

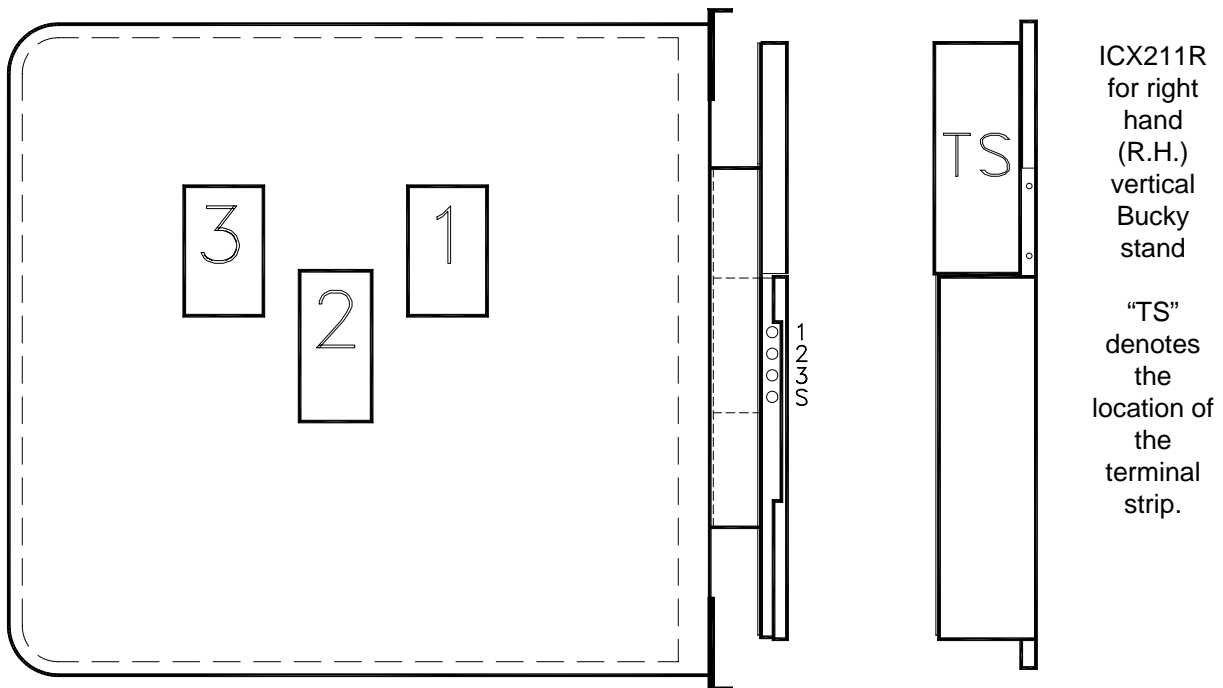
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Model ICX211R (GEMS P/N 2331092-2 and 2331097)
Three-field Ionization Chamber
Calibration Procedure for Pre-Amplifier board 61132L

The model ICX211R is intended for use in a right hand vertical Bucky stand when replacing GEMS P/N 2331092-2, 2331097, 2224771, 2225327-2, 46-158297, 46-178529G2, 46-303847G2 or 46-316727G1.



WARNING:

- 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 and mechanical or other hazards.

Note: When working with the pre-amplifier assembly it is important that electrostatic discharge (ESD) prevention techniques be observed. Before touching the pre-amp assembly, attach an ESD wrist strap to yourself. Be sure to ground yourself and the ion chamber frame to dissipate static charges.

Note: The pre-amp assembly is a very delicate and sensitive device. It is important to keep it as clean as possible. Wash and dry your hands thoroughly before working with it and, when possible, use unpowdered latex or cotton gloves. Take care to touch the pre-amp board as little as possible. Take extra care to avoid touching the three air-mounted field inputs. Oils from your fingers on the air-mounts or their components can cause performance degradation.

The 61132L pre-amplifier board can be configured to operate with several different AEC systems. If specified at the time of purchase, the ion chamber will be delivered with the pre-amplifier board already configured for a particular application. To reconfigure an ion chamber for a different configuration, see the section on Ion Chamber Inputs and Output and the section on Specific Configurations at the end of this document.

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

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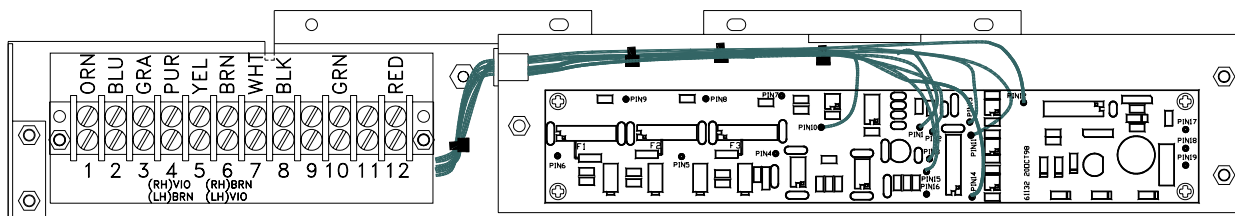
The following adjustments apply to the calibration of a 61132L pre-amplifier board for a stationary 3-field ion chamber, e.g. for chest or table use.

The procedure assumes that the installation of the Automatic Exposure Control (AEC) is complete and that the AEC and 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 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.

Note: The pre-amp chassis and terminal strip covers should remain in place during all calibration steps.



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Master Chamber Gain Adjustment (61132L R22):

The master chamber gain adjustment is labeled "S" in the diagram above. Typically, the master chamber gain adjustment is the only adjustment needed when installing an ICX series ion chamber. Use the chamber gain adjustment to match the overall chamber sensitivity to that of the other stationary chambers connected to the system. Note that the master chamber gain adjustment is a multi-turn potentiometer accessible through the pre-amp chassis cover. A clockwise adjustment to the chamber gain potentiometer will increase the sensitivity of the chamber, causing the length of the exposure (mAs) to decrease.

Make exposures and process the films. Adjust the chamber gain for the desired optical density. Make the chamber gain adjustment for each stationary chamber being installed.

Balance Check:

Using the Expos-AID 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.

For the GEMS compatible ICX211L the individual gain potentiometers (61132L R8, R11 and R14) correspond to Field 1, Field 2 and Field 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:

TERMINAL STRIP POSITION	FUNCTION	WIRE COLOR	61132L PIN OUTS
1	+15VDC	ORANGE	3
2	-15VDC	BLUE	2
3	RESET (START INTEGRATING)	GRAY	10
4	FIELD 1 SELECT	PURPLE	13
5	FIELD 2 SELECT	YELLOW	11
6	FIELD 3 SELECT	BROWN	14
7	OUTPUT	WHITE	15
8	GND	BLACK	12

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.

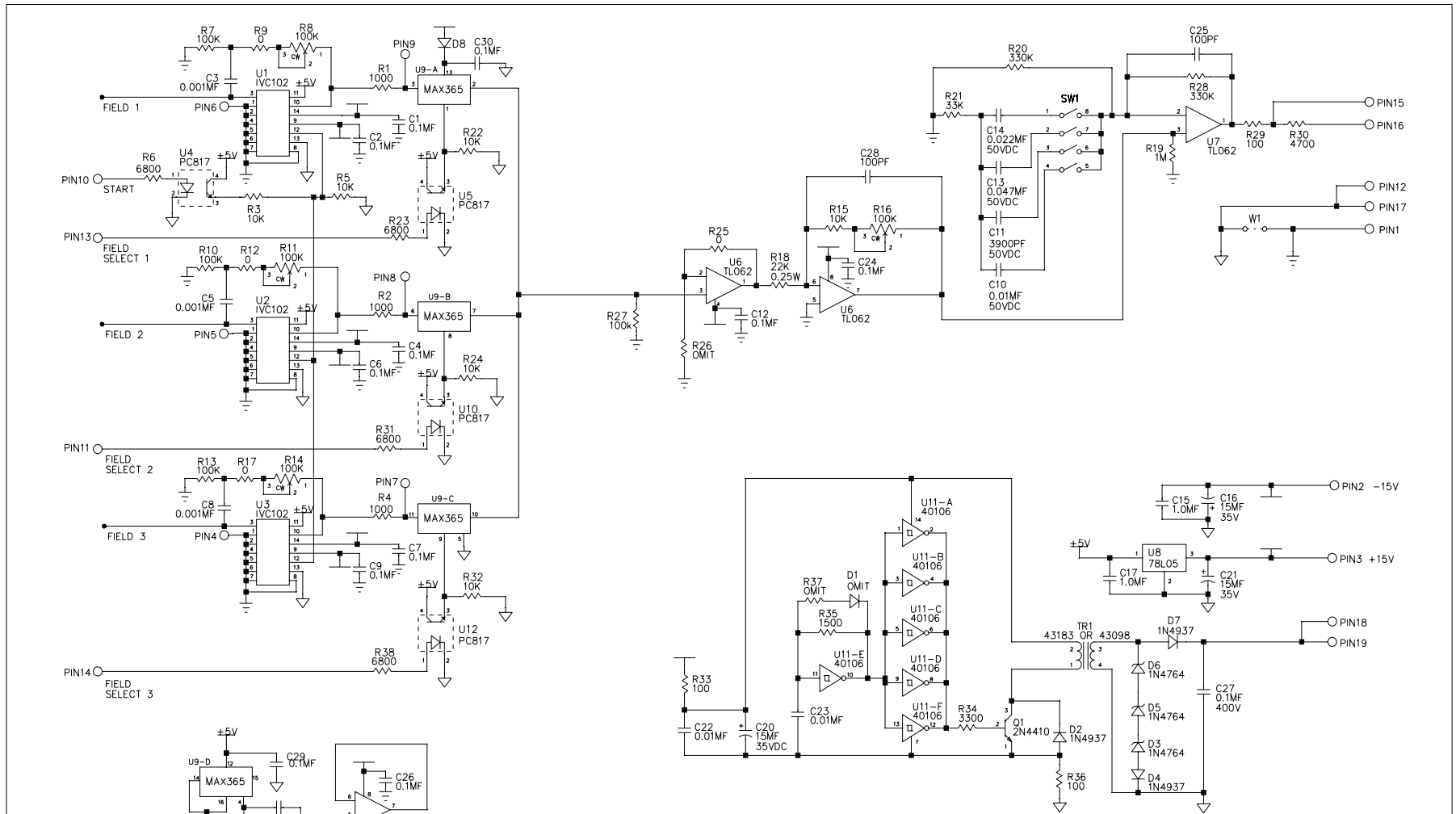
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Acceptable Power Supply Ranges for 61132L Pre-amp:

Supply Voltage	Measurement Point	Acceptable Range
+15VDC Pos. Input Supply	61132L pin 3	+11.4VDC to +15.8VDC
-15VDC Neg. Input Supply	61132L pin 2	-11.4VDC to -15.8VDC
+5VDC Regulated on Board	61132L C17 (positive lead)	+4.7VDC to +5.3VDC
+75VDC Internal Bias Voltage	61132L PINS 18 & 19	+65VDC to +85.0VDC
+300VDC External Bias Voltage	Terminates at Terminal Strip Pins 10 & 12	Not Used



- NOTES:
- * MANUFACTURER MAY USE ALTERNATE COMPONENTS UNLESS NOTED OTHERWISE.
 - ALL UNMARKED DIODES ARE 1N4148

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					SCALE	NONE	DRAWN BY	SO	DATE	16MAY07	
					MATERIAL	NONE	CHECKED BY				
					FINISH	NONE	APPROVED BY				
00	TA146	16MAY07	SAME AS 61132A-07 EXCEPT FOR: R18=22K	SO	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.						
REV.	ECN NO.	DATE	REVISIONS	BY							
					USED ON	ICX SERIES	NEXT ASSY.	DRAWING NO.	61132L	REV.	00