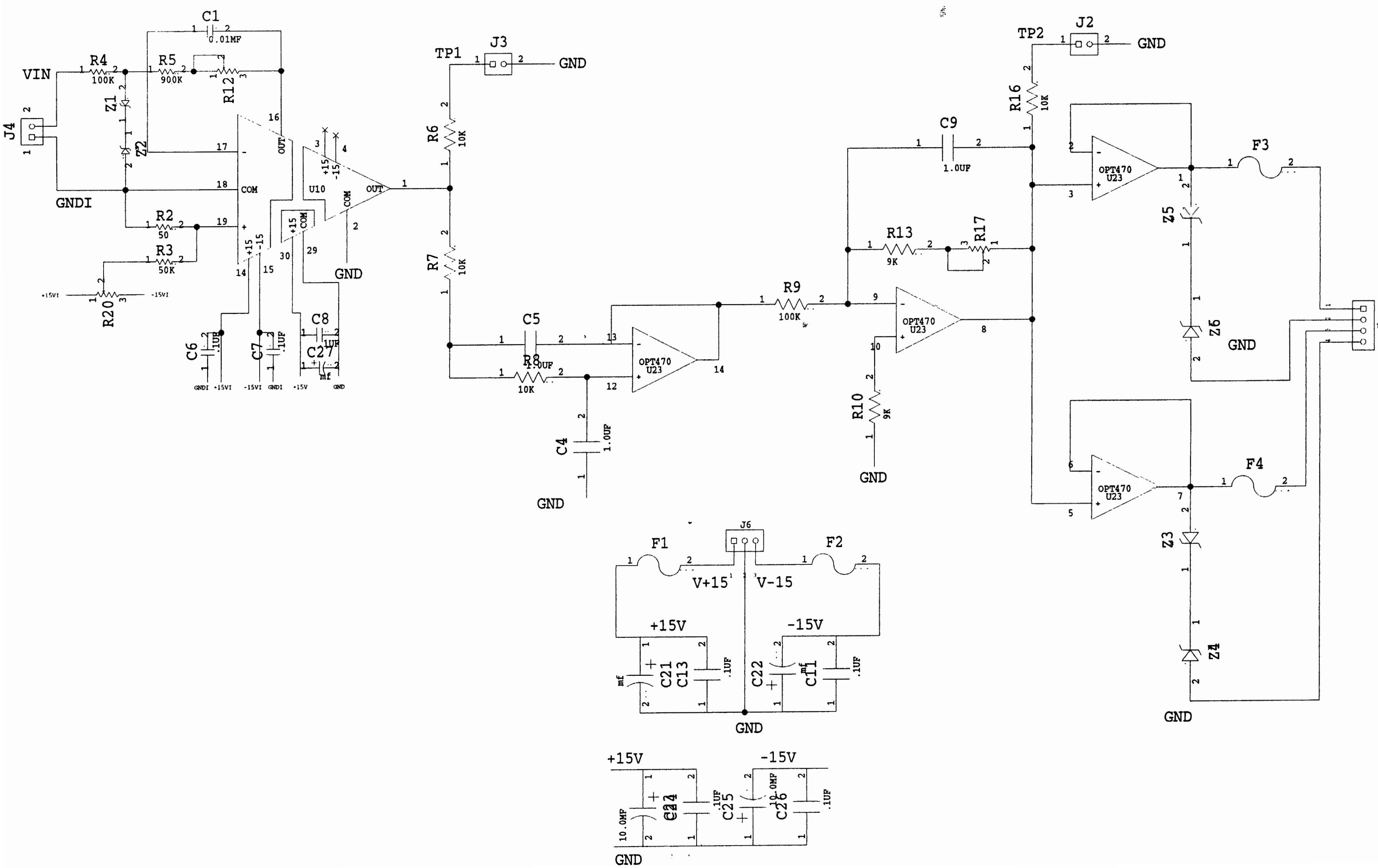
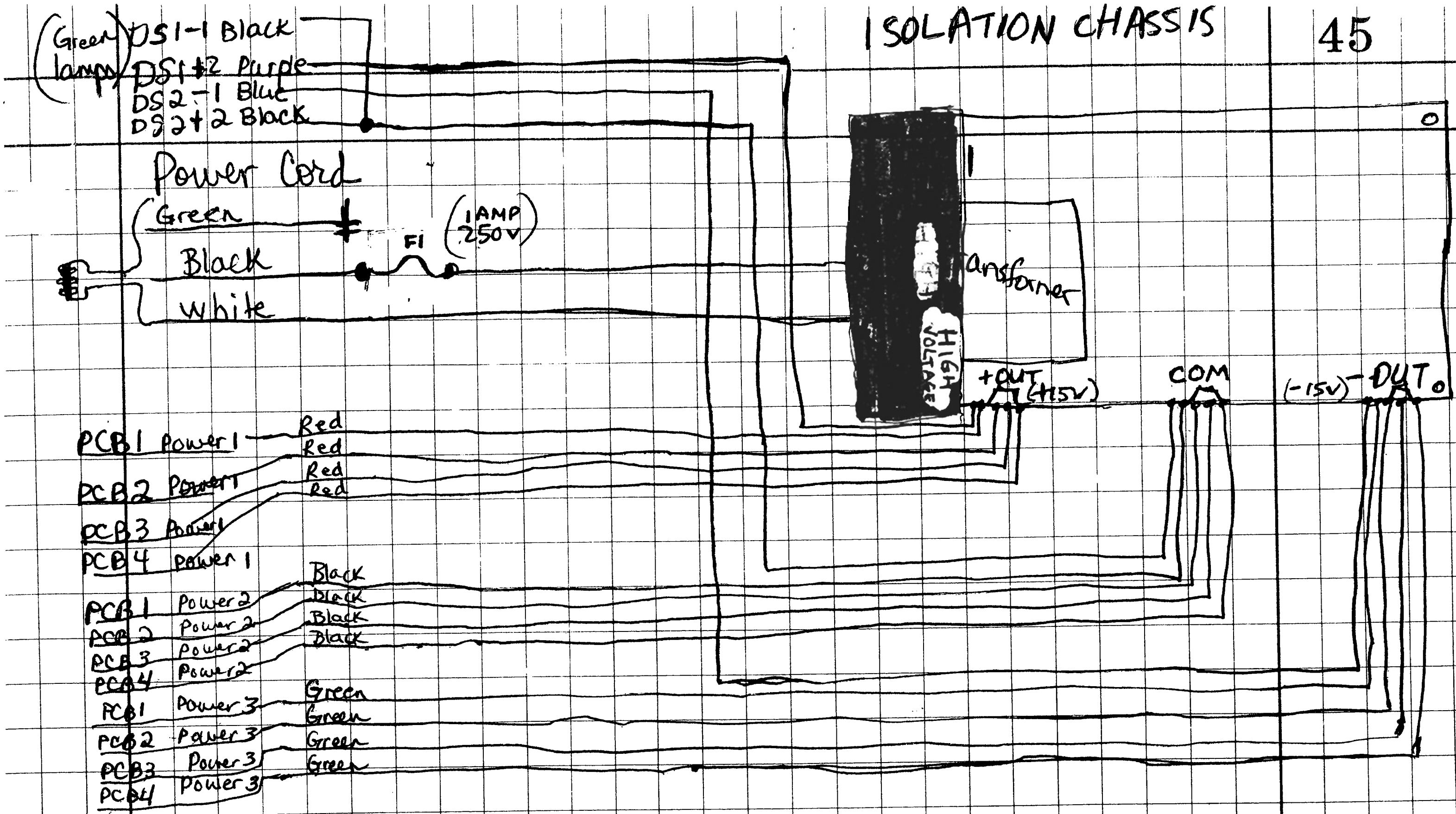
HALLA ISOLATION CIRCUIT





P1 { J1-A red TO: PCB 1 V OUT #1,1
{ J1-B black TO: PCB 1 " #1,2
TP2 { J2-A red to: PCB 1 " #2,1
{ J2-B black TO: PCB 1 " #2,2
} CHANNEL 1

MALE P1-A red TO: P2-A
P1-B black TO: P2-B
P2-A red to: PCB1-VIN 2 } TP3
P2-B Black To: PCB1-VIN 1

TP4 { J3-A red TO: PCB2 V OUT #1,1
{ J3-B black TO: PCB2 " 1,2
TP5 { J4-A red TO: PCB2 " 2,1
{ J4-B black TO: PCB2 " 2,2
} CHANNEL 2

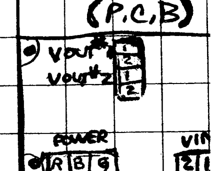
MALE P3-A red TO: PCB-2 VIN 2 } TP6
P3-B black TO: PCB2 VIN 1
P4-A red TO: P3-A
P4-B black TO: P3-B

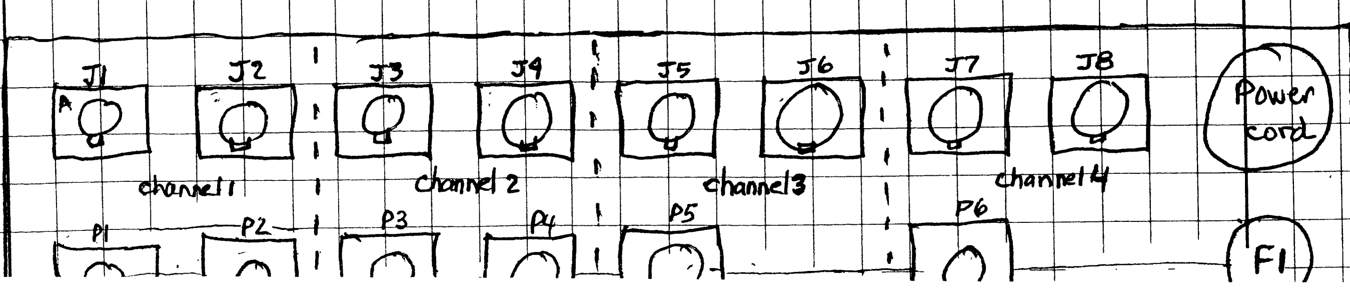
TP7 { J5-A red TO: PCB3 VOUT #1,1
{ J5-B black TO: PCB3 " #1,2
TP8 { J6-A red TO: PCB3 " #2,1
{ J6-B black TO: PCB3 " #2,2
} CHANNEL 3

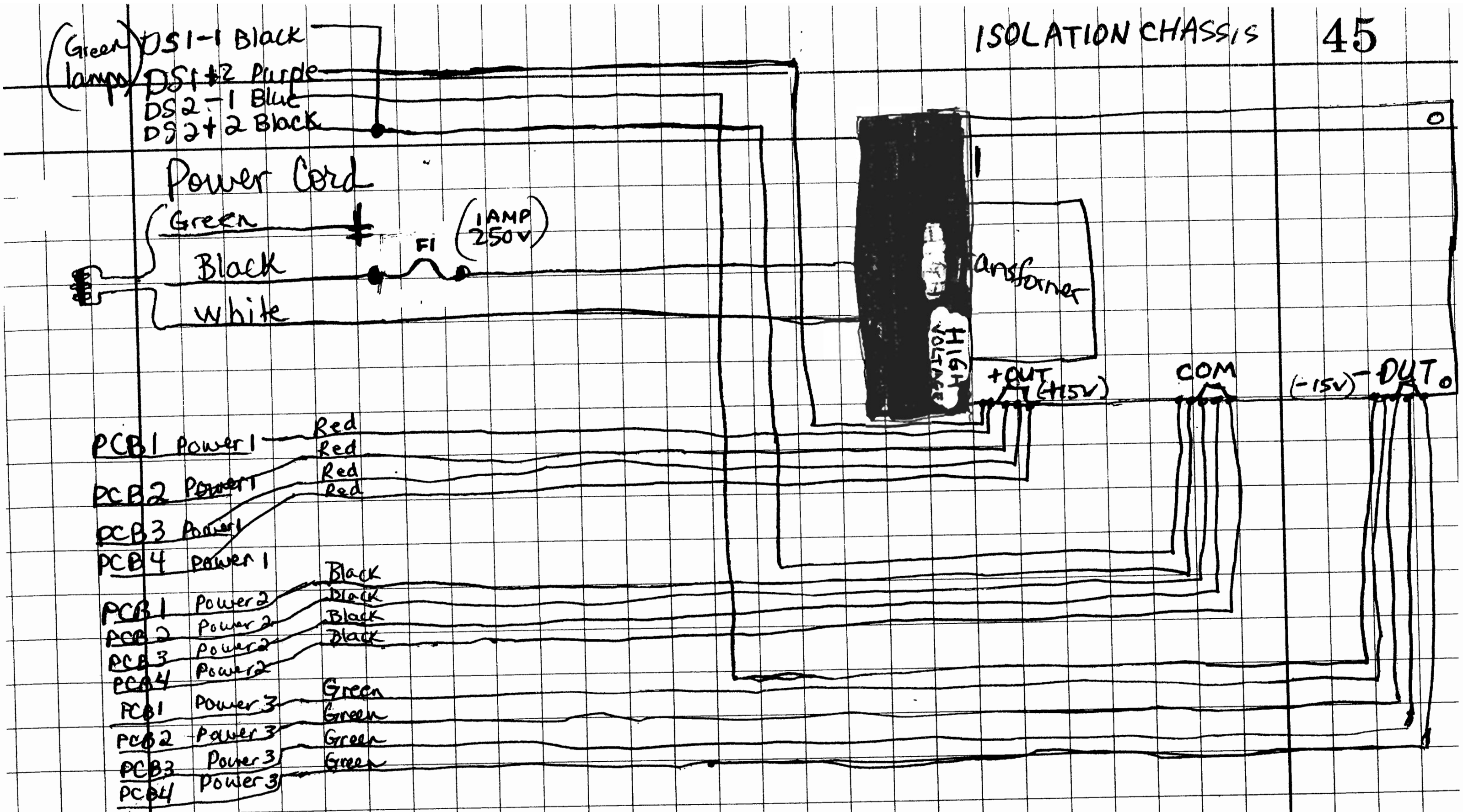
MALE P5-A red TO: PCB-3 VIN 2 } TP9
P5-B black TO: PCB-3 VIN 1

TP10 { J7-A red TO: PCB4 VOUT #1,1
{ J7-B black TO: PCB4 " #1,2
TP11 { J8-A red TO: PCB4 " #2,1
{ J8-B black TO: PCB4 " #2,2
} CHANNEL 4

MALE P6-A red TO: PCB-4 VIN 2 } TP12
P6-B black to: PCB-4 VIN 1

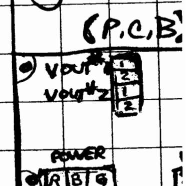






TP1	J1-A	red TO: PCB 1	V OUT	#1,1
	J1-B	black TO: PCB 1	"	#1,2
TP2	J2-A	red to: PCB 1	"	#2,1
	J2-B	black TO: PCB 1	"	#2,2
TP4	J3-A	red TO: PCB2	V OUT	#1,1
	J3-B	black TO: PCB2	"	1,2
TP5	J4-A	red TO: PCB2	"	2,1
	J4-B	black TO: PCB2	"	2,2
TP7	J5-A	red TO: PCB3	VOUT	#1,1
	J5B	black TO: PCB3	"	# 1,2
TP8	J6-A	red TO: PCB3	"	# 2,1
	J6-A	black TO: PCB3	"	# 2,2
TP10	J7-A	red TO: PCB4	VOUT	#1,1
	J7-B	black TO: PCB4	"	#1,2
TP11	J8-A	red TO: PCB4	"	#2,1
	J8B	black TO: PCB4	"	# 2,2

CHANNEL 1	MALE	P1-A red TO: P2-A	
		P1-B black TO: P2-B	
		P2-A red TO: PCB1-VIN 2	TP3
		P2-B Black TO: PCB1-VIN 1	
CHANNEL 2	MALE	P3-A red TO: PCB-2 VIN 2	TP6
		P3-B black TO: PCB2 VIN 1	
		P4-A red TO: P3-A	
		P4-B black TO: P3-B	
CHANNEL 3	MALE	P5-A red TO: PCB-3 VIN 2	TP9
		P5-B black TO: PCB-3 VIN 1	
CHANNEL 4	MALE	P6-A red TO: PCB-4 VIN 2	TP12
		P6-B black to: PCB-4 VIN 1	



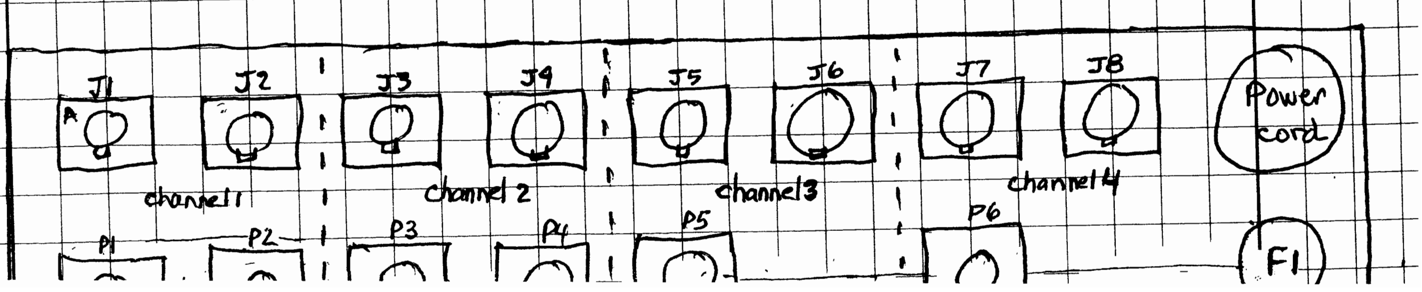


Table 1: Isolation Amplifier Parts List

Component	Type	Manuf.	Part#	Vendor	Stock#	Designation
AD210BN	Iso OP-AMP	Analog Devices	AD210BN	Newark		U10
OP470FY	Quad OP-AMP	Analog Devices	OP470FY	Stkrm	5964-20174	U23
12v Zener			1N5242B	Stkrm	5961-10160	Z1, Z2, Z3, Z4, Z5, Z6
0.01 uF	Cap			Stkrm	5910-20026	C1
0.1 uF	Cap			Stkrm	5910-20024	C6, C7, C8, C11, C13, C24, C26
1.0 uF	Cap			Stkrm	5910-20027	C4, C5, C9
4.7 uF	Cap			Stkrm	5910-14110	C21, C22
100 uF	Cap			Stkrm	5910-14155	C27
[illegible]	1%, 1/8 w			Stkrm	5905-10080	R2
9.09 K	1%, 1/8 w			Stkrm	5905-10720	R10, R13
10.0 K	1%, 1/8 w			Stkrm	5905-10740	R6, R7, R8, R16
49.9 K	1%, 1/8 w			Stkrm	5905-10960	R3
0.82M	5%, 1/8 w			Stkrm	5905-21160	(R5)
0.91 M	5%, 1/8 w			Stkrm	5905-21170	R5
2K	Pot, 20-turn	Bourns		Stkrm	5905-70360	R17
50K	Pot, 20-turn	Bourns		Stkrm	5905-70420	R20
200K	Pot, 20-turn	Bourns		Newark		R12
1/16 Amp	pico fuse	Littelfuse		Newark		F3, F4
1/8 Amp	pico fuse	Littelfuse		Newark		F1, F2
15V, 0.5A P/S	Power Supply	Aztek		Stkrm	6130-10235	
2-pin housing	Con-F	Molex		Newark		
3-pin housing	Con-F	Molex		Newark		
4-pin housing	Con-F	Molex		Newark		
2-pin header	Con-M	Molex		Newark		
3-pin header	Con-M	Molex		Newark		
4-pin header	Con-M	Molex		Newark		

Table 1: Isolation Amplifier Parts List

Component	Type	Manuf.	Part#	Vendor	Stock#	Designation
Crimp Terminals	Pins	Molex		Newark		
2-pin MS Panel	Con-F		MS3110E8-2S			3 per board
2-pin MS Panel	Con-M		MS3110E8-2P			1 per board
2-pin MS Cable	Con-F		MS3116F8-2S			1 per board
2-pin MS Cable	Con-M		MS3116F8-2P			3 per board
Hex Standoff	3/8", 4-40			Stkrm	5310-92060	4 per board
Q2, Q3 ONLY:						
100K	1%, 1/8 w		installed 1 chassis	Stkrm	5905-11080	R4, R9
DIPOLE ONLY:						
1M	5[illegible]				[illegible]	R4
10K	1[illegible]				[illegible]	R9

2 boards
3 [illegible]

Monday July 29, 1996

Z1-Z6 6 per need 30

P/N 5961 10160 zener 12v

R4 1 Meg. 5 5% 1/4W

P/N 5905 31180

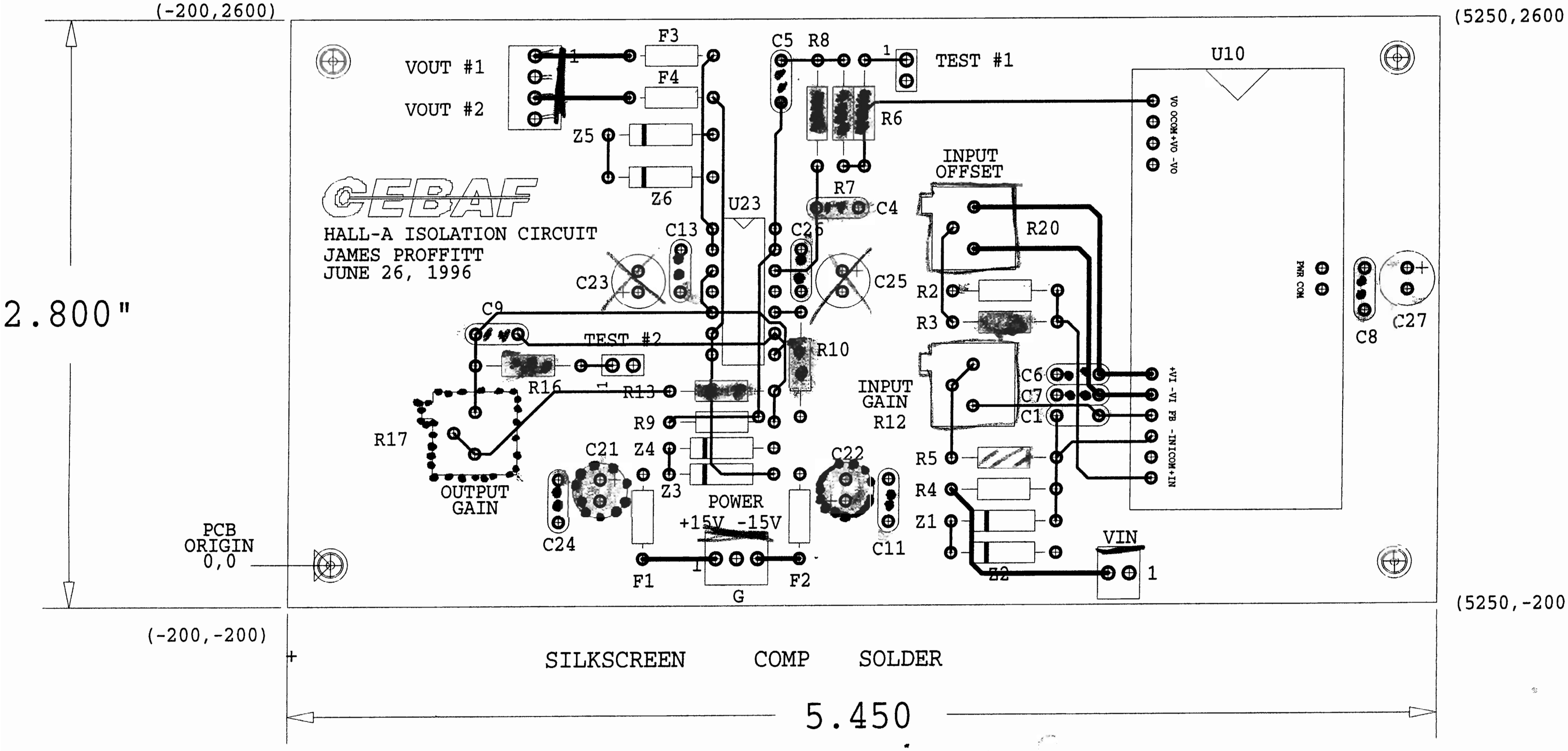
3 [illegible]

4 [illegible]

10.K 1% 1/8w

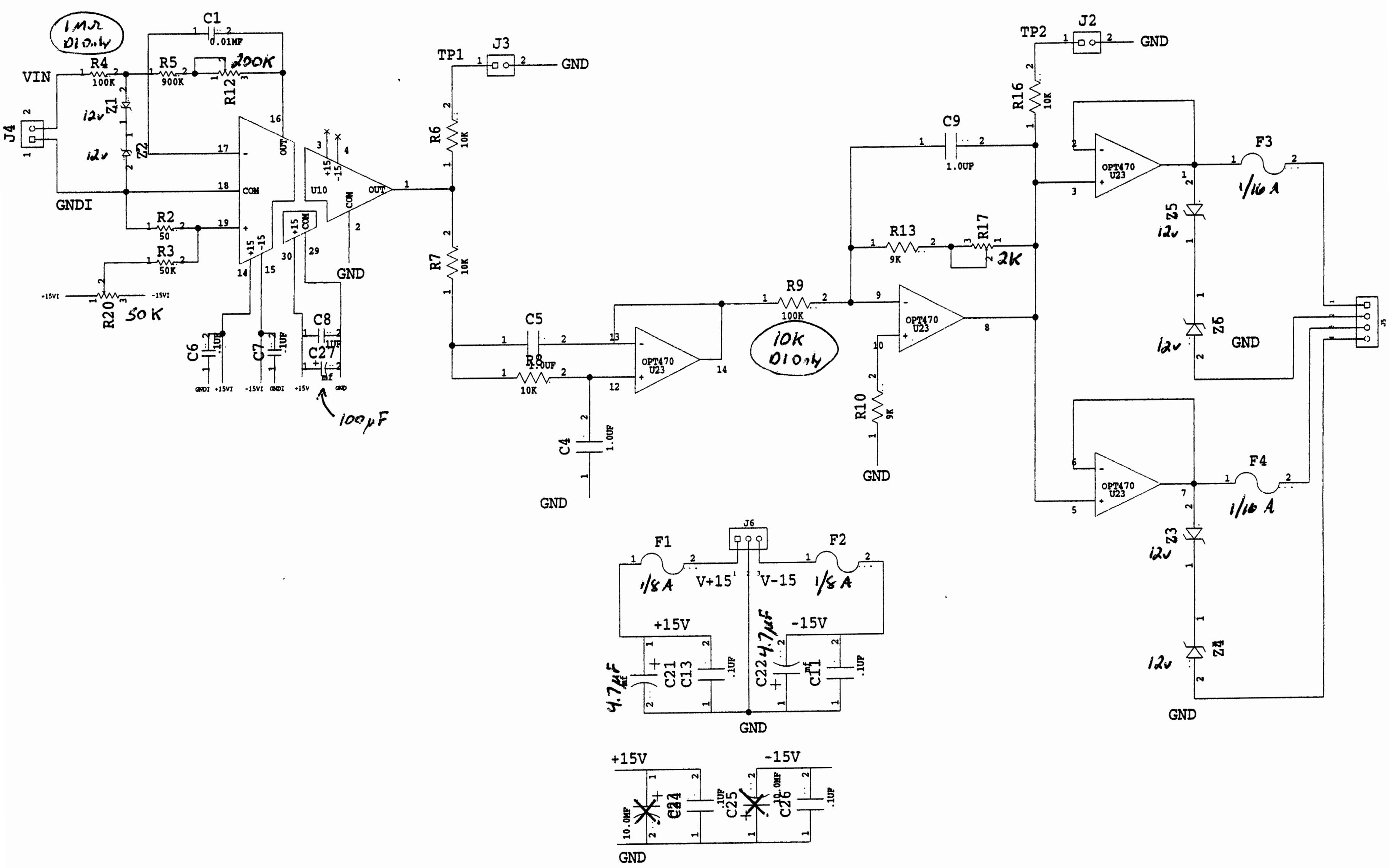
R6, R7, R8, R16, 'R9', 5905 10740

CEBAF JOB A100R2



SILKSCREEN COMP SOLDER

HALLA ISOLATION CIRCUIT



Hadron Flag heater Pin-outs

Male Plug. MS3126F16-8S

Flag A+	#1 Pr.	B - Blk	120VAC
		G - Red	Neut.
	#2 Pr.	D - Red	PR-9
		E - Blk	
Flag B-	#1 Pr.	B - Blk	120VAC
		G - Red	NEUT.
	#2 Pr.	D - Red	PR-10
		E - Black	

Female wall mount Receptacle

			TO Newport Temp Control
Flag A+	V+	B	P6 - 1 NO
	V-	G	AC LO
	I+	D	P9 - 2
	I-	E	P3 - 2
Flag B-	V+	B	P6 - 1 NO
	V-	G	ACLO
	I+	D	P9 - 2
	I-	E	P3 - 2

D BLK (6)
Electron Cryostat

\# MASS Flow meter A — Newport

6	RED	6
5	BLK	7
		DYNAPWR INTRFACE
11	RED	1
9	BLK	2
		Newport
7	SHLD	12

\# MASS Flow meter B

		Newport
6	RED	6
5	BLK	7
		DYNAPWR INTERFACE
11	RED	1
9	BLK	2
		Newport
7	SHLD	12

DIPOLE (WANG)

Newport Flow Meters

0-5 VDC INPUT
0-5 VDC OUTPUT

O = open
X = closed

CONFIGURATION

Dip Switches 1 2 3 4 5 6 7 8
x x O O O x x x

Input 5V
DEC.P XXX.X

Input values

RD.S.O

IN 1	000.0	
RD 1	000.0	
IN 2	199.9	value conversion of 5.0 VDC
RD 2	250.0	

RD.CF
R.1 = T
R.2 = 3
R.3 = F

OT.S.O
RD1 = 000.0
OUT1 = 00.00
RD2 = 250.0
OUT2 = 05.00

S1.CF
S.1 = A
S.2 = U

LK.CF
SP = E
RS = E
L.3 = O

S2.CF
S.1 = A
S.2 = U

OT.CF
O.1 = E
O.2 = V
O.3 = A

SP1 = 080.0
SP2 = 000.0

For set point
use N.O. contact
and common

Newport Flow Meters Q2 SAClAY

4-20 MA - INPUT
4-20 MA - OUTPUT

DipSwitches

1	2	3	4	5	6	7	8
X	O	X	X	O	X	X	O

INPUT: 0-20
DEC.P: XXX.X

RANGE
0-100 SLPM's

INPUT VAlUS

RD.S.O

IN 1	199.6	value conversion (varies)
RD 1	000.0	
IN 2	998.9	value conversion (varies)
RD 2	100.0	

RD.CF
R.1 = T
R.2 = 4
R.3 = F

OT.S.O
RD1 = 000.0
OUT1 = 04.00
RD2 = 100.00
OUT2 = 20.00

S1.CF
S.1 = A
S.2 = U

LK.CF
SP. = E
RS. = E

S2.CF
S.2 = A
S.2 U

SP1 = 000.0
SP2 = 000 0

OT.CF
O.1 = E
O.2 = C
O.3 = A

Hadron

Mass Flow Meter A

			Newport Controller
5	Black	signal common	7
6	Red	signal output	6
7	sheild		12
			Dynapower chassis
9	white	-15 vdc	2
11	Black	+15 vdc	1

Mass Flow Meter B

			Newport Controller
5	Black	0V	7
6	Red	5Vdc	6
7	sheild		12
			Dynapower chassis
9	white	-15vdc	2
11	Black	+15 vdc	1

Electron Cryostat

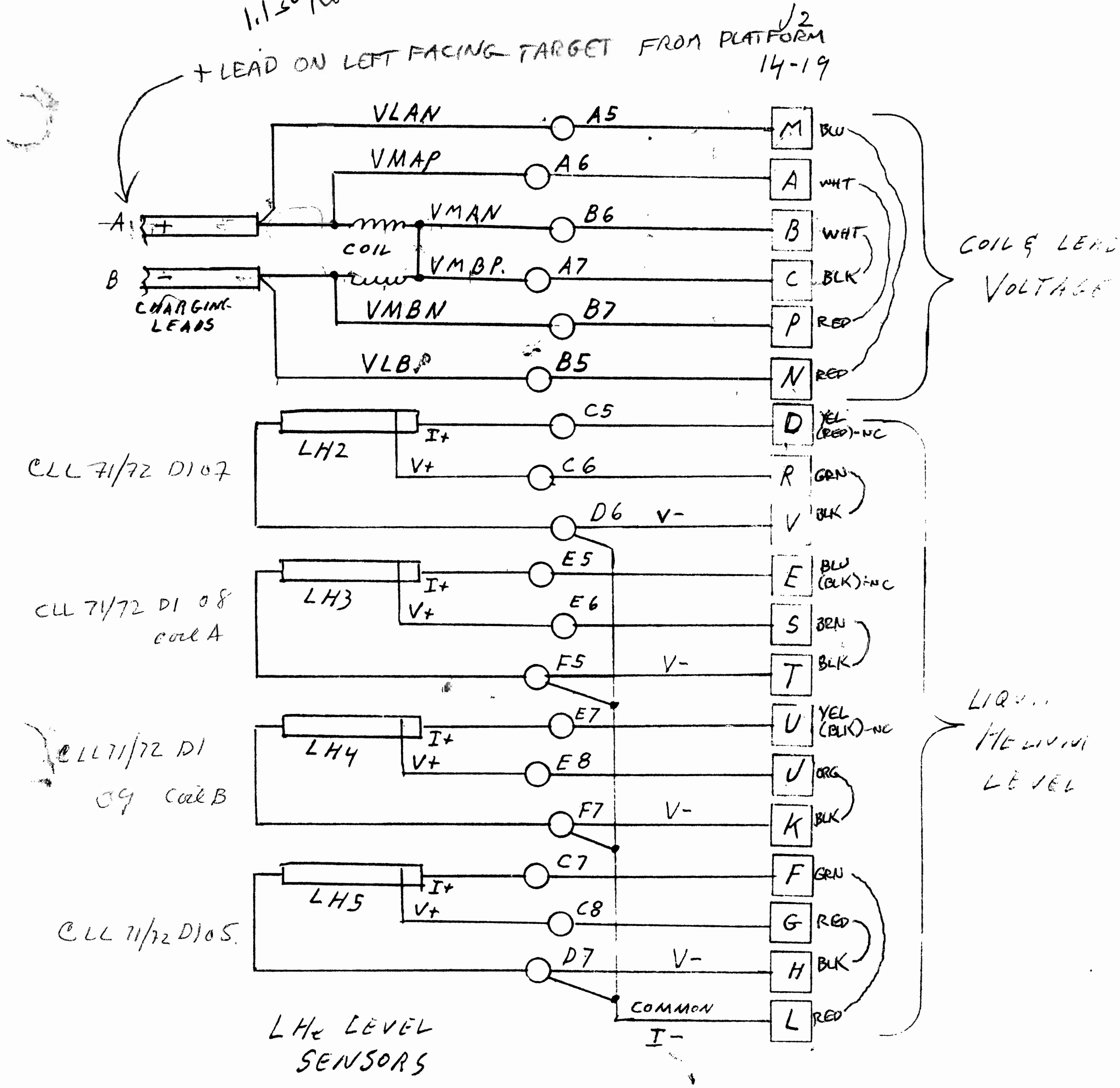
Level sensors

	J1		J1 (EP460)
Lite #1	A	Red	(2)
	B	BLACK	(3)
	C	Red	(4)
	D	BLK	(6)

Lite # 2, 3, 4, 5.

	J2		J21 EP461
#2	D	Yellow	(1)
	R	Green	(2)
	V	Black	(3)
	L	Red	(4)
#3	E	Blue	(5)
	S	Brown	(6)
	T	Black	(7)
	L		
#4	U	Yellow	(8)
	J	Orange	(9)
	K	Black	(10)
	L		
#5	F	Green	(11)
	G	Red	(12)
	H	Black	(14)
	L		

ELECTRON



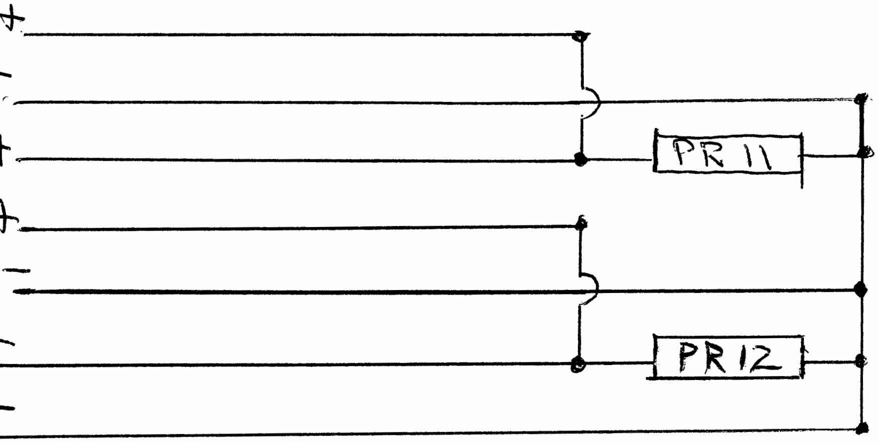
COIL VOLTAGE
& L He
MAGNET J2
7/25/91
CEBAF-EP811

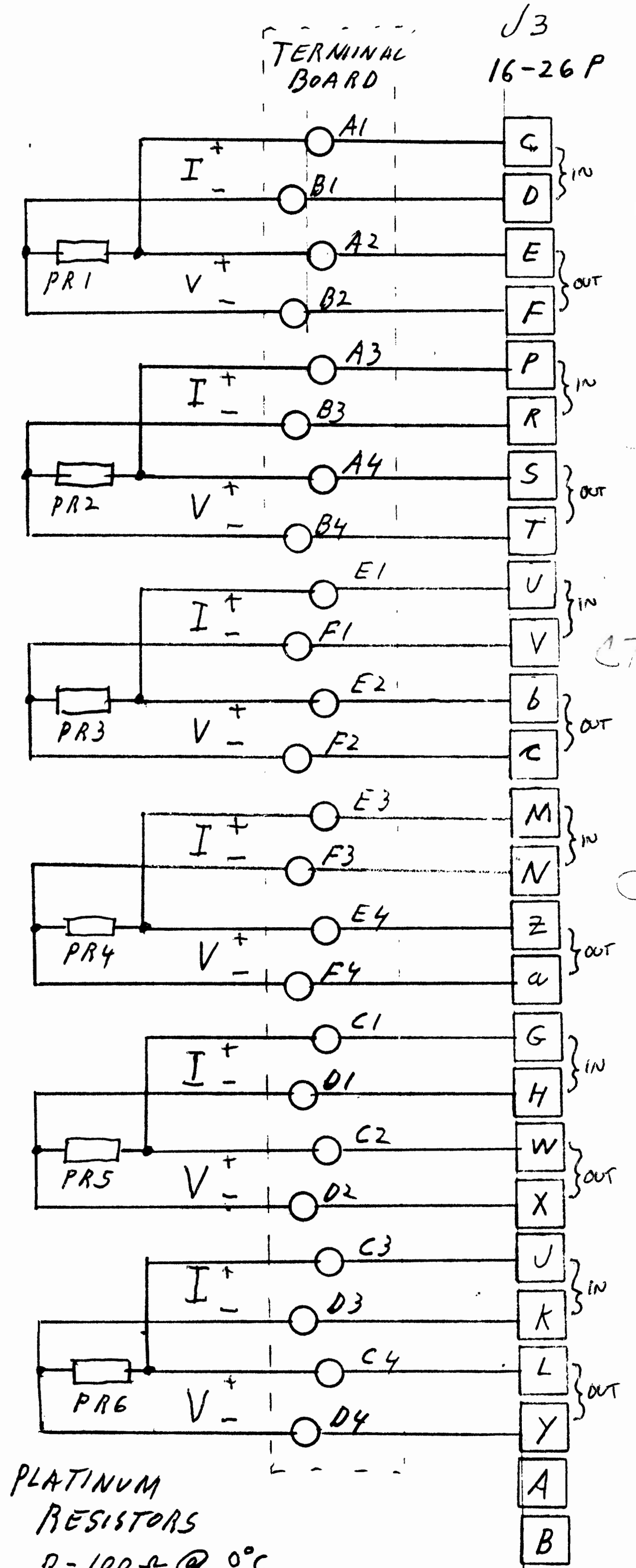
— HADRON —

CRYOSTAT J2 PIN-OUTS

Pin	Wire	Pair			J21 (EP461)
M	Brown	PR.	Quench		
A	Black				
B	Green	PR.			
C	Red				
P	orange	PR.			
N	Black				
D	Yellow	PR.		I+	1
R	Red			V+	3
V	Black – (Yellow)	PR.	NOT USED	V−	4
E	Red	PR.		I+	5
S	white			V+	7
T	Black	PR.		V−	8
U	Red			I+	9
J	Green	PR.		V+	11
K	Black			V−	12
F	Blue	PR.		I+	13
G	Red			V+	15
H	Blue	PR.		V−	16
L	Black			Common	2

Pin	Wire	Signal
b	Black	I+
c	white	V−
Z	Yellow	V+
a	Brown	I+
w	orange	V−
X	Blue	V+
Y	Green	I−





COIL TEMP SENSORS
MAGNET J3
CEBAF-EP 812
7/25/91

Cryostat 4K Cooldown
VME Card Channel Assignments

by: James Proffitt 2/6/95

Table 1: Cryostat Signals

Device	Signal	Card Type	Card	Channel
N2 Level	Level	ADC	VMIVME-3122	55 *
GHe Valve Pos	Valve Position	ADC	VMIVME-3122	63
TF Valve Pos	Valve Position	ADC	VMIVME-3122	62
BF Valve Pos	Valve Position	ADC	VMIVME-3122	61
N2 Valve Pos	Valve Position	ADC	VMIVME-3122	60
N2 Pressure	Pressure	ADC	VMIVME-3122	59
He Pressure	Pressure	ADC	VMIVME-3122	58
Cold Cathode	Pressure	ADC	VMIVME-3122	57
Convectron	Pressure	ADC	VMIVME-3122	56
Flow Transducer	+ Lead flow	ADC	VMIVME-3122	54 *
Flow Transducer	- Lead flow	ADC	VMIVME-3122	53 *
Protection Circuit	+ Lead drop	ADC	VMIVME-3122	52 *
Protection Circuit	- Lead drop	ADC	VMIVME-3122	51 *
Protection Circuit	+ Coil drop	ADC	VMIVME-3122	50 *
Protection Circuit	- Coil drop	ADC	VMIVME-3122	49 *
PR1	Temperature	RTD Scanner	V460 #1	4
PR2	Temperature	RTD Scanner	V460 #1	5
PR3	Temperature	RTD Scanner	V460 #1	6
PR4	Temperature	RTD Scanner	V460 #1	7
PR5	Temperature	RTD Scanner	V460 #1	
PR6	Temperature	RTD Scanner	V460 #1	
PR7 / ~~SD1~~	Temperature	RTD Scanner	V460 #1	
SD2	Temperature	RTD Scanner	V460 #1	
SD3	Temperature	RTD Scanner	V460 #1	
SD4	Temperature	RTD Scanner	V460 #1	
SD5	Temperature	RTD Scanner	V460 #1	

WEKA

–SWAP

→ 90' CABLE TO CRYOSTAT
~~MODIFY DYNAPOWER~~ F. [illegible] (EXT. #.

2. INSTALL PROTECTION RESET BUTTON. DONE.

3. REWIRE DYNAPOWER PS1 + PS2 TO UPS. DONE.

4. GET KLIXONS + MOUNT BLOCKS

WHAT ABOUT DIFF. PRESS. SW. ON LCW?

Table 1: Cryostat Signals

Device	Signal	Card Type	Card	Channel
Heat Exchanger	He Temperature	RTD Scanner	V460 #1	0/1
Heat Exchanger	N2 Temperature	RTD Scanner	V460 #1	0/1
Bayonet Can	He Temperature	RTD Scanner	V460 #1	2/3 *
Bayonet Can	N2Temperature	RTD Scanner	V460 #1	2/3 *
+Lead	Temperature	RTD Scanner	V460 #2	0 *
-Lead	Temperature	RTD Scanner	V460 #2	1 *
He Level	Probe Control	GPIB	GPIB-1014D	
Power Supply	Slow Dump Intlck.	Relay Out	VMIVME-2210	8 *
Heat Exchanger	He Valve Motor +	Relay Out	VMIVME-2210	0 *
Heat Exchanger	He Valve Motor -	Relay Out	VMIVME-2210	1 *
Heat Exchanger	N2 Valve Motor +	Relay Out	VMIVME-2210	2 *
Heat Exchanger	N2 Valve Motor -	Relay Out	VMIVME-2210	3 *
+ Lead Valve	Motor +/-	Relay Out (2)	VMIVME-2210	4-5 *
- Lead Valve	Motor +/-	Relay Out (2)	VMIVME-2210	6-7 *
Hx He Valve	Open Lim.	Digital In	PIO-1	17 *
Hx He Valve	Closed Lim.	Digital In	PIO-1	18 *
Hx N2 Valve	Open Lim.	Digital In	PIO-1	19 *
Hx N2 Valve	Closed Lim.	Digital In	PIO-1	20 *
+ Lead Valve	Valve Open Lim.	Digital In	PIO-1	21 *
+ Lead Valve	Valve Closed Lim.	Digital In	PIO-1	22 *
- Lead Valve	Valve Open Lim.	Digital In	PIO-1	23 *
- Lead Valve	Valve Closed Lim.	Digital In	PIO-1	24 *
P/S	Interlock status	Digital In (?)	PIO-1	? *
GHe Valve Control	Valve Control	DAC	VMIVME-4150	0
TF Valve Control	Valve Control	DAC	VMIVME-4150	1
BF VAlve Control	Valve Control	DAC	VMIVME-4150	2
N2 Valve Control	Valve Control	DAC	VMIVME-4150	3
Heat Exchanger	He Valve Position	LVDT Scanner	V550	0 *
Heat Exchanger	N2 Valve Position	LVDT Scanner	V550	1 *

AMERICAN MAGNETICS, INC.
P.O. BOX 2509, 112 FLINT ROAD, OAK RIDGE, TENN. 37831-2509, TEL. 615-482-1056

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS FOR THE AMI MODEL 137 LIQUID HELIUM LEVEL INSTRUMENT

I. INTRODUCTION

The American Magnetics, Inc. (AMI) Model 137 Liquid Helium Level Instrument is an advanced, microprocessor-based, liquid helium level instrument utilizing AMI's patented sample-and-hold principle with automatic helium sensor vacuum burnout protection. The Model 137 is designed for unattended operation in systems where it is important to monitor liquid helium levels and minimize the liquid helium losses.

The Model 137 is designed to be used in conjunction with an AMI liquid helium level sensors. The liquid helium level sensor consists of a small diameter NbTi filament in a hollow tube. A constant current is passed through this filament causing the portion of the filament in helium gas to become resistive while the portion in the liquid helium remains superconducting. The resulting voltage across the resistive portion of the filament is read by the instrument, converted to a liquid level and displayed on the front panel LED display.

In order to minimize liquid helium loss, the Model 137 automatically energizes the liquid helium level sensor at predetermined time intervals and monitors the normal (resistive) zone as it progresses from the top of the sensor toward the surface of the liquid helium. As soon as the normal zone reaches the liquid surface the level reading is saved and the sensor current is turned off until the next sample interval occurs. A SENSOR CURRENT LED is illuminated during each sample. Sample intervals are user programmable from the front panel and can be set between "0.0" (no delay between samples) to "600.0" minutes or hours. A manual update/contin./sample switch provided on the front panel can be positioned for continuous readings during a helium transfer period or just a quick reading update.

The Model 137 provides automatic helium sensor vacuum burnout protection. A sensor which is energized in a vacuum environment will self-heat to the point of burnout. AMI's innovative microprocessor-based circuitry detects incipient sensor burnout and de-energizes the sensor before damage can occur. A 5% increase in sensor resistance will trigger this protection, causing the current to be switched off for 6 seconds before normal operation continues.

Due to safety concerns, the high voltage power supply used for the sensor is a floating supply. This minimizes the possibility of personnel injury in the inadvertent event of someone who is grounded coming in contact with the sensor electrical wires.

The Model 137 has the capacity of monitoring up to eight liquid helium sensors. Selection between sensors is performed from the front panel of the instrument or remotely with a

Rev. 1, May 1992

AMERICAN MAGNETICS, INC.
P.O. BOX 2509, 112 FLINT ROAD, OAK RIDGE, TENN. 37831-2509, TEL. 615-482-1056

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

FOR THE AMI LIQUID HELIUM

LEVEL SENSOR

I. INTRODUCTION

The AMI liquid helium level sensor uses a small Niobium-Titanium (NbTi) wire as the detector element. A heater creates and helps maintain a normal zone in that portion of the wire above the liquid helium level while that portion of the wire below the liquid helium level remains superconducting. The output voltage of the sensor varies linearly with a change in liquid level.

The AMI liquid helium level sensor is designed to operate with an AMI liquid helium level meter. Each meter is calibrated for a specific sensor length and if sensors of different lengths are interchanged the level meter will require recalibration. Operation of the sensor with other level meters or operation of different length sensor with a meter calibrated for a specific length may void the sensor warranty.

II. SPECIFICATIONS

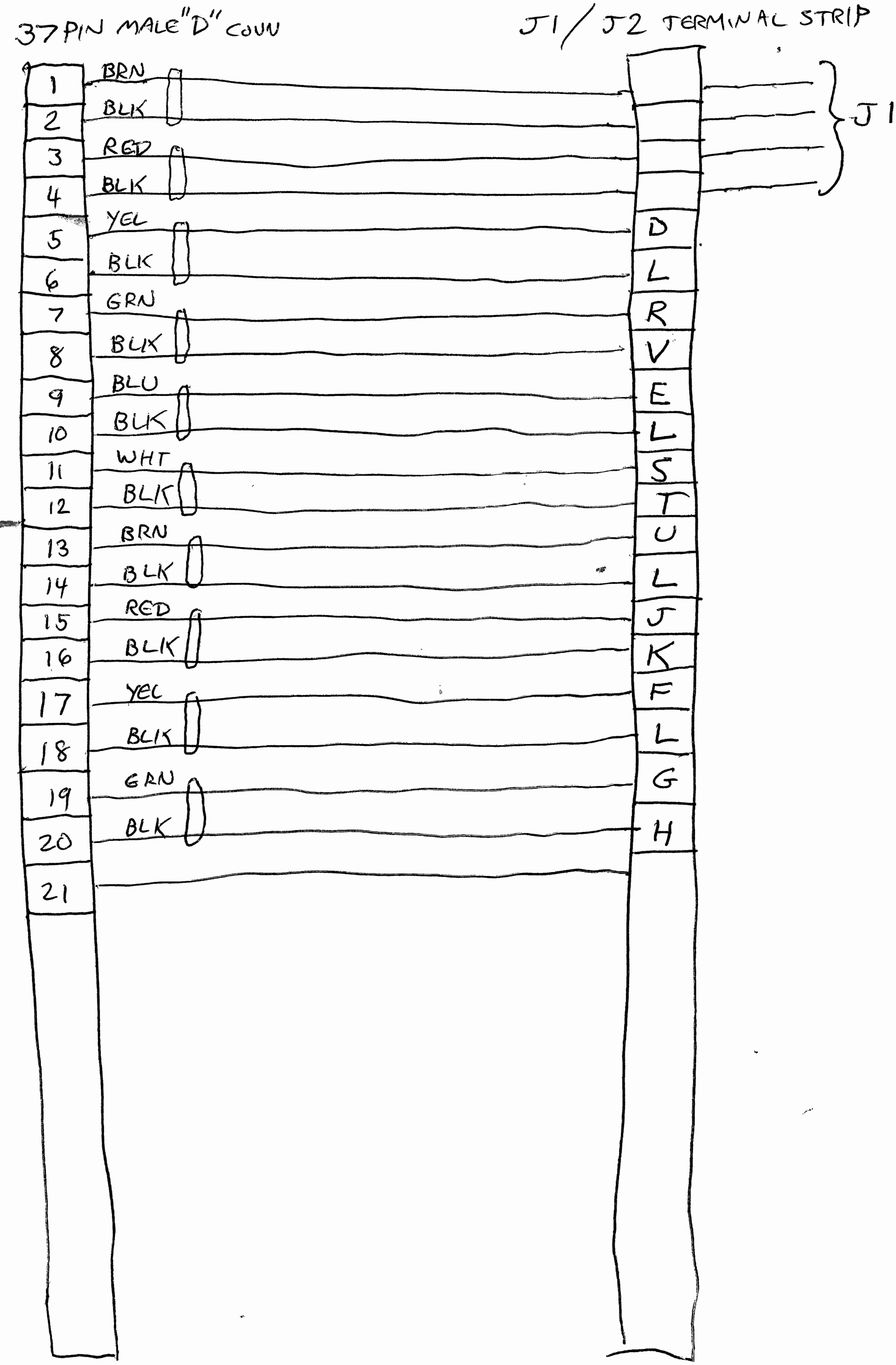
Diameter	1/4"
Active lengths	1 to 80 inches
Overall length	usually 1 inch longer than active length (1/2 inch at top and bottom)
Sensor current	70 milliamperes (nominal)
Sensor voltage	0-60 V dc depending on sensor length.
Nominal sensor resistance	4.5 ohms/cm (11.6 ohms/in) at 10K 5.4 ohms/cm (13.7 ohms/in) at 300K
Maximum magnetic field	10 Tesla

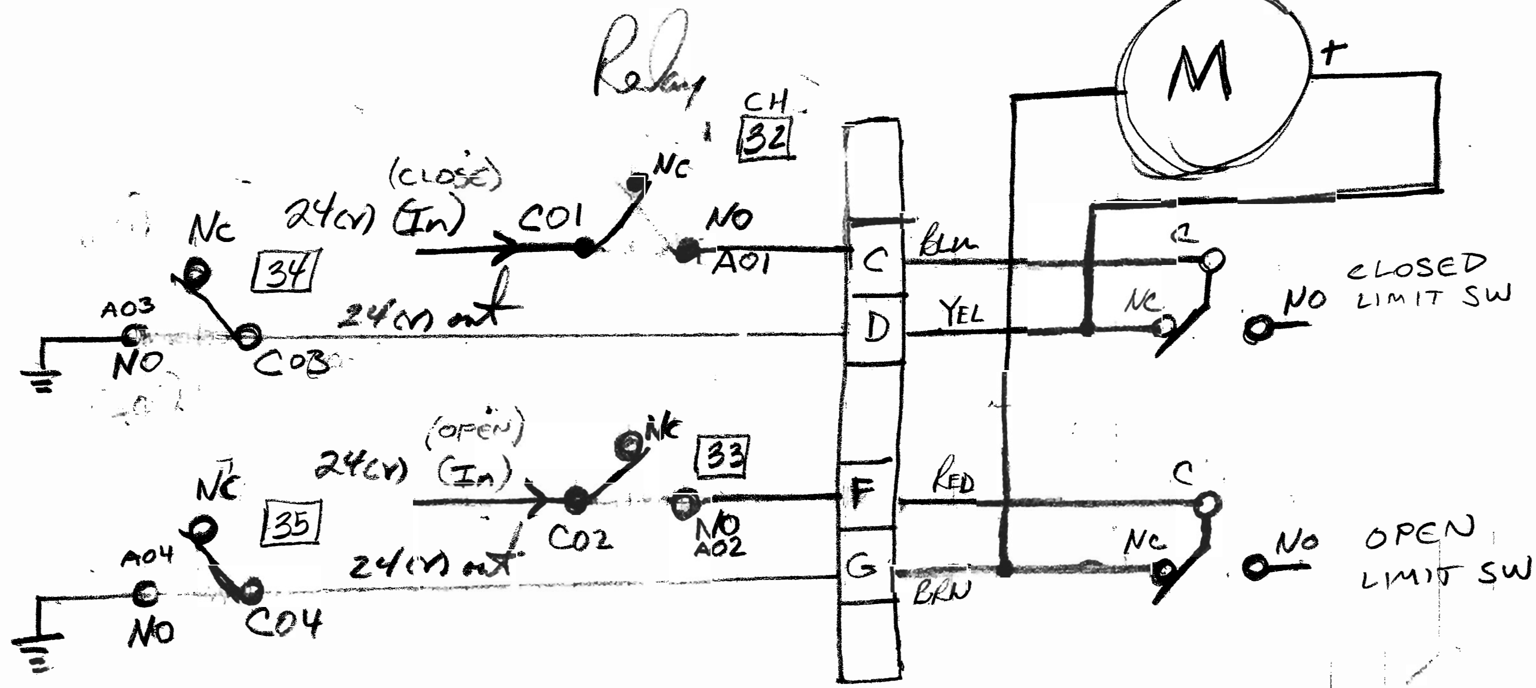
III. INSTALLATION

1. Carefully remove the sensor from the shipping tube and remove all packaging material.

2. The sensor must be mounted with the electrical leads coming out of the top.

AMI 137 TO FIELD CABLE TERMINAL STRIP





1/2 OPEN }
3/4 CLOSE } LN_2

5/6 OPEN }
7/8 CLOSE } He MIX

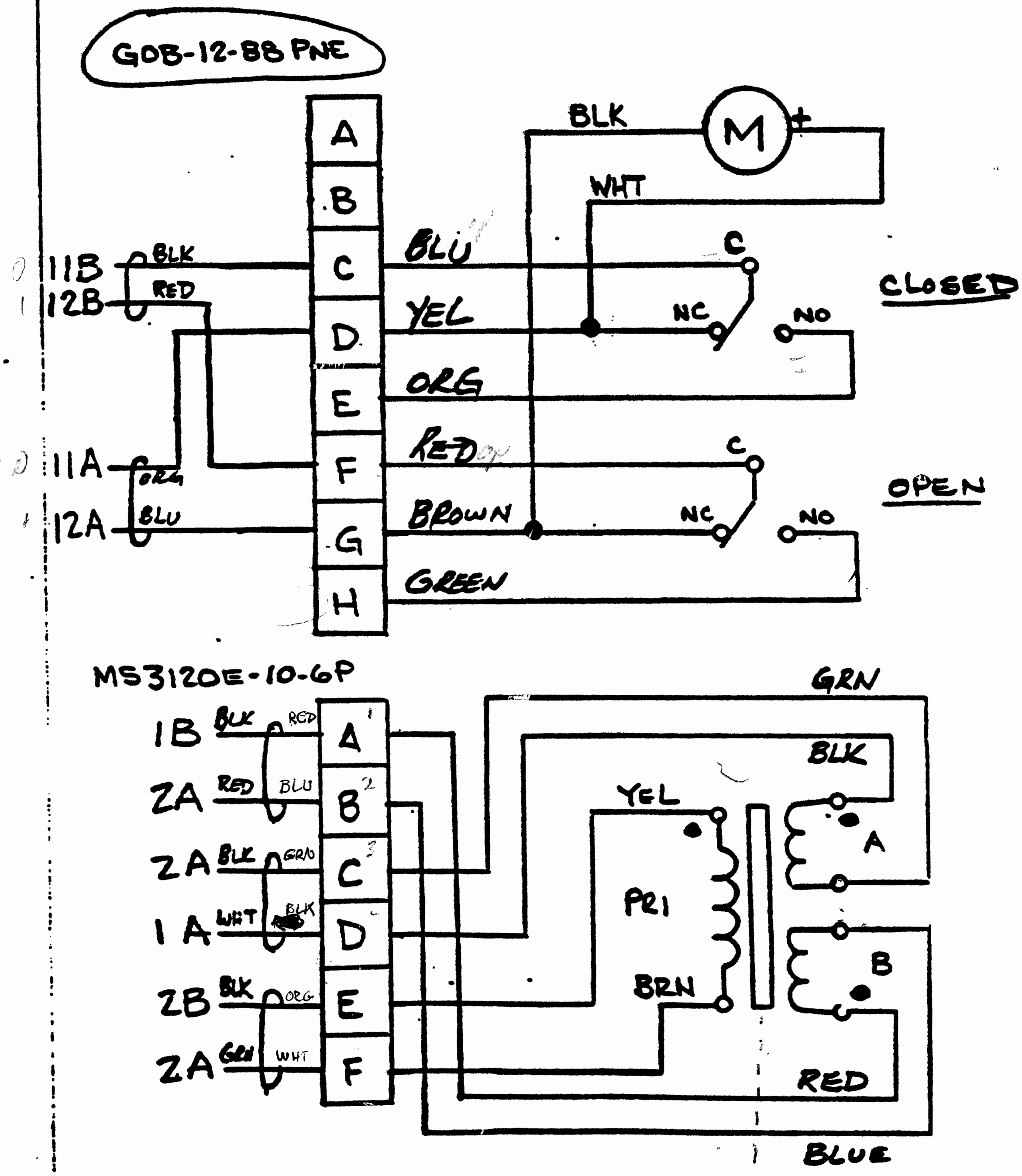
Channels 1 } 24 (v)
2 }

3 } 24 RET
4 }

1 } CLOSE
4 }

2 }
3 }

HEAT EXCHANGER VALVES



INLET = GHe MIX

MHR SERIES—MINIATURE

- FOR APPLICATIONS WHERE INSTALLATION SPACE OR WEIGHT IS LIMITED
- LIGHTWEIGHT CORE

The MHR Series is suitable for use where installation space or LVDT weight is limited. It occupies only 25 percent of the volume of standard-size LVDT's. The MHR's lightweight core is ideal for applications where excessive core weight could influence the motion of sensitive mechanisms. The lightweight core also helps minimize stresses and preserves the structural integrity of the core actuation assembly. High sensitivity results from close electrical coupling between coil and core. A magnetic stainless steel housing provides electromagnetic and electrostatic shielding.

GENERAL SPECIFICATIONS

Input Voltage	3 V rms (nominal)
Frequency Range	400 Hz to 20 kHz
Temperature Range	−65°F to +300°F (−55°C to +150°C)
Null Voltage	Less than 0.5% full scale output
Shock Survival	1000 *g* for 11 milliseconds
Vibration Tolerance	20 *g* up to 2 kHz
Coil Form Material	High density, glass-filled polymer
Housing Material	AISI 400 series stainless steel
Lead Wires	32 AWG, stranded copper, Teflon-insulated, 12 inches (300 mm) long (nominal)

PERFORMANCE SPECIFICATIONS AND DIMENSIONS

(2.5 kHz)

LVDT MODEL NUMBER	NOMINAL LINEAR RANGE	LINEARITY ± PERCENT FULL RANGE				SENSITIVITY mV Out/ Volt In Per	IMPEDANCE Ohms		PHASE SHIFT	WEIGHT Grams		DIMENSIONS A (Body)	B (Core)
	Inches	50	100	125	150	.001 In.	Pri.	Sec.	Degrees	Body	Core	Inches	Inches
005 MHR	±0.005	0.20	0.25	0.30	0.40	2.7	60	260	+71	2	0.1	0.38	0.18
010 MHR	±0.010	0.10	0.25	0.35	0.35	3.4	80	110	+58	3	0.2	0.54	0.23
025 MHR	±0.025	0.15	0.25	0.25	0.30	4.5	115	280	+60	5	0.4	0.66	0.40
050 MHR	±0.050	0.15	0.25	0.35	0.50	2.7	140	90	+34	6	0.4	0.80	0.50
100 MHR	±0.100	0.15	0.25	0.25	0.30	2.4	150	110	+30	6	0.5	1.00	0.62
* 250 MHR	±0.250	0.15	0.25	0.35	0.50	2.0	190	280	+28	9	0.9	1.85	1.12
500 MHR	±0.500	0.15	0.25	0.30	0.75	1.6	135	435	+17	17	1.6	3.30	2.00
1000 MHR	±1.000	0.20	0.25	0.50	—	0.8	100	385	+5	26	2.5	5.60	3.00

(10 kHz)

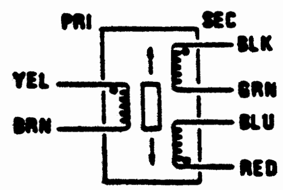
LVDT MODEL NUMBER	NOMINAL LINEAR RANGE	50	100	125	150	SENSITIVITY	Pri.	Sec.	PHASE SHIFT	Body	Core	A (Body)	B (Core)
005 MHR	±0.005	0.20	0.25	0.30	0.40	8.4	75	315	+40	2	0.1	0.38	0.18
010 MHR	±0.010	0.10	0.25	0.35	0.35	6.1	165	300	+16	3	0.2	0.54	0.23
025 MHR	±0.025	0.15	0.25	0.25	0.30	7.8	220	500	+22	5	0.4	0.66	0.40
050 MHR	±0.050	0.15	0.25	0.35	0.50	3.3	450	150	+9	6	0.4	0.80	0.50
100 MHR	±0.100	0.15	0.25	0.25	0.30	2.5	450	190	+8	6	0.5	1.00	0.62
250 MHR	±0.250	0.15	0.25	0.35	0.50	2.1	350	430	+8	9	0.9	1.85	1.12
500 MHR	±0.500	0.15	0.25	0.30	0.75	1.8	235	750	+4	17	1.6	3.30	2.00
1000 MHR	±1.000	0.20	0.25	0.50	—	0.8	170	450	−1	26	2.5	5.60	3.00

ORDERING INFORMATION

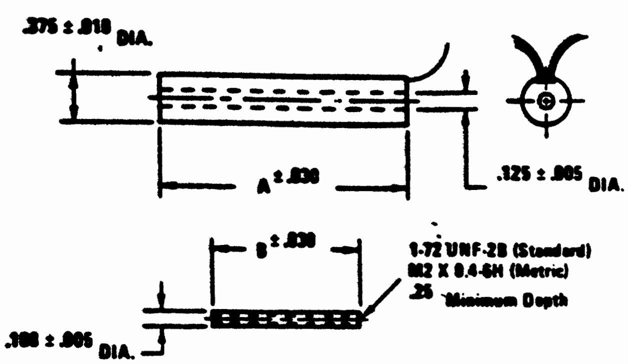
(Fold out page 32 for instructions on how to use this chart.)

OPTION NO.	002	003	006	010	020	040	080
	5.0 kHz LIN. TEST (NOTE 2)	10.0 kHz LIN. TEST (NOTE 2)	METRIC THREAD CORE (NOTE 1)	TEFLON BORELINER	SMALL DIAMETER CORE	10 FOOT (3m) LEADS	MILDLY RADIATION RESISTANT
MODEL NO.							
005 MHR	A	A	N	X	X	F	X
010 MHR	A	A	N	X	X	F	X
025 MHR	A	A	N	X	X	F	X
050 MHR	A	A	N	X	X	F	X
100 MHR	A	A	N	X	X	F	X
250 MHR	A	A	N	X	X	F	X
500 MHR	A	A	N	X	X	F	X
1000 MHR	A	A	N	X	X	F	X

Note 1: See outline drawing for metric thread size
Note 2: See frequency option note on page 32



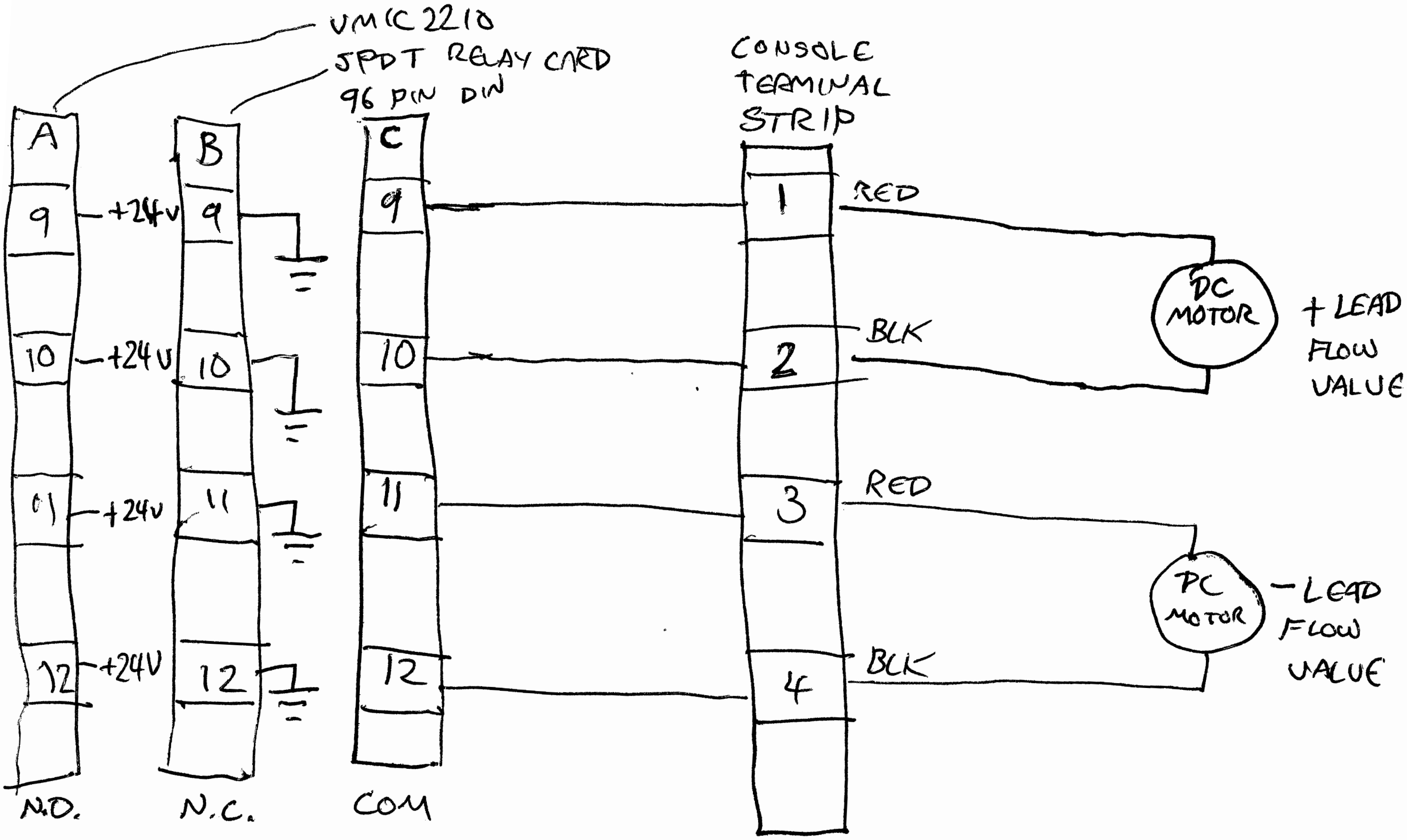
CONNECT GRN TO BLU FOR DIFFERENTIAL OUTPUT



SEE SCHAEVITZ SERIES 70 BULLETINS FOR COMPATIBLE SIGNAL-CONDITIONING AND READOUT EQUIPMENT

* FOR OUR STANDARD 9/16" STROKE VALVE

LEAD FLOW VALVE CABLES



FLOW METER CABLES (100' 2 PR) 8' PWR

+ FLOW METER: 15 PIN FEMALE D — CONSOLE: TERMINAL STRIP: — END DEVICE: VME CRATE

①

PIN *	SIGNAL	WIRE COLOR	TERMINAL #		END DEVICE
5	COM	BLK	5	A 1 ~~BLK~~	VMIVME-3122, P4, PIN C-10
			5	Red 2 ~~BLK~~	±15VDC PWR SUP, COMMON
6	0-5V OUT	RED	6		VMIVME-3122, P4, PIN A-10
9	-15VDC	BLK	9	✓	-15VDC (PWR SUP)
11	+15VDC	RED	11	✓	+15VDC (PWR SUP)

– FLOW METER

②

PIN	SIGNAL	WIRE COLOR	TERMINAL #		END DEVICE
5	COM	BLK	5	B BLK	VMIVME 3122, P4, PIN C-11
				RED	±15 V COMMON
6	0-5V OUT	RED	6		VMIVME 3122, P4, PIN A-11
9	-15V	BLK	9		- 15 V
11	+15V	RED	11		+ 15 V

* Inpo P.S. → Go over cap kit
flow meters
~~Washer missing~~
→ new washer

18'

Flow Meter

In

Out

24(v) PS 1 GRD

2 24(v)

5 GRD → out to ... cavro

6 signal

7 signal

9 -15(v)

11 +15(v)

In

Out

24(v) PS 24(v) 1

GRD 2

±15(v) PS GRD GRD 5 C10 + C11 A to D conv.

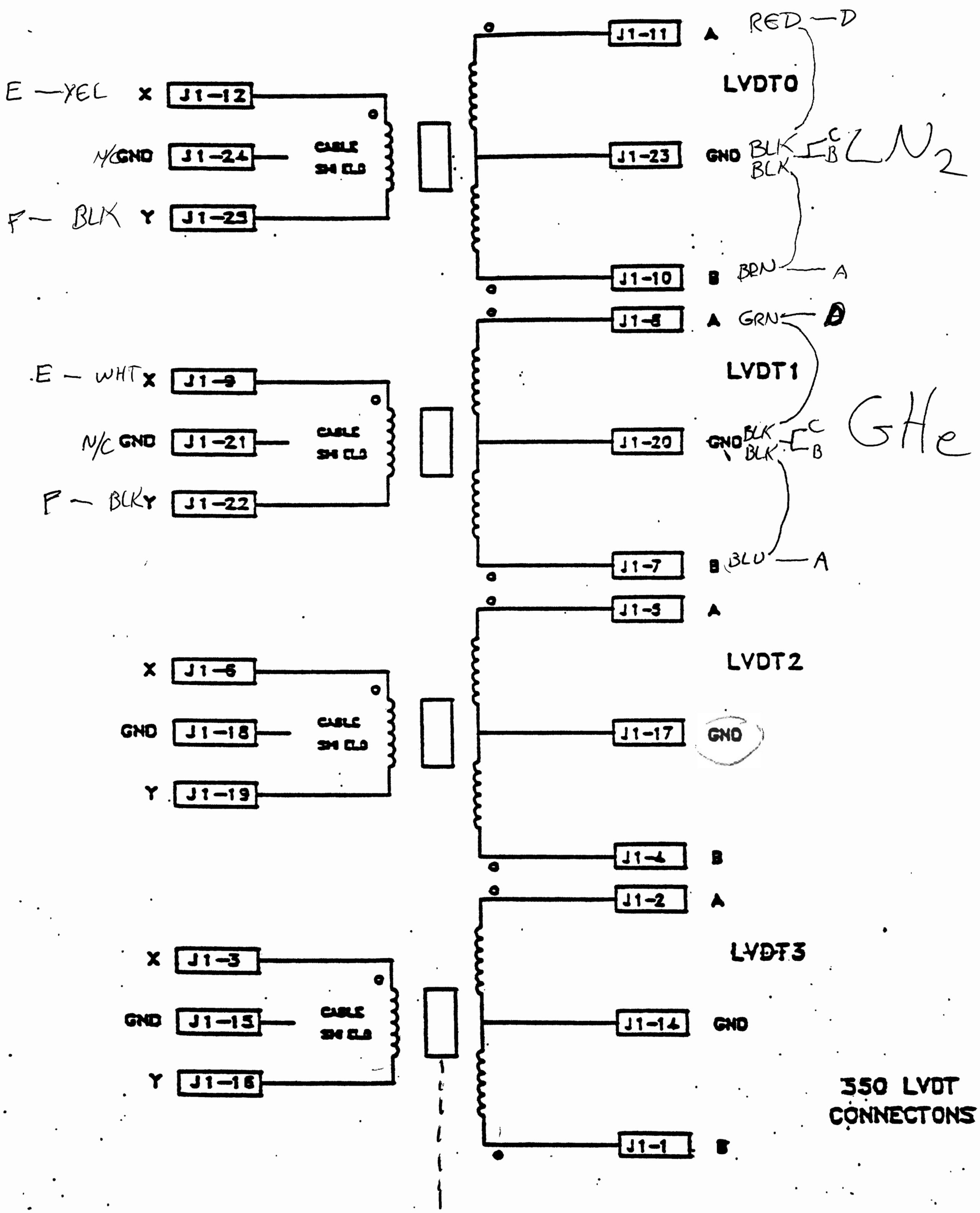
6

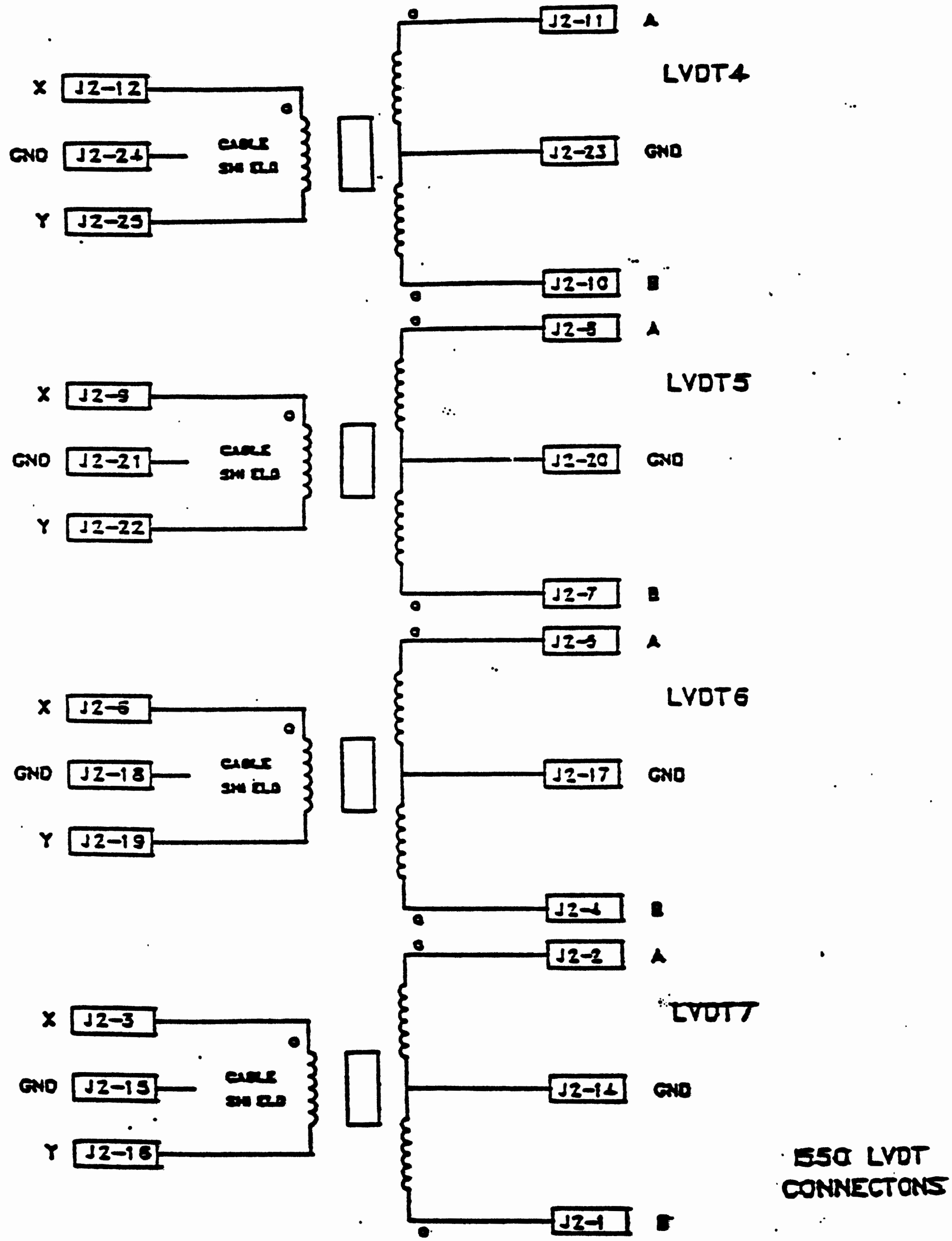
7

±15(v) PS -15(v) 9

" +15(v) 11

Highland V550
LVDT Card
25-Pin D-Sub

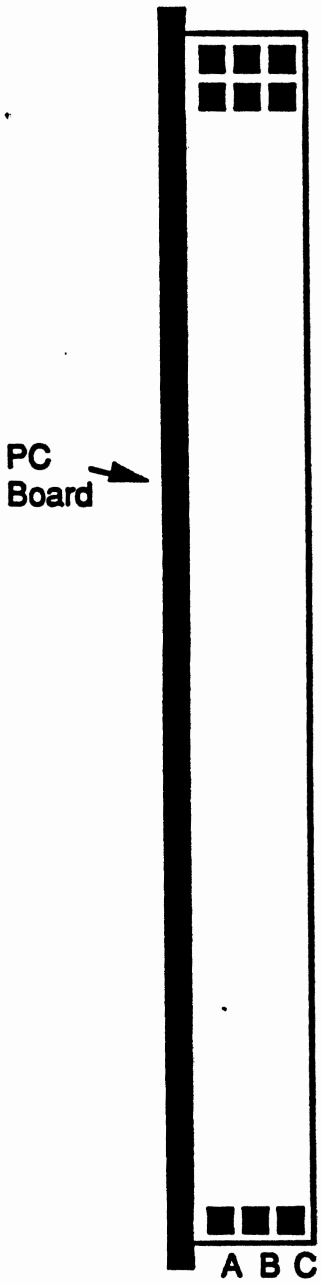



LVDT4
X J2-12
GND J2-24
Y J2-25
CABLE SHIELD
J2-11 A
J2-23 GND
J2-10 B
LVDT5
X J2-9
GND J2-21
Y J2-22
CABLE SHIELD
J2-8 A
J2-20 GND
J2-7 B
LVDT6
X J2-6
GND J2-18
Y J2-19
CABLE SHIELD
J2-5 A
J2-17 GND
J2-4 B
LVDT7
X J2-3
GND J2-15
Y J2-16
CABLE SHIELD
J2-2 A
J2-14 GND
J2-1 B
1550 LVDT
CONNECTONS

VMIC 2210
SPDT Relay Card (32 Channels)
96 Pin Din

5.4 CONNECTOR CONFIGURATION

The VMIVME-2210 uses two 96-pin DIN connectors on the front panel. These connectors can be used with a discrete wire connector housing and shell from HARTING ELEKTRONIK INC. or a mass-terminated cable and connector from ERNI components. The specification sheet for this board contains detailed ordering information about these connectors and cables. These cables and connectors will bring out all of the contacts from the board. The contacts are configured as 1 Form C (SPDT); however, the connector layout shown in Figures 5.4-1 and 5.4-2 permits a 64-conductor cable and full C DIN connector to bring out the contacts as a 1 Form A (SPST N.O.).



Column A	Column B	Column C	~~Channel~~
A32 - N.O.	B32 - N.C.	C32 - COMM	CHNL 63
A31 - N.O.	B31 - N.C.	C31 - COMM	CHNL 62
A30 - N.O.	B30 - N.C.	C30 - COMM	CHNL 61
A29 - N.O.	B29 - N.C.	C29 - COMM	CHNL 60
A28 - N.O.	B28 - N.C.	C28 - COMM	CHNL 59
A27 - N.O.	B27 - N.C.	C27 - COMM	CHNL 58
A26 - N.O.	B26 - N.C.	C26 - COMM	CHNL 57
A25 - N.O.	B25 - N.C.	C25 - COMM	CHNL 56
A24 - N.O.	B24 - N.C.	C24 - COMM	CHNL 55
A23 - N.O.	B23 - N.C.	C23 - COMM	CHNL 54
A22 - N.O.	B22 - N.C.	C22 - COMM	CHNL 53
A21 - N.O.	B21 - N.C.	C21 - COMM	CHNL 52
A20 - N.O.	B20 - N.C.	C20 - COMM	CHNL 51
A19 - N.O.	B19 - N.C.	C19 - COMM	CHNL 50
A18 - N.O.	B18 - N.C.	C18 - COMM	CHNL 49
A17 - N.O.	B17 - N.C.	C17 - COMM	CHNL 48
A16 - N.O.	B16 - N.C.	C16 - COMM	CHNL 47
A15 - N.O.	B15 - N.C.	C15 - COMM	CHNL 46
A14 - N.O.	B14 - N.C.	C14 - COMM	CHNL 45
A13 - N.O.	B13 - N.C.	C13 - COMM	CHNL 44 — CRYO READY INTLK
A12 - N.O.	B12 - N.C.	C12 - COMM	CHNL 43 — - LEAD VALVE
A11 - N.O.	B11 - N.C.	C11 - COMM	CHNL 42 — - LEAD VALVE
A10 - N.O.	B10 - N.C.	C10 - COMM	CHNL 41 — + LEAD VALVE
A09 - N.O.	B09 - N.C.	C09 - COMM	CHNL 40 — + LEAD VALVE
A08 - N.O.	B08 - N.C.	C08 - COMM	CHNL 39 — ⏚
A07 - N.O.	B07 - N.C.	C07 - COMM	CHNL 38 — ⏚
A06 - N.O.	B06 - N.C.	C06 - COMM	CHNL 37 — +24V
A05 - N.O.	B05 - N.C.	C05 - COMM	CHNL 36 — +24V
A04 - N.O.	B04 - N.C.	C04 - COMM	CHNL 35 — ⏚
A03 - N.O.	B03 - N.C.	C03 - COMM	CHNL 34 — ⏚
A02 - N.O.	B02 - N.C.	C02 - COMM	CHNL 33 — +24V
A01 - N.O.	B01 - N.C.	C01 - COMM	CHNL 32 — +24V

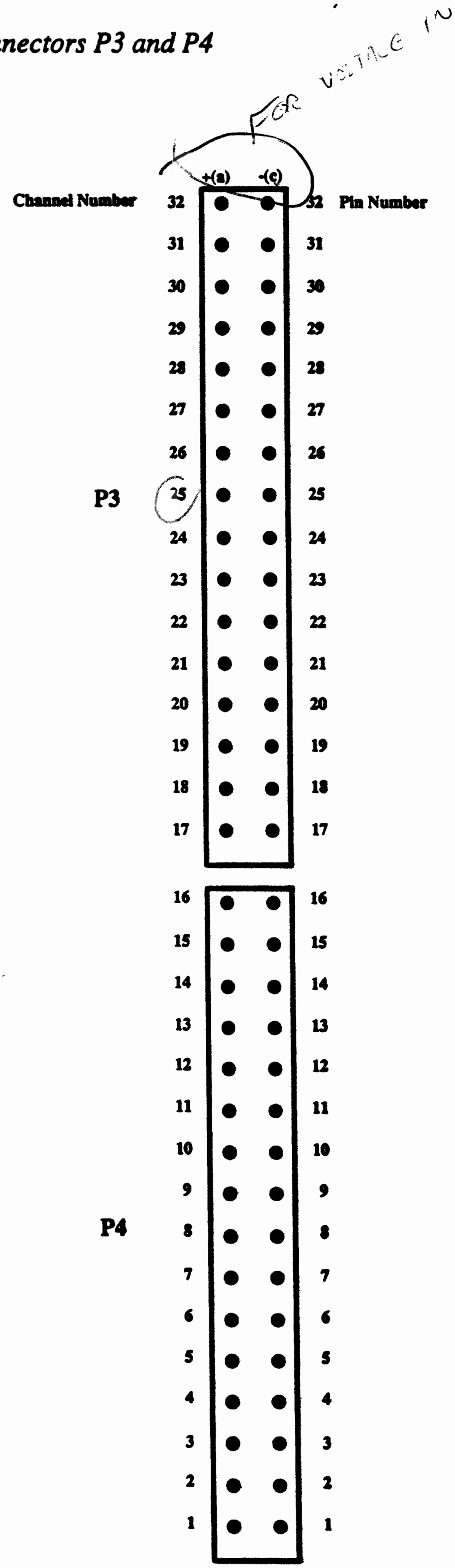
He MIX (channels 36–39); LN2 (channels 32–35)

M2210/F5.4-1

Figure 5.4-1. P3's Connector Layout and Pin Assignments

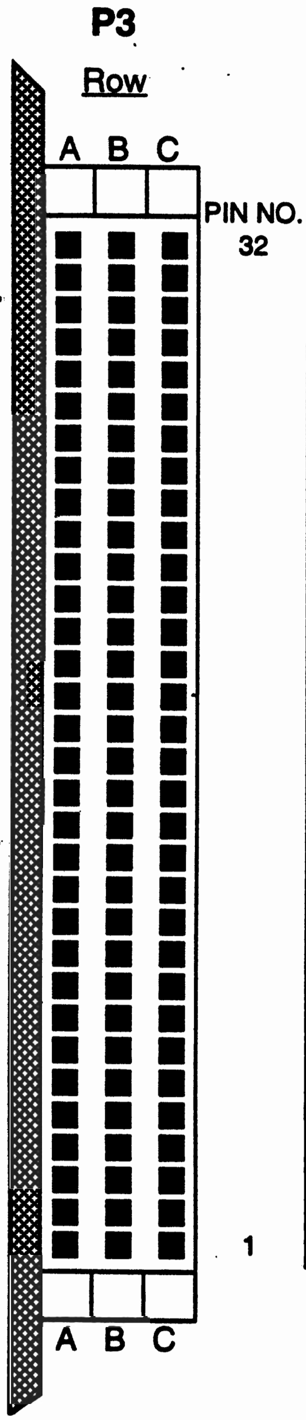
Radstone PIO-1
Digital I/O card 96 pin DIN (A+C)

Figure 13. Front Panel Connectors P3 and P4



VMIVME 3122 ADC

Table 5.5.3-2. P3 Connector Pinout

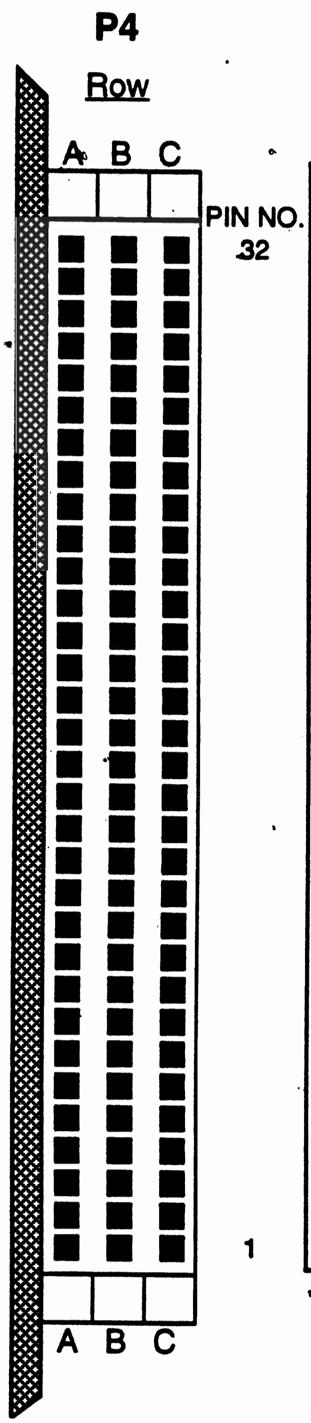


Pin	Row A	Row B	Row C	
1	CH 63 HIGH		CH 63 LOW*	→ GHe VALVE (WEKA)
2	CH 62 HIGH		CH 62 LOW	→ JT VALVE (WEKA)
3	CH 61 HIGH	AGND	CH 61 LOW	→ PRE COOL V. (WEKA)
4	CH 60 HIGH		CH 60 LOW	→ LN_2 VALVE (WEKA)
5	CH 59 HIGH	•	CH 59 LOW	→ N_2 PRESSURE
6	CH 58 HIGH		CH 58 LOW	→ He PRESSURE
7	CH 57 HIGH		CH 57 LOW	→ HPS 421 VAC
8	CH 56 HIGH	•	CH 56 LOW	→
9	CH 55 HIGH		CH 55 LOW	→ N_2 LEVEL
10	CH 54 HIGH	•	CH 54 LOW	→ +LEAD FLOW
11	CH 53 HIGH		CH 53 LOW	→ −LEAD FLOW
12	CH 52 HIGH		CH 52 LOW	→ +LEAD V. DROP
13	CH 51 HIGH		CH 51 LOW	→ −LEAD V. DROP
14	CH 50 HIGH	•	CH 50 LOW	→ +COIL V. DROP
15	CH 49 HIGH		CH 49 LOW	→ −COIL V. DROP
16	CH 48 HIGH		CH 48 LOW	→ LAKESHORE GAUSS METER
17	CH 47 HIGH	AGND	CH 47 LOW	
18	CH 46 HIGH		CH 46 LOW	
19	CH 45 HIGH		CH 45 LOW	
20	CH 44 HIGH	•	CH 44 LOW	
21	CH 43 HIGH		CH 43 LOW	
22	CH 42 HIGH	•	CH 42 LOW	
23	CH 41 HIGH		CH 41 LOW	
24	CH 40 HIGH		CH 40 LOW	
25	CH 39 HIGH	•	CH 39 LOW	
26	CH 38 HIGH		CH 38 LOW	
27	CH 37 HIGH		CH 37 LOW	
28	CH 36 HIGH	•	CH 36 LOW	
29	CH 35 HIGH		CH 35 LOW	
30	CH 34 HIGH		CH 34 LOW	
31	CH 33 HIGH	AGND	CH 33 LOW	
32	CH 32 HIGH		CH 32 LOW	

*Channel 31 and 63 LOW inputs can be jumpered individually to AGND.

M3122/T5.5.3-2

Table 5.5.3-3. P4 Connector Pinout



Pin	Row A	Row B	Row C
32	CH 31 HIGH		CH 31 LOW*
31	CH 30 HIGH		CH 30 LOW
30	CH 29 HIGH	AGND	CH 29 LOW
29	CH 28 HIGH		CH 28 LOW
28	CH 27 HIGH	•	CH 27 LOW
27	CH 26 HIGH		CH 26 LOW
26	CH 25 HIGH		CH 25 LOW
25	CH 24 HIGH	•	CH 24 LOW
24	CH 23 HIGH		CH 23 LOW
23	CH 22 HIGH		CH 22 LOW
22	CH 21 HIGH	•	CH 21 LOW
21	CH 20 HIGH		CH 20 LOW
20	CH 19 HIGH		CH 19 LOW
19	CH 18 HIGH	•	CH 18 LOW
18	CH 17 HIGH		CH 17 LOW
17	CH 16 HIGH		CH 16 LOW
16	CH 15 HIGH	AGND	CH 15 LOW
15	CH 14 HIGH		CH 14 LOW
14	CH 13 HIGH	•	CH 13 LOW
13	CH 12 HIGH		CH 12 LOW
12	CH 11 HIGH		CH 11 LOW
11	CH 10 HIGH	•	CH 10 LOW
10	CH 09 HIGH		CH 09 LOW
9	CH 08 HIGH		CH 08 LOW
8	CH 07 HIGH	•	CH 07 LOW
7	CH 06 HIGH		CH 06 LOW
6	CH 05 HIGH		CH 05 LOW
5	CH 04 HIGH	•	CH 04 LOW
4	CH 03 HIGH		CH 03 LOW
3	CH 02 HIGH		CH 02 LOW
2	CH 01 HIGH	AGND	CH 01 LOW
1	CH 00 HIGH		CH 00 LOW

*Channel 31 and 63 LOW inputs can be jumpered individually to AGND.

M3122/T5.5.3-3

IN	FUNCTION	PIN	FUNCTION	COMMENT
-2	W0	J2-2	W8	SENSOR POSITIVE DRIVE
-3	X0	J2-3	X8	SENSOR POSITIVE SENSE
-21	Y0	J2-21	Y8	SENSOR NEGATIVE SENSE
-22	Z0	J2-22	Z8	SENSOR DRIVE RETURN
-4	W1	J2-4	W9	
-5	X1	J2-5	X9	
-23	Y1	J2-23	Y9	
-24	Z1	J2-24	Z9	
-6	W2	J2-6	W10	
-7	X2	J2-7	X10	
-25	Y2	J2-25	Y10	
-26	Z2	J2-26	Z10	
-8	W3	J2-8	W11	
-9	X3	J2-9	X11	
-27	Y3	J2-27	Y11	
-28	Z3	J2-28	Z11	
10	W4	J2-10	W12	
-11	X4	J2-11	X12	
-29	Y4	J2-29	Y12	
-30	Z4	J2-30	Z12	
-12	W5	J2-12	W13	SENSOR POSITIVE DRIVE
-13	X5	J2-13	X13	SENSOR POSITIVE SENSE
-31	Y5	J2-31	Y13	SENSOR NEGATIVE SENSE
-32	Z5	J2-32	Z13	SENSOR DRIVE RETURN
-14	W6	J2-14	W14	
-15	X6	J2-15	X14	
-33	Y6	J2-33	Y14	
-34	Z6	J2-34	Z14	
-16	W7	J2-16	W15	
-17	X7	J2-17	X15	
-35	Y7	J2-35	Y15	
-36	Z7	J2-36	Z15	
-1	COMMON	J2-1	COMMON	VME CIRCUIT COMMON
-18	COMMON	J2-18	COMMON	
-20	COMMON	J2-20	COMMON	
-37	COMMON	J2-37	COMMON	
	+12 VOLTS	J2-19	+12 VOLTS	FUSED VME +12 SUPPLY

can above Heat Exchange Ron Zarobinski

A } V+ Diode A
B } V− Lakeshore #470 [redacted] Supply
C } I+
D } I−

Conn 1
on can

E } V+
F } V− Diode B GHE Return
G } I+ Lakeshore #470
H } I−

cables complete

check & record location of diodes

LOWER ABCD
UPPER EFGH

J1

IN	FUNCTION	PIN		FUNCTION	CRYOSTAT CONNECTOR/PIN	SIGNAL NAME	SIGNAL VALUE	SENSOR UNIT
==	========	===		========				
1-2	W0	J2-2		W8	HEAT EXCH - E	I+		HEAT EXCH PR He PM
1-3	X0	J2-3		X8	F	V+		
1-21	Y0	J2-21		Y8	C	V-		
1-22	Z0	J2-22		Z8	D	I-		
1-4	W1	J2-4		W9	HEAT EXCH - H	I+		HEAT EXCH PR N_2 PM
1-5	X1	J2-5		X9	G	V+		
1-23	Y1	J2-23		Y9	B	V-		
1-24	Z1	J2-24		Z9	A	I-		
1-6	W2	J2-6		W10	B- C	I+	LEAD FLAG PT	~~BAYONET CAN SD DIODE (BAD SHORTED)~~
1-7	X2	J2-7		X10	A	V+		
1-25	Y2	J2-25		Y10	B	V-		
1-26	Z2	J2-26		Z10	D	I-		
1-8	W3	J2-8	WHT	W11	B- G	I+	BAYONET CAN DIODE	~~BAYONET CAN SD DIODE~~ ~~LN2 DIODE~~ ~~BOTTOM~~ TOP
1-9	X3	J2-9	BLU	X11	E	V+		
1-27	Y3	J2-27	RED	Y11	F	V-		
1-28	Z3	J2-28	GRN	Z11	H	I-		
1-10	W4	J2-10		W12	J3- C	I+		PR1
1-11	X4	J2-11		X12	E	V+		
1-29	Y4	J2-29		Y12	F	V-		
.-30	Z4	J2-30		Z12	D	I-		
1-12	W5	J2-12		W13	J3- P	I+		PR2
.-13	X5	J2-13		X13	S	V+		
.-31	Y5	J2-31		Y13	T	V-		
.-32	Z5	J2-32		Z13	R	I-		
.-14	W6	J2-14		W14	J3 U	I+		PR3
.-15	X6	J2-15		X14	b	V+		
.-33	Y6	J2-33		Y14	c	V-		
.-34	Z6	J2-34		Z14	V	I-		
.-16	W7	J2-16		W15	J3 M	I+		PR4
.-17	X7	J2-17		X15	Z	V+		
.-35	Y7	J2-35		Y15	a	V-		
.-36	Z7	J2-36		Z15	N	I-		
.-1	COMMON	J2-1		COMMON	VME CIRCUIT COMMON			
.-18	COMMON	J2-18		COMMON				
.-20	COMMON	J2-20		COMMON				
.-37	COMMON	J2-37		COMMON				
.-19	+12 VOLTS	J2-19		+12 VOLTS	FUSED VME +12 SUPPLY			

|

D1 — from S1 Box

D 1 = I+ Red
I− Black

D2 I+ white/Red
I− Black

D3 I+ orange
I− white/Black

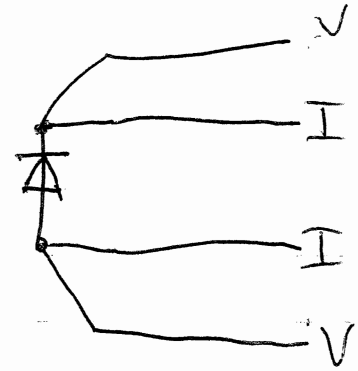
D4 I+ white/orange
I− white/Black

D5 I+ Purple
I− white/gray

D6 I+ white/purple
I− white/gray

CD 3-~~4~~

CD ~~4~~-~~6~~



CD 3
Left Side

A = V+
B = V-
C = I+
D = I-

CD 4
Right Side

E = V+
F = V-
G = I+
H = I-

J 7

CD 5
Left side

A ~~B~~ = V+
B = V-
C = I+
D = I-

CD 6
Right side

E = V+
F = V-
G = I+
H = I-

J 8

J2

IN	FUNCTION	PIN	FUNCTION	CRYOSTAT CONNECTOR/PIN	SIGNAL NAME	SIGNAL VALUE	SENSOR UNIT
==	========	===	========				
1-2	W0	J2-2	W8	J3-G	I+		PR5
1-3	X0	J2-3	X8	W	V+		
1-21	Y0	J2-21	Y8	X	V-		
1-22	Z0	J2-22	Z8	H	I-		
1-4	W1	J2-4	W9	J3-J	I+		PR6
1-5	X1	J2-5	X9	L	V+		
1-23	Y1	J2-23	Y9	Y	V-		
1-24	Z1	J2-24	Z9	K	I-		
1-6	W2	J2-6	W10	~~J4-K~~ U	~~I+~~	LEAD FLAG PT	~~PR7~~
1-7	X2	J2-7	X10	~~-B~~ A	~~V+~~		~~LN_2 DIODE~~
1-25	Y2	J2-25	Y10	~~-A~~ B	~~V-~~		~~BOTTOM~~
1-26	Z2	J2-26	Z10	~~-U~~ K	~~I-~~		
1-8	W3	J2-8	W11	J4-~~V~~ U A	I+		~~SD8 (wings diode)~~
1-9	X3	J2-9	X11	-~~U~~ T B	V+		PR7
1-27	Y3	J2-27	Y11	-~~X~~ L K	V-		
1-28	Z3	J2-28	Z11	-~~U~~ J	I-		
1-10	W4	J2-10	W12	J7-C	I+		SDF
1-11	X4	J2-11	X12	A	V+		SD2
1-29	Y4	J2-29	Y12	B	V-		
1-30	Z4	J2-30	Z12	D	I-		
1-12	W5	J2-12	W13	J7-G	I+		SDG
1-13	X5	J2-13	X13	E	V+		SD3
1-31	Y5	J2-31	Y13	F	V-		
1-32	Z5	J2-32	Z13	H	I-		
1-14	W6	J2-14	W14	J8-C	I+		SDI
1-15	X6	J2-15	X14	A	V+		SD4
1-33	Y6	J2-33	Y14	B	V-		
1-34	Z6	J2-34	Z14	D	I-		
1-16	W7	J2-16	W15	J8-G	I+		SDJ
1-17	X7	J2-17	X15	E	V+		SD5
1-35	Y7	J2-35	Y15	F	V-		
1-36	Z7	J2-36	Z15	H	I-		
1-1	COMMON	J2-1	COMMON	VME CIRCUIT COMMON			
1-18	COMMON	J2-18	COMMON				
1-20	COMMON	J2-20	COMMON				
1-37	COMMON	J2-37	COMMON				
1-19	+12 VOLTS	J2-19	+12 VOLTS	FUSED VME +12 SUPPLY			

CRYOSTAT ADD-ON DIODES

Table 5.6-1. P3 Pin Assignments

Pin	Data Bit	Pin	Data Bit
19	OUT 0	37	COMM 0
18	VEXT 0	36	N/C
17	N/C	35	N/C
16	OUT 1	34	COMM 1
15	VEXT 1	33	N/C
14	N/C	32	N/C
13	OUT 2	31	COMM 2
12	VEXT 2	30	N/C
11	N/C	29	N/C
10	OUT 3	28	COMM 3
9	VEXT 3	27	N/C
8	N/C	26	N/C
7	OUT 4	25	COMM 4
6	VEXT 4	24	N/C
5	N/C	23	N/C
4	OUT 5	22	COMM 5
3	VEXT 5	21	N/C
2	N/C	20	N/C
1	N/C		

BLK RED

GHe VALVE (20-4)

JT VALVE

PRE-COOL VALVE

LN_2 VALVE

30*60 = 1800

0.500

900 Mb.

Table 5.6-2. P4 Pin Assignments

Pin	Data Bit	Pin	Data Bit
19	OUT 6	37	COMM 6
18	VEXT 6	36	N/C
17	N/C	35	N/C
16	OUT 7	34	COMM 7
15	VEXT 7	33	N/C
14	N/C	32	N/C
13	OUT 8	31	COMM 8
12	VEXT 8	30	N/C
11	N/C	29	N/C
10	OUT 9	28	COMM 9
9	VEXT 9	27	N/C
8	N/C	26	N/C
7	OUT 10	25	COMM 10
6	VEXT 10	24	N/C
5	N/C	23	N/C
4	OUT 11	22	COMM 11
3	VEXT 11	21	N/C
2	N/C	20	N/C
1	N/C		

Highland card for
Diode & Platinum Resistor readouts

PIN	FUNCTION	PIN	FUNCTION	COMMENT
J1-2	W0	J2-2	W8	SENSOR POSITIVE DRIVE
J1-3	X0	J2-3	X8	SENSOR POSITIVE SENSE
J1-21	Y0	J2-21	Y8	SENSOR NEGATIVE SENSE
J1-22	Z0	J2-22	Z8	SENSOR DRIVE RETURN
J1-4	W1	J2-4	W9	
J1-5	X1	J2-5	X9	
J1-23	Y1	J2-23	Y9	
J1-24	Z1	J2-24	Z9	
J1-6	W2	J2-6	W10	
J1-7	X2	J2-7	X10	
J1-25	Y2	J2-25	Y10	
J1-26	Z2	J2-26	Z10	
J1-8	W3	J2-8	W11	
J1-9	X3	J2-9	X11	
J1-27	Y3	J2-27	Y11	
J1-28	Z3	J2-28	Z11	
J1-10	W4	J2-10	W12	
J1-11	X4	J2-11	X12	
J1-29	Y4	J2-29	Y12	
J1-30	Z4	J2-30	Z12	
J1-12	W5	J2-12	W13	SENSOR POSITIVE DRIVE
J1-13	X5	J2-13	X13	SENSOR POSITIVE SENSE
J1-31	Y5	J2-31	Y13	SENSOR NEGATIVE SENSE
J1-32	Z5	J2-32	Z13	SENSOR DRIVE RETURN
J1-14	W6	J2-14	W14	
J1-15	X6	J2-15	X14	
J1-33	Y6	J2-33	Y14	
J1-34	Z6	J2-34	Z14	
J1-16	W7	J2-16	W15	
J1-17	X7	J2-17	X15	
J1-35	Y7	J2-35	Y15	
J1-36	Z7	J2-36	Z15	
J1-1	COMMON	J2-1	COMMON	VME CIRCUIT COMMON
J1-18	COMMON	J2-18	COMMON	
J1-20	COMMON	J2-20	COMMON	
J1-37	COMMON	J2-37	COMMON	
J1-19	+12 VOLTS	J2-19	+12 VOLTS	FUSED VME +12 SUPPLY

5.6 I/O CABLE AND FRONT CONNECTOR CONFIGURATION

The front input connectors (P3 and P4) on the VMIVME-4150 are standard subminiature 37-pin female D-shell connectors. The P3/P4 connector pin layout is shown in Figure 5.6-1. The pin assignments for P3 and P4 are shown in Table 5.6-1 and 5.6-2.

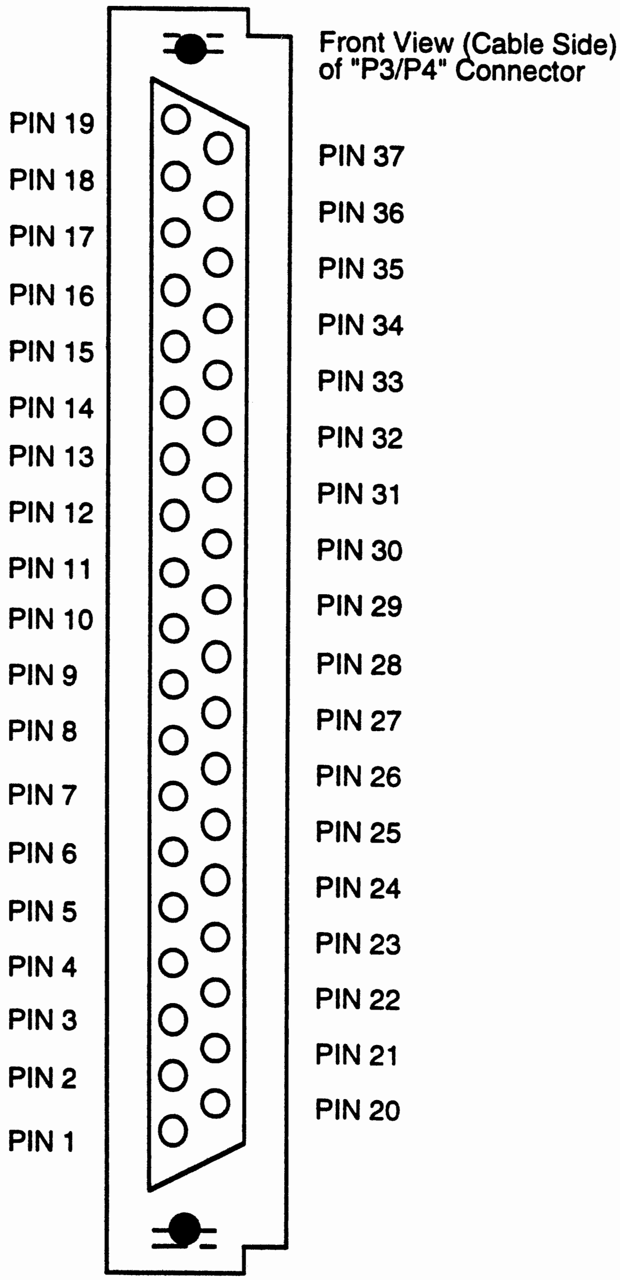


Figure 5.6-1. P3/P4 Connector Pin Layout

Table 5.6-1. P3 Pin Assignments

ch0
ch1
ch2

Pin	Data Bit	Pin	Data Bit
19	OUT 0	37	COMM 0
18	VEXT 0	36	N/C
17	N/C	35	N/C
16	OUT 1	34	COMM 1
15	VEXT 1	33	N/C
14	N/C	32	N/C
13	OUT 2	31	COMM 2
12	VEXT 2	30	N/C
11	N/C	29	N/C
10	OUT 3	28	COMM 3
9	VEXT 3	27	N/C
8	N/C	26	N/C
7	OUT 4	25	COMM 4
6	VEXT 4	24	N/C
5	N/C	23	N/C
4	OUT 5	22	COMM 5
3	VEXT 5	21	N/C
2	N/C	20	N/C
1	N/C		

Table 5.6-2. P4 Pin Assignments

ch7
Not used

Pin	Data Bit	Pin	Data Bit
19	OUT 6	37	COMM 6
18	VEXT 6	36	N/C
17	N/C	35	N/C
16	OUT 7	34	COMM 7
15	VEXT 7	33	N/C
14	N/C	32	N/C
13	OUT 8	31	COMM 8
12	VEXT 8	30	N/C
11	N/C	29	N/C
10	OUT 9	28	COMM 9
9	VEXT 9	27	N/C
8	N/C	26	N/C
7	OUT 10	25	COMM 10
6	VEXT 10	24	N/C
5	N/C	23	N/C
4	OUT 11	22	COMM 11
3	VEXT 11	21	N/C
2	N/C	20	N/C
1	N/C		