

## Testing of the EMCO Prototype Boards

The following are expected from EMCO by the end of December, 2003:

- ❖ Four (4) HV Control Boards (7930A mounted on 7954) without the ribbon connector.
- ❖ Four (4) PMT HV Base Boards (7931)

We are to tell EMCO whether the prototypes are acceptable by January 9, 2004.

We are expecting a drawing of the Base (7931) from EMCO by the time the boards are received.

The EMCO drawing for the HV generator (7930A) is attached at the end of this file.

The assembly drawing (7930A plus 7954) is attached also.

For the design / specification information, look at:

<http://amanda.wisc.edu/kitamura/HVM/HVM1.htm>

# Tests

Verify if the board mounting holes are correct, and the cable lengths are okay (in the DOM).

## **HV Control Board**

The boards will be delivered without the ribbon connector. The boards will have a footprint for a 24 pin connector. Attach a 20-pin connector to this footprint (see the figure next page).

Electrical

Total power consumption

Digital functions

HV\_DISABLE

HV\_ONOFF

HV\_ID

DAC writes

ADC reads

HV

Output HV (measure)

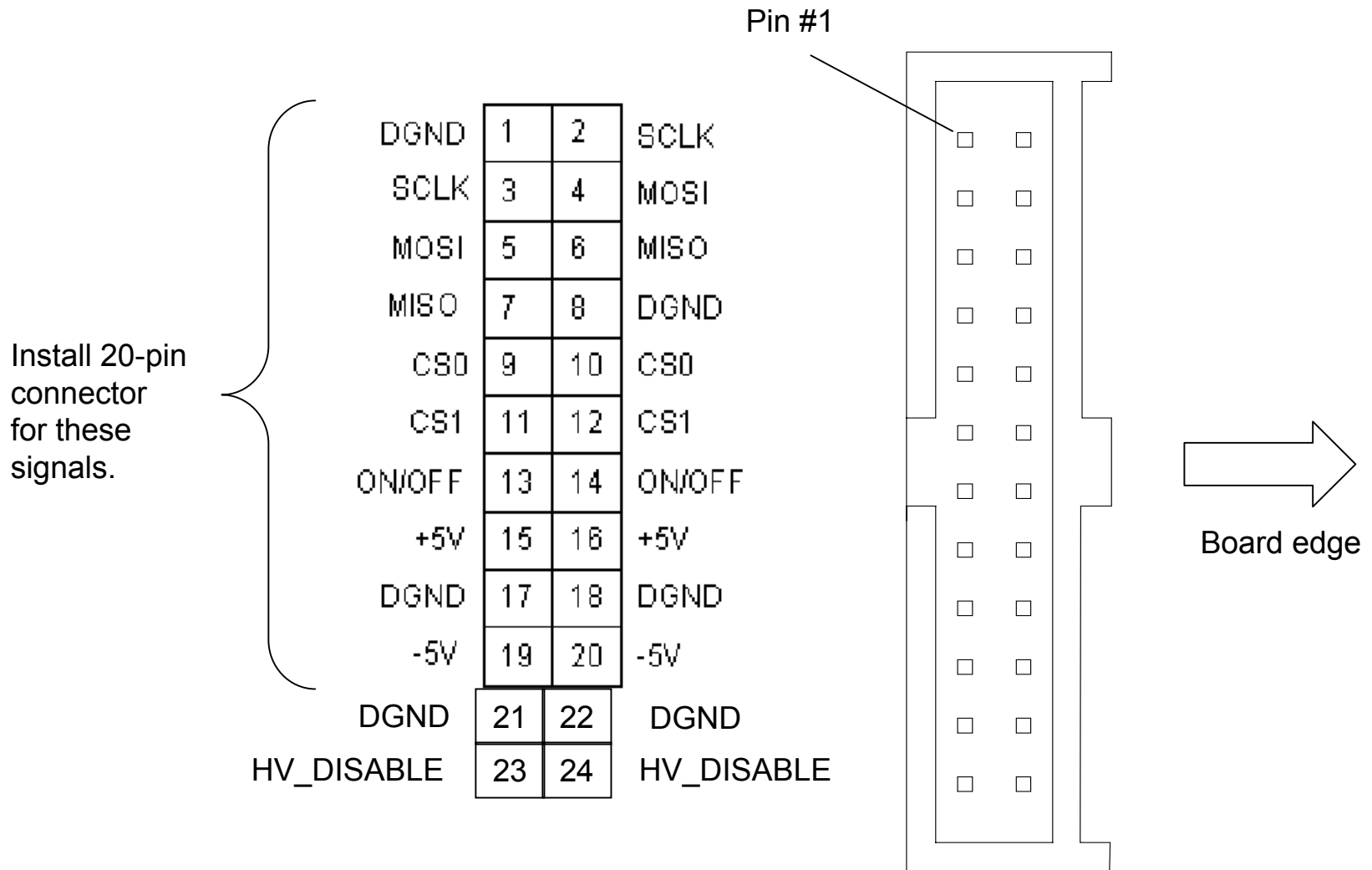
## **PMT Base Board**

Total bleeder resistance (measure)

PMT pulse measurement with a scope

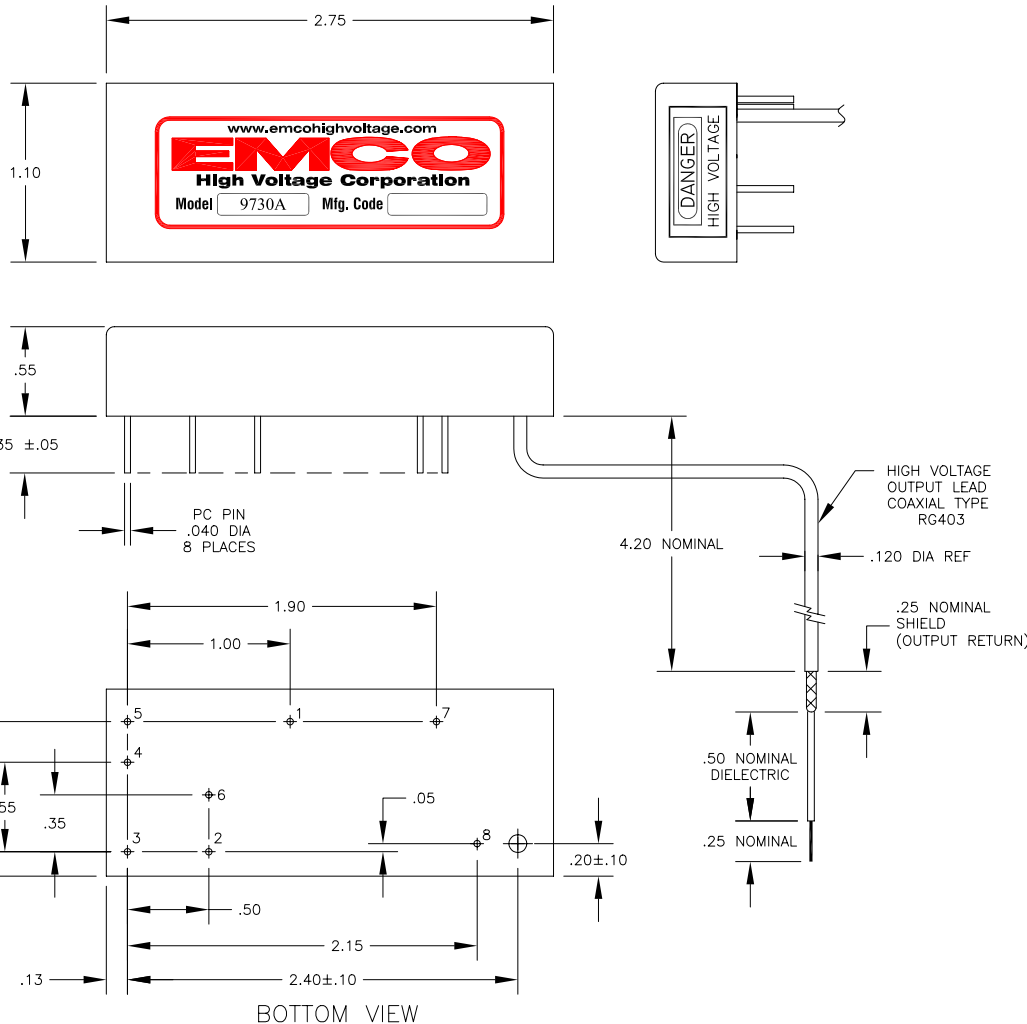
(Use a PMT socket and the cable adapter box. Set this up inside the dark box.)

# Component Side View



“HV\_DISABLE” is a 3.3V positive high logic (HV is disabled when connected to +3.3V).  
 +3.3V is available in the DOMMB-Flasher Board connector.

REVISIONS			
LTR	DESCRIPTION	DATE	APPD
U	ADDED 'LOCATION OF PIN 6 "TBD" '	9-26-03	DS/MD
V	LOCATED NEW PIN PATTERN	10-28-03	DS/MD



**NOTES:**

- ELECTRICAL SPECIFICATIONS (AFTER ONE HOUR WARMUP)
  - INPUT VOLTAGE: +5 VOLTS ±5%
  - OVERVOLTAGE PROTECTED: +15V
  - PROGRAMMING: 0 TO 2.048 VDC <100µA
  - INPUT POWER: FULL LOAD: <300mW @ MAX VOUT, TYPICAL  
STANDBY: <25mW @ MIN VOUT
  - OUTPUT VOLTAGE: 0 TO 2,050 VOLTS
  - OUTPUT CURRENT: 0 TO 30µA
  - LINE REGULATION: 0.1%
  - LONG TERM STABILITY: <200 PPM/HR/8 HRS @ FULL OUTPUT VOLTAGE AND CURRENT
  - P-P RIPPLE VOLTAGE: <2.4 PPM @ FULL OUTPUT VOLTAGE AND CURRENT.  
DC TO 20MHz BANDWIDTH, TYPICAL
  - VOLTAGE MONITOR: 0 TO 2.048V @1.0MA
  - ENABLE/DISABLE: TTL LOW/OPEN=ON, 3.3V=OFF
  - OPERATING TEMPERATURE: -55° TO +50°C
  - STORAGE TEMPERATURE: -55° TO +70°C
  - TEMPERATURE RAMPING: 5°C PER MINUTE MAX
- UNIT WEIGHT: APPROX 2.2 OZ (62 GRAMS)
- CONSTRUCTION:
  - BOX: ZINC PLATED STEEL
  - SOLID ENCAPSULATION

PIN #	FUNCTION
1	PROGRAMMING INPUT
2	GROUND
3	GROUND
4	+INPUT VOLTAGE: 5V±5%
5	VOLTAGE MONITOR: 0 TO 2.048V
6	ENABLE/DISABLE: 3.3V=OFF
7 & 8	NO CONNECTION

CASE IS CONNECTED TO GROUND INTERNALLY

3185	9730A
NEXT ASSY	USED ON
APPLICATION	

INT	DATE
DWN DJS	1-9-03
CHK DFH	1-10-03
ENGR MJD	2-27-03

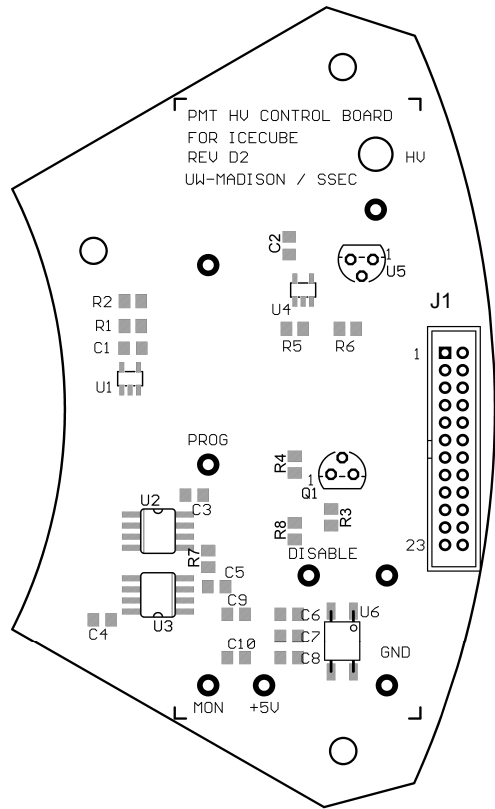
UNLESS OTHERWISE SPECIFIED  
DIMENSIONS ARE IN INCHES  
TOLERANCES ARE:

DECIMALS	ANGLES
.xx <sup>±</sup> .02	±
.xxx <sup>±</sup> .010	

DIMENSIONS ARE IN INCHES  
DO NOT SCALE DRAWING

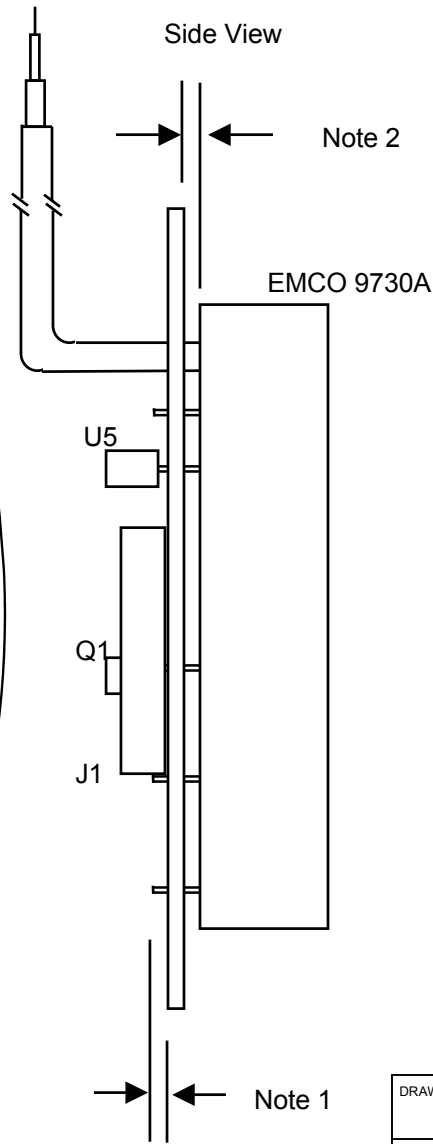
ITEM	QTY	PART NO.	DESCRIPTION
PARTS LIST			
EMCO HIGH VOLTAGE CORP. www.emcohighvoltage.com			
OUTLINE & SPECIFICATIONS MODEL 9730A			
SIZE A	CAGE # 4T243	DWG# 9730	REV V
SCALE NONE		SHEET 1 OF 1	

# Component Side



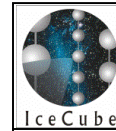
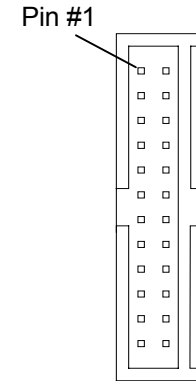
EMCO 9754

Scale 1:1



## Notes

1. Trim leads according to 9730A recommended usage.
2.  $1 \pm 0.1\text{mm}$
3. See below for detailed view of J1 (top view).



**IceCube Project**

Space Science and Engineering Center  
University of Wisconsin-Madison

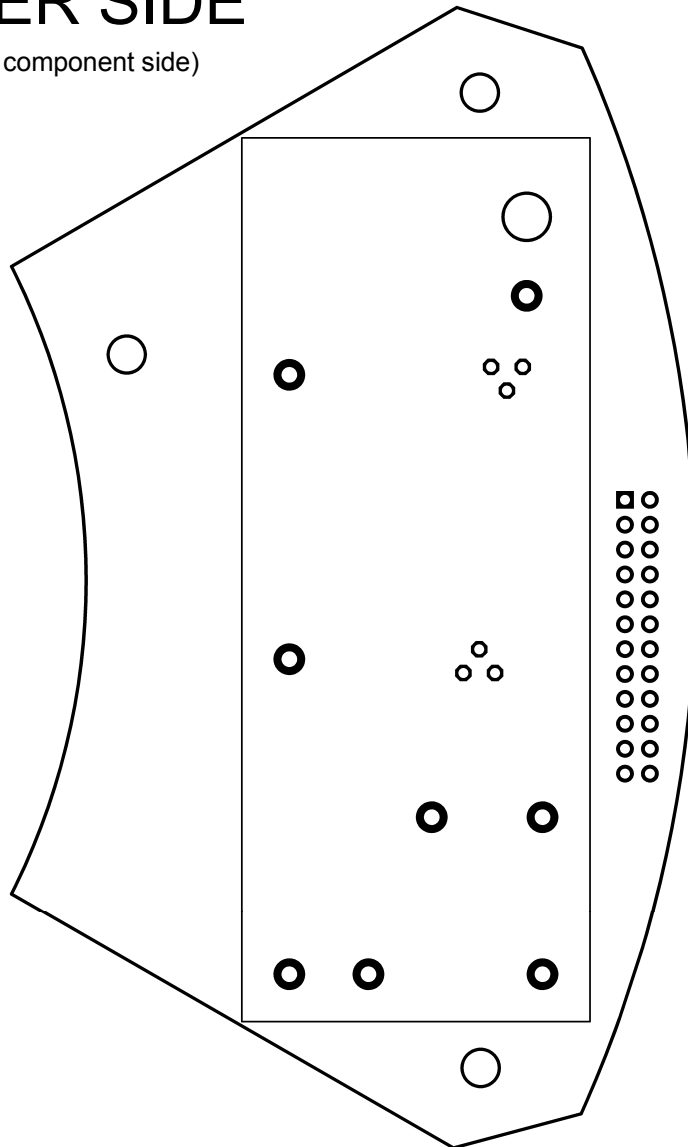
HV Control Board Assembly Drawing

DRAWN NK	HV Control Board Assembly Drawing	
CHK'D GA	DWG # HV_D2_ASSY.pdf	REV -
APPRV'D -	DATE 12/7/2003	Sheet 1 of 3

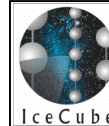


# SOLDER SIDE

(Viewed thru component side)



Scale 140%



IceCube

## IceCube Project

Space Science and Engineering Center  
University of Wisconsin-Madison

### HV Control Board Assembly Drawing

DRAWN NK	HV Control Board Assembly Drawing	
CHK'D GA	DWG # HV_D2_ASSY.pdf	REV -
APPRV'D -	DATE 12/7/2003	Sheet 3 of 3