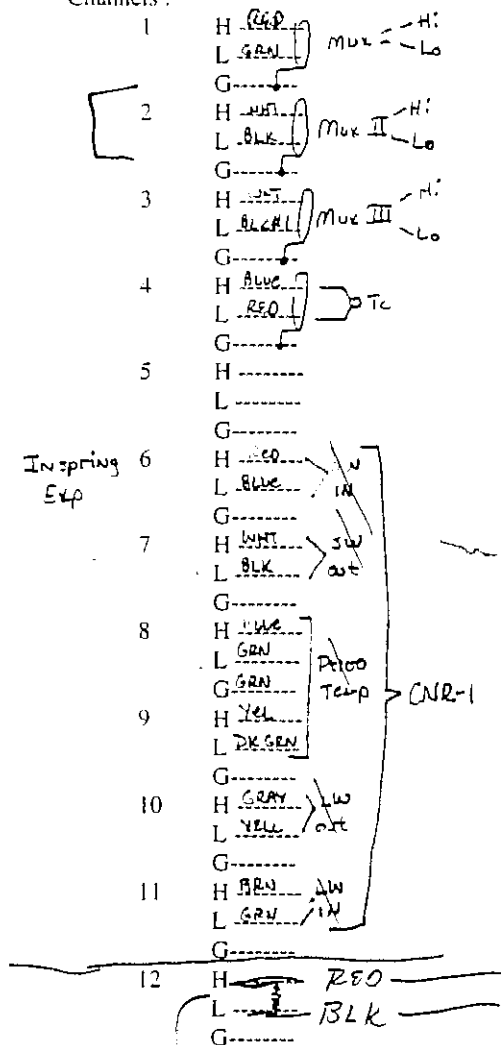


Sets : 1 -> 3



Logger Name : Thermocouples.23x
 Type : 23x
 Location : Level #1, N. canopy access tower
 Programs : Tc23x.esi

Channels :



Control

1-BLU Mux I - RES
 2-WHT Mux I - CLK
 3-GRN Mux II - RES
 4-BLU Mux II - CLK
 5-BLU Mux III - RES
 6-BLK#3 Mux III - CLK
 7-
 8-

Power
 +12V -12V Mux I - 12V
 G-WHT Mux I - G
 SW12-
 G-BLK Mux II - G
 +5V-
 G-BLK#2 Mux III - G

Excite

1-P-GRN Mux I - EXC
 2-WHT Mux I - EXC
 3-GRN Mux II - EXC
 4-BLK CNR-1 PT-100
 G-BLK CNR-1
 G-BLK Mux I - AG
 G-BLK Mux II - AG
 G-BLK#4 Mux III - AG

Pulse
 1-
 2-
 3-
 4-
 G-

Sensors : 107-L type T thermocouples (75), CNR-1 (spring, 2002)

measure the resistance

775 Ω

For Tc23x : 3 Thermocouple multiplexers

Mux I.

12V — RED — 12V
 Grd. — WHT — G
 Res. — BLUE — C1
 Clk. — WHT — C2
 Exc. — P, GRN — Exc 1
 AG — BLK — G

Hi — RED — HI 1
 Lo — GRN — LO 1
 G — — —

Sets : 1 -> 25

HI — BLUE
 LI — RED
 G — — —

Mux II.

12V — RED — 12V
 Grd. — BLK — G
 Res. — GRN — C3
 Clk. — BLK — C4
 Exc. — WHT — Exc. 2
 AG — BLK — G

Hi — WHT — HI 2
 Lo — BLK — LO 2
 G — — —

Sets : 1 -> 25

HI — BLUE
 LI — RED
 G — — —

Mux III.

12V — RED — 12V
 Grd. — BLK #2 — G
 Res. — BLUE — C5
 Clk. — Black #3 — C6
 Exc. — GRN — Exc #3
 AG — Blk #4 — G

Hi — WHT — HI 3
 Lo — BLK #1 — LO 3
 G — — —

Sets : 1 -> 25

HI — BLUE
 LI — RED
 G — — —

Logger name : Dendrometers :
 Type : 21x
 Location : on ground near mid. canopy access tower
 Program : dendro.csi

Channels :

1	H -----
	L -----
	G -----
2	H -----
	L -----
	G -----
3	H -----
	L -----
	G -----
4	H -----
	L -----
	G -----
5	H -----
	L -----
	G -----
6	H -----
	L -----
	G -----
7	H -----
	L -----
	G -----
8	H -----
	L -----
	G -----
9	H -----
	L -----
	G -----
10	H -----
	L -----
	G -----

Control

1-----
2-----
3-----
4-----
5-----
6-----
7-----
8-----

Power

+12V -----
G -----
SW12-----
G -----
+5V -----
G -----

Excite

1-----
2-----
3-----
4-----
G -----

Pulse

1-----
2-----
3-----
4-----
G -----

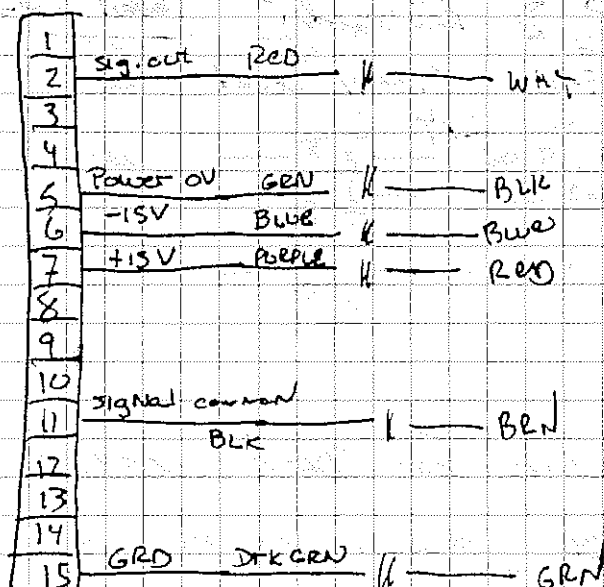
Sensors : automatic dendrometers :

REWIRING of Dendrometers

CHANNEL (GNPOD)	DEND#	TREE	CHANNEL	DEND #	TREE
2	1		6	7	
3	3		7	6	
4	2		8	9	
5	5		9	8	
	4		10	10	

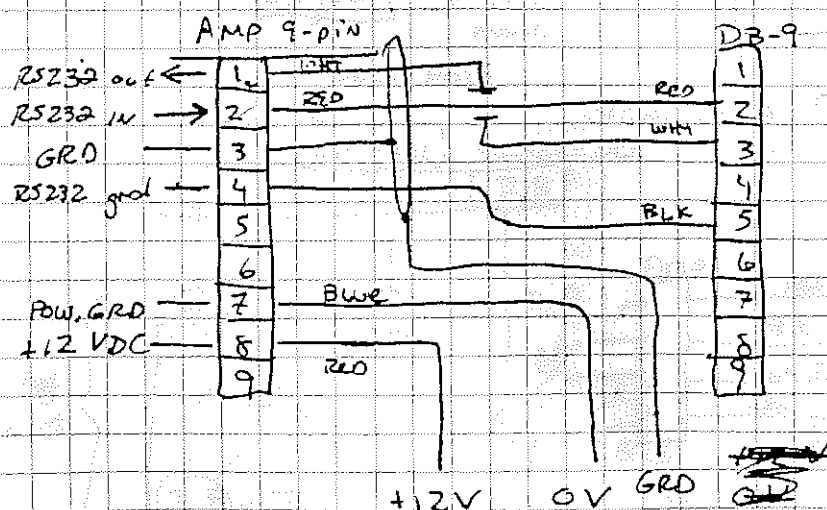
MKS Flowmeter connector => for substitute in Disjunct sampler

D-15



Serial Adapters for "New Duck"

Adapter goes from AMP 9-pin → DB-9 (Female)
w/ 2 wires going off for +12V power



Final Storage

01 0

2 ✓

3 w

4 t

5 diag

03 stat

analog 1. a1

2

3 → a#

4

5

6

7

8

CO2abs

h2Oabs

press

CO2 manual

h2O manual

a9

a10

a11

a12

a1 1V

CO2

a2 5V

temp

a3 1V

p

a4 1V

h2O.ec

a5

h2O.kr

6

7

8

9

10

11

12

5V

hook SF₆ to channel 7 or 8