

ICX937
Three-field Ionization Chamber
Calibration Procedure for Pre-Amplifier board 61149B

The ICX937 is intended as a replacement ion chamber for several GEHC models as outlined below:

To replace GEHC P/N	Use AID P/N
2252611	See Model ICX967 or ICX2967
2252611-2	ICX937 and 75084M04
2252611-3	ICX937 and 75084M24
2307342	ICX937 alone
2307343	ICX937 and 75035M04
2307344	ICX937 and 75035M24

The model ICX937 connects via a male 9-pin sub-miniature "D" connector. It may be necessary to replace the existing interface cable if it is not compatible with this connector style. Refer to page 4 of this document for interface cable pin-out details.

To insure correct fit, the mounting spacers from the original GEHC part must be re-used. Remove the mounting spacers from the original GEHC ion chamber and thread them into the frame of the ICX937. Use these spacers to mount the ICX937 in the Bucky.

The following adjustments apply to the calibration of the 61149B pre-amplifier board used with the model ICX937 three-field ion chamber.

WARNING:

- This service manual is normally supplied in English. Other languages* available on request..
- Do not attempt to service the equipment unless this service manual has been consulted and is understood.
- Failure to heed this warning may result in injury to the service provider, operator or patient from electric shock mechanical or other hazards.

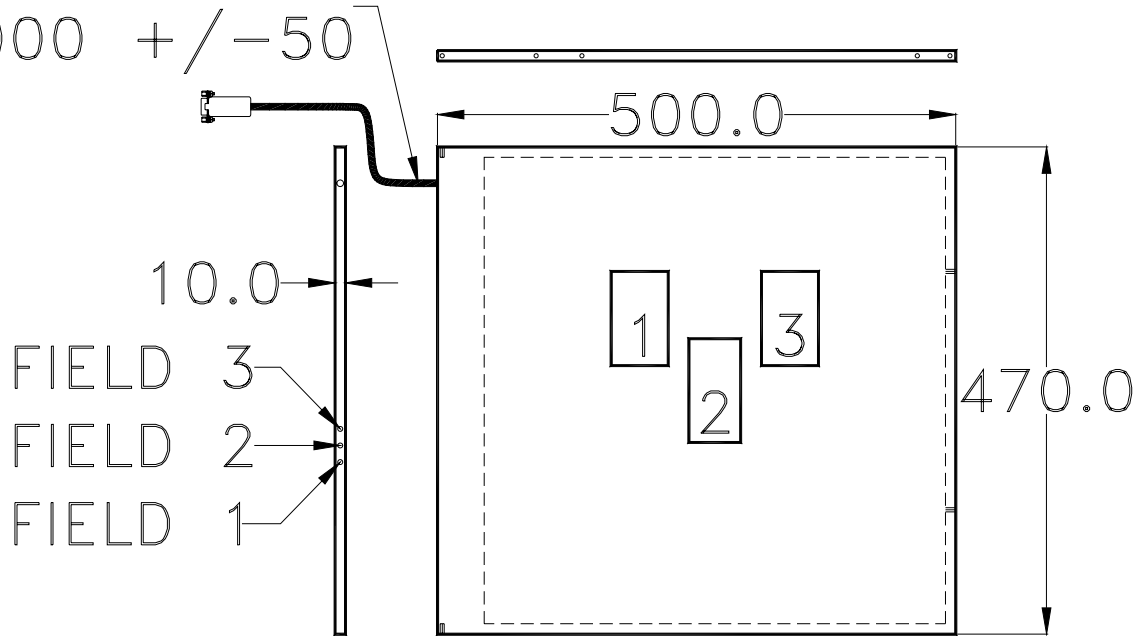
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The procedure assumes that the installation of the Automatic Exposure Control (AEC) is complete and that the AEC and the x-ray generator are in proper working condition. After making the necessary interconnections between the ion chamber and the AEC, power up the system.

* French, German, Spanish

CABLE LENGTH

1000 \pm 50



Calibration/Test Set Up:

Select the center field of the ion chamber. Set the generator for 100 kVp and maximum backup time. For 100 kVp, use 8 to 10 inches (20 to 25 cm) of water or plastic for a phantom. Metals such as copper, aluminum or lead are not suitable for use as phantoms. Make sure the phantom is homogeneous and completely covers all fields equally. Center the x-ray beam on the center field. Collimate the x-ray beam so that it completely covers all three fields but does not extend beyond the limits of the phantom.

Balance Check:

Using the AEC post-exposure mAs display or other calibrated mAs meter check the individual fields to see that they are balanced, that is, that they produce the same mAs reading. If mAs readings are not stable from exposure to exposure for an individual field, then it will be necessary to expose films and make these adjustments based upon optical density.

The individual gain potentiometers, 61149B R3, R5 and R9, correspond to ion chamber fields 1, 2 and 3, respectively. If necessary, adjust the individual gain potentiometers to balance the outputs to give the same mAs reading for each field. Note that individual gain adjustments are multi-turn potentiometers. A clockwise adjustment to a gain potentiometer will increase the sensitivity of a field, causing the length of the exposure (mAs) to decrease.

Ionization Chamber Pin outs:

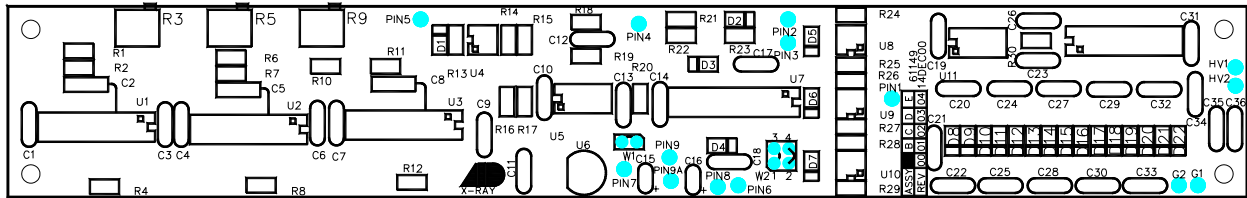
61149B PRE-AMP BOARD PAD NUMBER	FUNCTION	MALE 9-PIN SUB-D PIN NUMBER
1	GROUND, 24V RTN	1
2	FIELD 2 SELECT (CENTER)	2
3	FIELD 1 SELECT (LEFT)	3
4	OUTPUT	4
5	START INTEGRATE	5
6	FIELD 3 SELECT (RIGHT)	6
7	-15VDC	7
8	+15VDC	8
9	GROUND, 15V RTN	9

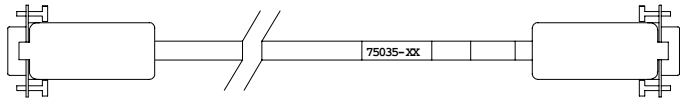
NOTE: Cable wire colors do not match those inside the pre-amp chassis. Cable pin-out details are available on-line at <http://www.aidxray.com> or by contacting Advanced Instrument Development, Inc.

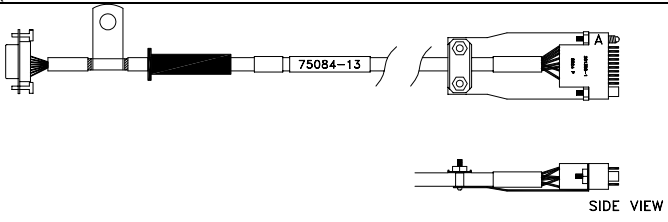
Acceptable Power Supply Ranges for 61149B Pre-amp:

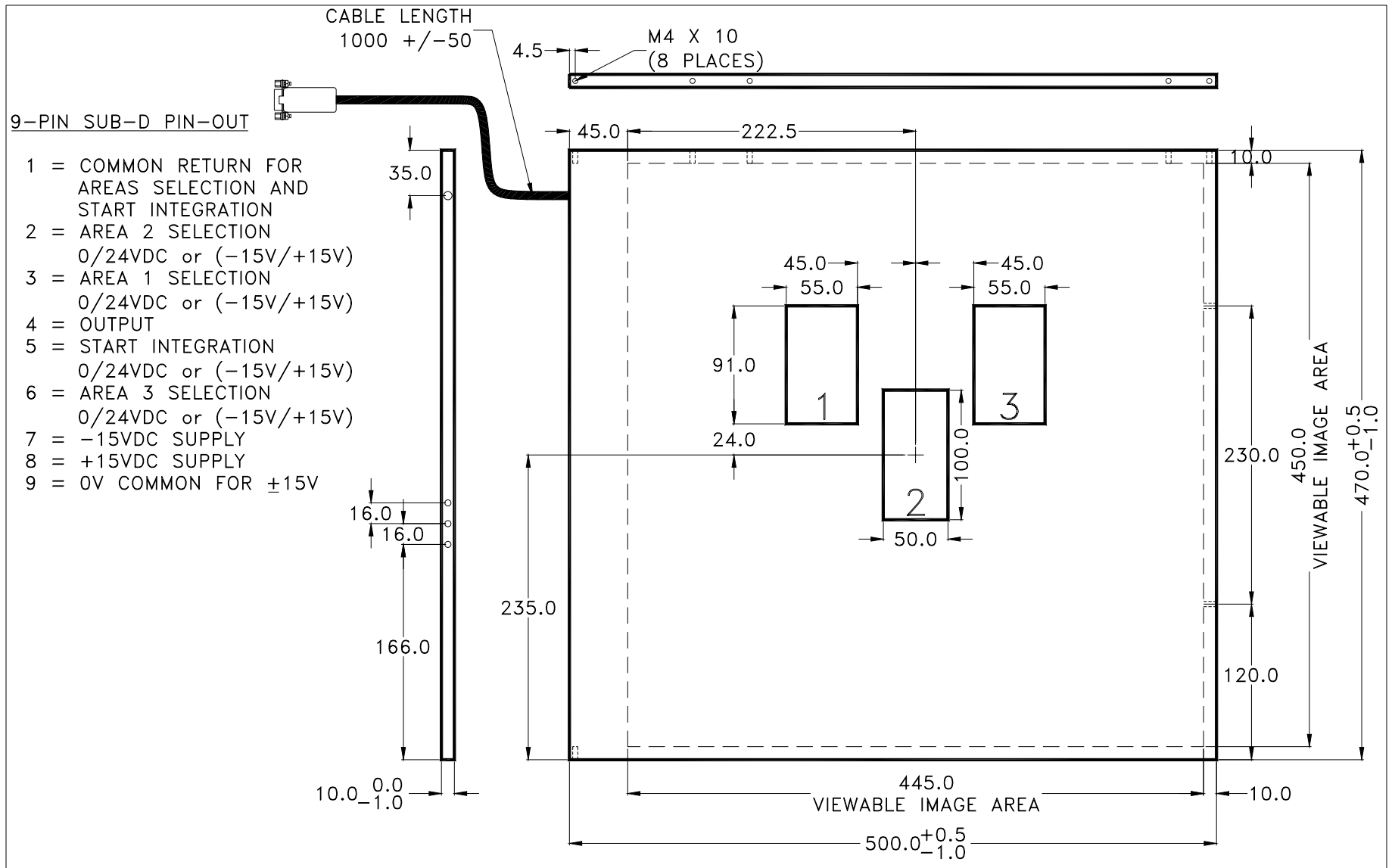
Supply Voltage	Measurement Point	Acceptable Range
+15VDC Pos. Input Supply Voltage	61149B pin 8	From +11.4VDC to +15.8VDC
-15VDC Neg. Input Supply Voltage	61149B pin 7	From -11.4VDC to -15.8VDC
+5VDC Regulated on board	61149B C11 (positive lead)	From +4.7VDC to +5.3VDC
+75VDC Internal Bias Voltage Regulated on board	61149B C36 at the cathode of D22	From +65VDC to +85VDC


All readings are referenced to ground at 61149B pin 9 or 9-pin sub-D connector pin 9.

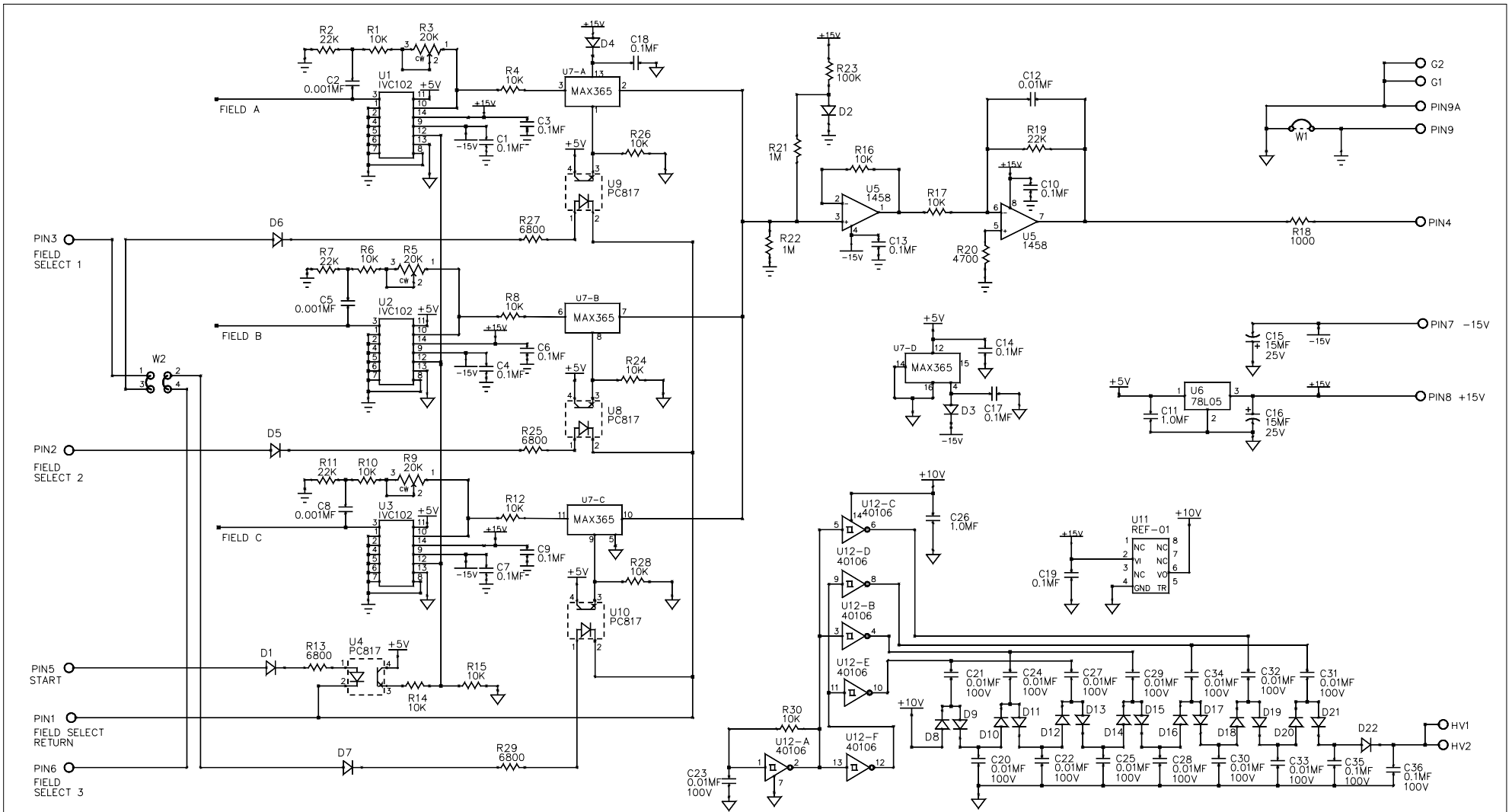


P/N 75035M04 (4-METER LENGTH) P/N 75035M24 (24-METER LENGTH)			
ION CHAMBER CONNECTOR	ION CHAMBER CABLE WITH STRAIGHT CONNECTOR SHELLS		AEC CONNECTOR
FEMALE 9-PIN SUB-D			MALE 9-PIN SUB-D
PIN NUMBER	WIRE COLOR	FUNCTION	PIN NUMBER
1	BLACK	GROUND, 24V RTN	1
2	BROWN	FIELD 2 SELECT (CENTER)	2
3	RED	FIELD 1 SELECT (LEFT)	3
4	ORANGE	OUTPUT	4
5	YELLOW	START INTEGRATE	5
6	GREEN	FIELD 3 SELECT (RIGHT)	6
7	BLUE	-15VDC	7
8	VIOLET	+15VDC	8
9	WHITE	GROUND, 15V RTN	9
9	CLEAR	SHIELD	N/C

P/N 75084M04 (4-METER LENGTH) P/N 75084M24 (24-METER LENGTH)			
ION CHAMBER CONNECTOR	ICX937 INTERCONNECTION CABLE (FOR GEHC EUROPEAN PIN-OUT MPH GENERATORS)	AEC CONNECTOR	
FEMALE 9-PIN SUB-D			MALE 14-PIN AMP M SERIES (201355-1)
PIN NUMBER	WIRE COLOR	FUNCTION	PIN NUMBER
1	BLACK	GROUND, 24V RTN	E
2	BROWN	FIELD 2 SELECT (CENTER)	K
3	RED	FIELD 1 SELECT (LEFT)	J
4	ORANGE	OUTPUT	D
5	YELLOW	START INTEGRATE	H
6	GREEN	FIELD 3 SELECT (RIGHT)	F
7	BLUE	-15VDC	C
8	VIOLET	+15VDC	A
9	WHITE	GROUND	B
9	CLEAR	SHIELD	N/C



					DO NOT SCALE			ADVANCED INSTRUMENT DEVELOPMENT, INC. 1011 N. 25TH AVE. MELROSE PARK, IL. 60160 					
					UNLESS SPECIFIED OTHERWISE: DIMENSIONS ARE IN MILLIMETERS. DECIMALS ANGLES ±0.3 ±1°								
					SCALE	NONE	DRAWN BY	BRP	DATE	24MAR00			
					MATERIAL		CHECKED BY						
					FINISH		APPROVED BY						
					ION CHAMBER DIMENSIONS					USED ON	NEXT ASSY.	DRAWING NO.	REV.
REV.	ECN NO.	DATE	REVISIONS	BY	THIS DRAWING REPRESENTS PROPRIETARY AND CONFIDENTIAL INFORMATION ORIGINATED BY ADVANCED INSTRUMENT DEVELOPMENT, INC. AND WHICH SHALL NOT BE DISCLOSED OR UTILIZED IN ANY MANNER DETRIMENTAL TO THE COMPANY'S BUSINESS.					ICX937		ICX937	--



NOTES:
 1. * MANUFACTURER MAY USE ALTERNATE COMPONENTS UNLESS NOTED OTHERWISE.

REV.	ECN NO.	DATE	REVISIONS	BY
00	TA116	10MAY04	R2,R7,R11,R19 USE 18K, R1,R6,R10 USE 0 OHM	TRW
00	2176	18MAR04	NEW, REPLACES 61144A	TRW

DO NOT SCALE			
UNLESS SPECIFIED OTHERWISE; DIMENSIONS ARE IN INCHES. FRACTIONS DECIMALS ANGLES ±1/64 ±0.010 ±1°			
SCALE	NONE	DRAWN BY	TRW
MATERIAL		CHECKED BY	
FINISH		APPROVED BY	
DATE 18MAR04			
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ADVANCED INSTRUMENT DEVELOPMENT, INC.
 1011 N. 25TH AVE.
 MELROSE PARK, IL. 60160

GE ION CHAMBER
 3-FIELD PRE-AMP BD.
 WITHOUT L/R SWAPPING

USED ON	NEXT ASSY.	DRAWING NO.	REV.
ICX SERIES		61149B	00