

ICX937
Three-field Ionization Chamber
Calibration Procedure for Pre-Amplifier board 61154U

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

GEHC P/N	Use AID P/N
2307342	ICX937 alone
2307343	ICX937 and 75066M04
2307344	ICX937 and 75066M24

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 61154U pre-amplifier board used with the model ICX937 three-field ion chamber.

WARNING:

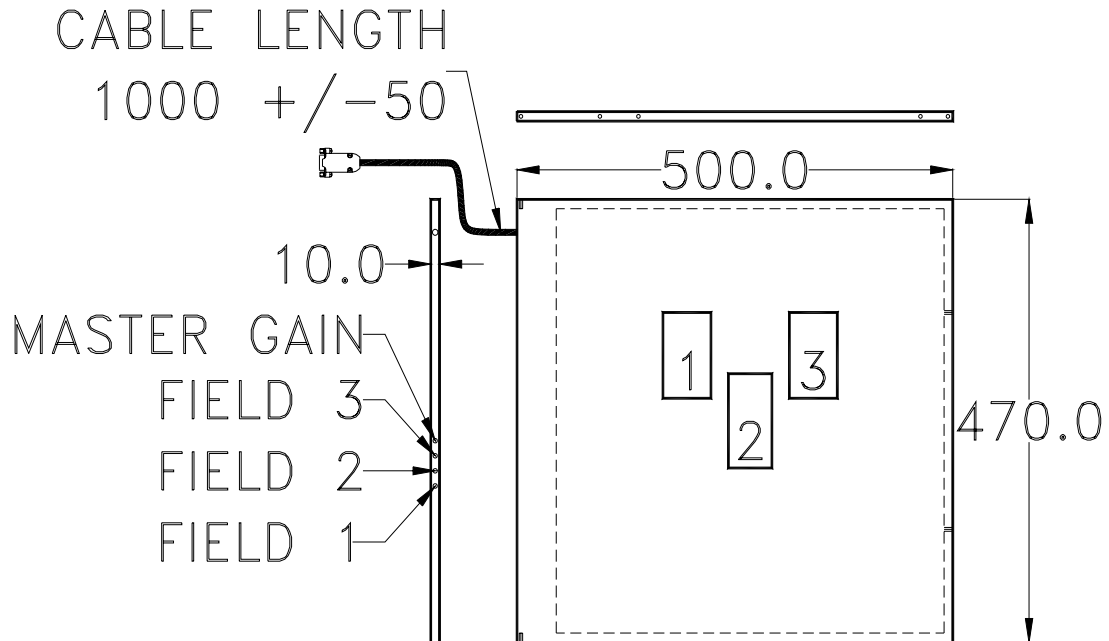
- This service manual is normally supplied in English. Other languages* available on request..
- Do not attempt to service the equipment unless this service manual has been consulted and is understood.
- Failure to heed this warning may result in injury to the service provider, operator or patient from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

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* French, German, Spanish, Japanese



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.

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, 61154U R1, R2 and R3, 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:

MALE 9-PIN SUB-D PIN NUMBER	FUNCTION	61154U PRE-AMP BOARD PAD NUMBER
1	GROUND, 24V RTN	1
2	FIELD 2 SELECT (CENTER)	2
3	FIELD 1 SELECT (LEFT)	3
4	OUTPUT	5
5	START INTEGRATE	4
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.

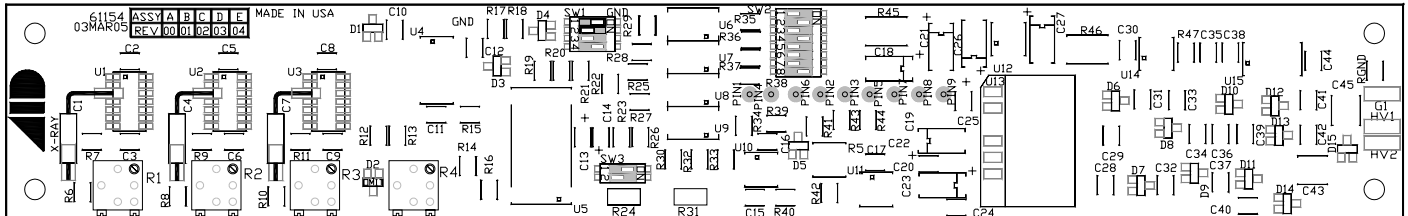
Acceptable Power Supply Ranges for 61154U Pre-amp:

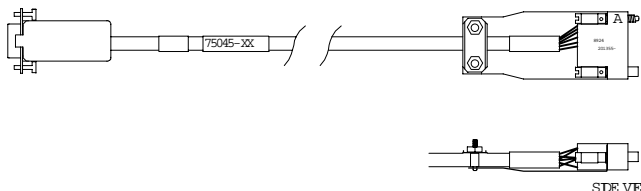
Supply Voltage	Measurement Point	Acceptable Range
External +15VDC	61154U pin 8	+11.4VDC to +15.8VDC
External -15VDC	61154U pin 7	-11.4VDC to -15.8VDC
Internal +12VDC	Measure across 61154U C23	+10.8VDC to +12.5VDC
Internal -12VDC	Measure across 61154U C22	-10.8VDC to -12.5VDC
Internal +5VDC	61154U C17 (positive lead)	+4.7VDC to +5.3VDC
Internal +75VDC	61154U HV1	+65VDC to +85.0VDC

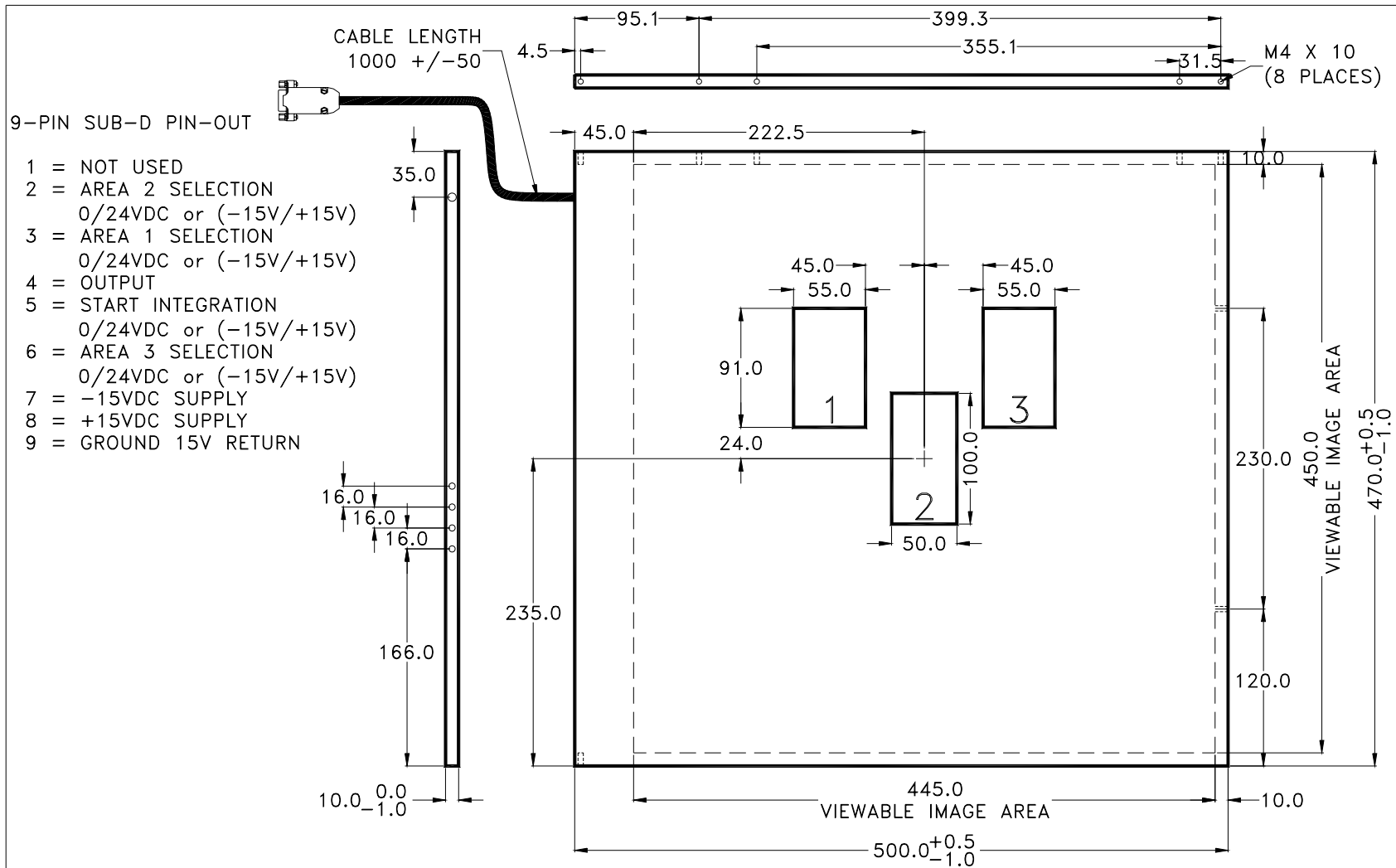
All readings are referenced to ground at 61154U pin 9 or 9-pin sub-D connector pin 9.


Pre-amplifier Switch Settings:

Function	Switch Setting
Default: Power Supply Isolation	SW1-1 ON
Enable: Alternate Field Selection	SW1-2 OFF
High-Active Commands: Start Integrate & Field Selects	SW1-3 ON SW1-4 OFF
Field Configuration: A=1, B=2, C=3	SW2-1,5 & 8 ON SW2-2,3,4, 6 & 7 OFF
Positive Output	SW3-1 ON SW3-2 OFF



75066M04 (4-METER CABLE) 75066M24 (24-METER CABLE)			
ION CHAMBER CONNECTOR	GE COMPATIBLE (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	NONE	N/C
2	BROWN	FIELD 2 SELECT	K
3	RED	FIELD 1 SELECT	J
4	ORANGE	RESET (START INTEGRATION)	H
5	YELLOW	OUTPUT	D
6	GREEN	FIELD 3 SELECT	F
7	BLUE	-15VDC	C
8	VIOLET	+15VDC	A
9	WHITE	GROUND (15V RETURN)	B
PIN-9 AND CONNECTOR BACKSHELL	CLEAR	SHIELD	N/C



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				UNLESS SPECIFIED OTHERWISE; DIMENSIONS ARE IN MILLIMETERS. DECIMALS ANGLES ±0.3 ±1°						
REV.	ECN NO.	DATE	REVISIONS	BY	SCALE	DRAWN BY	CHECKED BY	DATE		
--	2499	05DEC07	ADDED 4TH POT ACCESS HOLE	BRP	NONE	BRP		24MAR00		
--	2176	05APR04	9-PIN SUB-D W/SHIELDED BACKSHELL	BRP						
--	1872	20MAR00	NEW MODEL	BRP						
					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.		USED ON	NEXT ASSY.	DRAWING NO.	REV.
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