

Advanced Instrument Development, Inc.  
2545 Curtiss St.  
Downers Grove, IL 60515 U.S.A.

Phone: (630) 271-9729

[www.aidxray.com](http://www.aidxray.com)

Fax: (630) 271-9995

ICX941  
Three-field Ionization Chamber  
Calibration Procedure for Pre-Amplifier board 61149A

The following adjustments apply to the calibration of the 61149A pre-amplifier board used with the model ICX941 three-field ion chamber.

**WARNING:**

- This service manual is available in English only.
- If a customer's service provider requires a language other than English, it is the customer's responsibility to provide translation services.
- 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.

This document represents proprietary information originated by Advanced Instrument Development, Inc. and which shall not be disclosed or utilized in any manner detrimental to the company's business.

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.

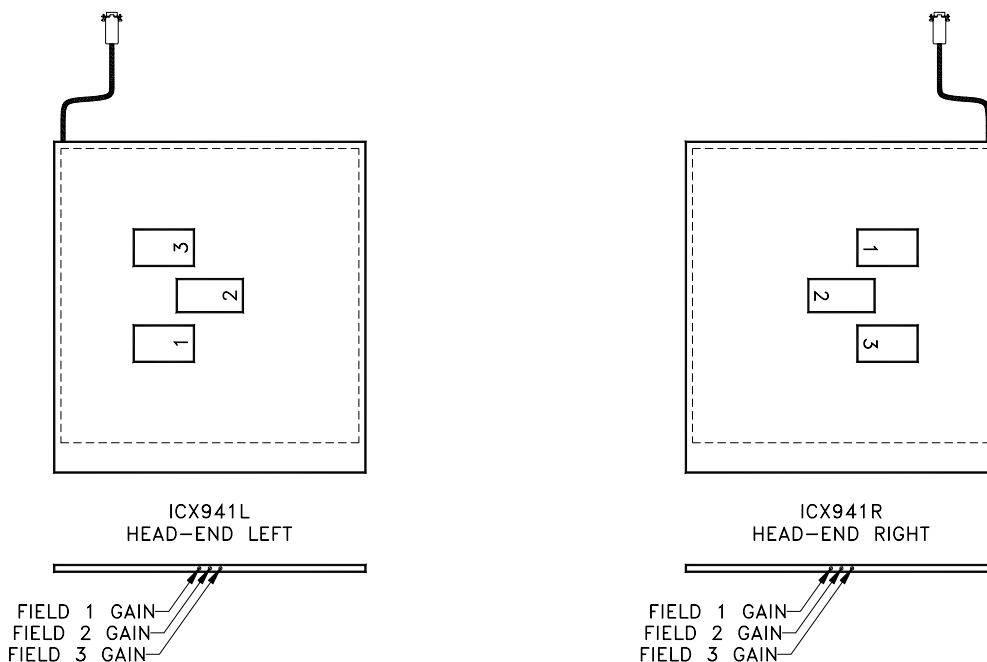
**Calibration/Test Set Up:**

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.



Field Selection and Orientation:

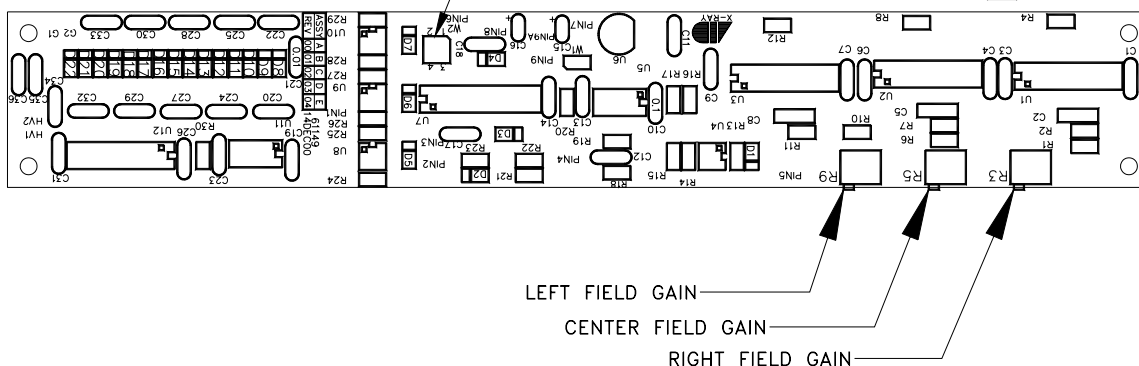
The ICX941 can be used in either a head-end left (ICX941L) or a head-end right (ICX941R) configuration. Note that when changing the orientation, the left and right fields are reversed. Changing the field selection jumper (61149A W2) will maintain the association between the AEC field selection signals and the left, center and right fields.

Model Configuration	61149A W2	Field Configuration
ICX941L	1-3 & 2-4	1-2-3
ICX941R	1-2 & 3-4	3-2-1



W2 JUMPER SELECTION:

ICX941L, HEAD-END LEFT = 1-3 & 2-4   
 ICX941R, HEAD-END RIGHT = 1-2 & 3-4 



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 Balance Check:

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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.

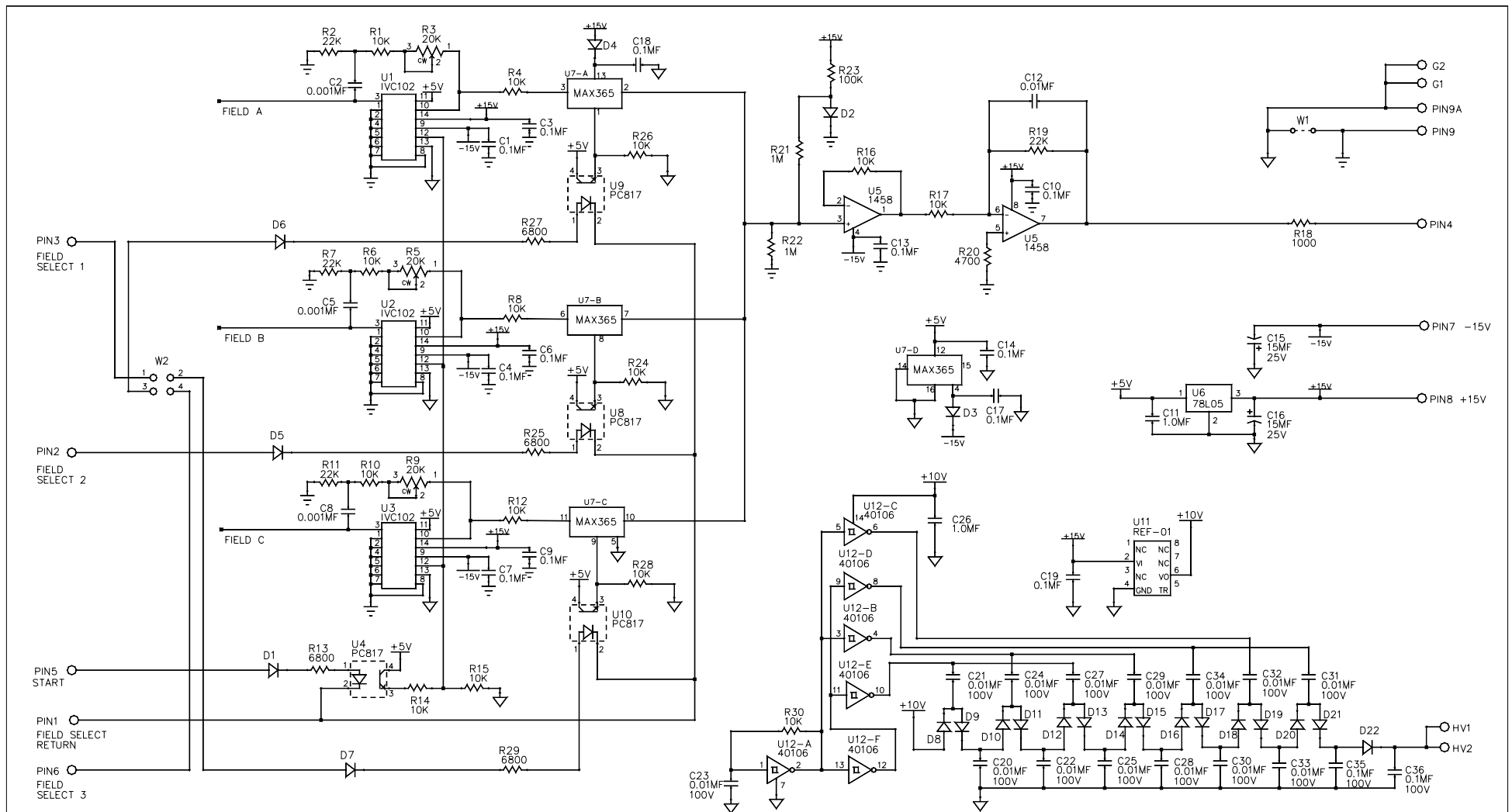
The individual gain potentiometers, 61149A R9, R5 and R3, correspond to ion chamber left, center and right fields, respectively. If necessary, adjust the individual gain potentiometers to balance the outputs to give the same mAs reading for each field. Note that individual gain adjustments are multi-turn 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:


61149A PRE-AMP BOARD PAD NUMBER	61149A PRE-AMP CHASSIS WIRE COLOR	FUNCTION	J1 9-PIN SUB-D 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

Acceptable Power Supply Ranges for 61149A Pre-amp:

Supply Voltage	Measurement Point	Acceptable Range
+12VDC Pos. Input Supply Voltage	61149A pin 8	From +11.4VDC to +15.8VDC
-12VDC Neg. Input Supply Voltage	61149A pin 7	From -11.4VDC to -15.8VDC
+5VDC Regulated on board	61149A C11 (positive lead)	From +4.7VDC to +5.3VDC
+75VDC Internal Bias Voltage Regulated on board	61149A C36 at the cathode of D22	From +65VDC to +85VDC



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

REV.	ECN NO.	DATE	REVISIONS	BY	DO NOT SCALE UNLESS SPECIFIED OTHERWISE; DIMENSIONS ARE IN INCHES. FRACTIONS DECIMALS ANGLES ±1/64 ±0.010 ±1°			ADVANCED INSTRUMENT DEVELOPMENT, INC. 1011 N. 25TH AVE. MELROSE PARK, IL. 60160	
03	2059	10MAY02	IVC102U AS ALTERNATE FOR U1, U2, AND U3	TRW	SCALE	DRAWN BY	DATE		
02	2059	10MAY02	SEE COMPONENT LAYOUT	TRW	NONE	TRW	15DEC00		
01	1953	15DEC00	IVC102U AS ALTERNATE FOR U1, U2, AND U3	TRW	MATERIAL	CHECKED BY			
00	1953	15DEC00	NEW	TRW	FINISH	APPROVED BY			
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					ICX SERIES		61149A	03	