Calibration Request for Electrometer in terms of DC current

1. General Information

Customer *Name and full address*		
Contact person *Name, telephone, and e-mail*	Name:	
	Tel:	E-mail:

☐ **I would like to receive a quote.** ?

2. Official Authorization

Name:..... Date:..... Signature:.....

Please fill in the entries and submit the form using the submit button or e-mail the file to service-emea@iba-group.com (subject: Calibration Request). Thank you for your request!

Comments:

☐ The calibration certificate shall contain a recommendation on the calibration interval.

Note: According to DIN EN ISO/IEC 17025:2018 Chapter 7.8.4.3 a calibration certificate or calibration label shall not contain any recommendation on the calibration interval, except where this has been agreed with the customer. DIN EN ISO/IEC 17025:2018 is a German adoption of ISO/IEC 17025:2017.

Reset Sections 1 & 2

3. Description of the Item to be Calibrated

Dosemeter (electrometer, maximum 1): DOSE-X **No. of Channels:** 1

Serial №	

If your electrometer's manufacturer is other than IBA Dosimetry (or Scanditronics-Wellhöfer), please consider that we are not authorized to perform any repair or internal adjustment of the device.

If you are sending more than one electrometer, please submit a separate request for each electrometer.

Reset Section

Please select the calibration type and enter the necessary information.

--Select a Calibration Type-- | Reset Selection

SSDL Calibration – IBA electrometers only	
Dose 1	2 calibraiton points (± 1nA)
Dose[2]	4 calibration points per channel (± 100 pA and ± 1nA)
DOSE-X	6 calibration points (± 100 pA, ± 1 nA and ± 1µA)

SSDL Calibration of Electrometer in terms of DC Current or Charge	
No. 1	Dual channel electrometer, 2 calibration points per channel at ± 1 nA
No. 2	Single channel electrometer, 4 calibration points at ± 100 pA and ± 1 nA
No. 3	Single channel electrometer, 6 calibration points at ± 10 pA, ± 100 pA and ± 1nA

Custom Calibration ?

No. of Points	***Electrometer Range*** *E.g., "High", "Medium", or "0 - 10nA"*	***Calibration Points*** *Select points from the scope of ± 1 pA to ± 20 µA*
1		±
2		±
3		±
4		±
5		±
6		±
7		±
8		±

Calibration with Linearity Check ?

Requested calibration extent	Lowest value: ±	Highest value§: ±

	Calibration Points
Linearity check calibration 1 *	at 100 % of the decade[1]
Linearity check calibration 2 **	at 50 % and 100 % of the decade[1]
Linearity check calibration 3 ***	at 20 %, 50 % and 100 % of the decade[1]
Linearity check calibration IEC	Please refer to IEC 60731 chapter 6.2.3

§ The calibrated extent will cover four decades starting from the given lowest value. The entire extent needs to be within the range of 1 pA up to 10 µA.

Example: For a single channel dosemeter, if the requested extent is ±1 pA to ±10 nA, 2×4 decades will be calibrated: 8(*), 16(**), or 24(***) calibration points.

[1] "Decade" to be understood as a factor of 10 difference between two numbers (an order of magnitude difference) on a logarithmic scale

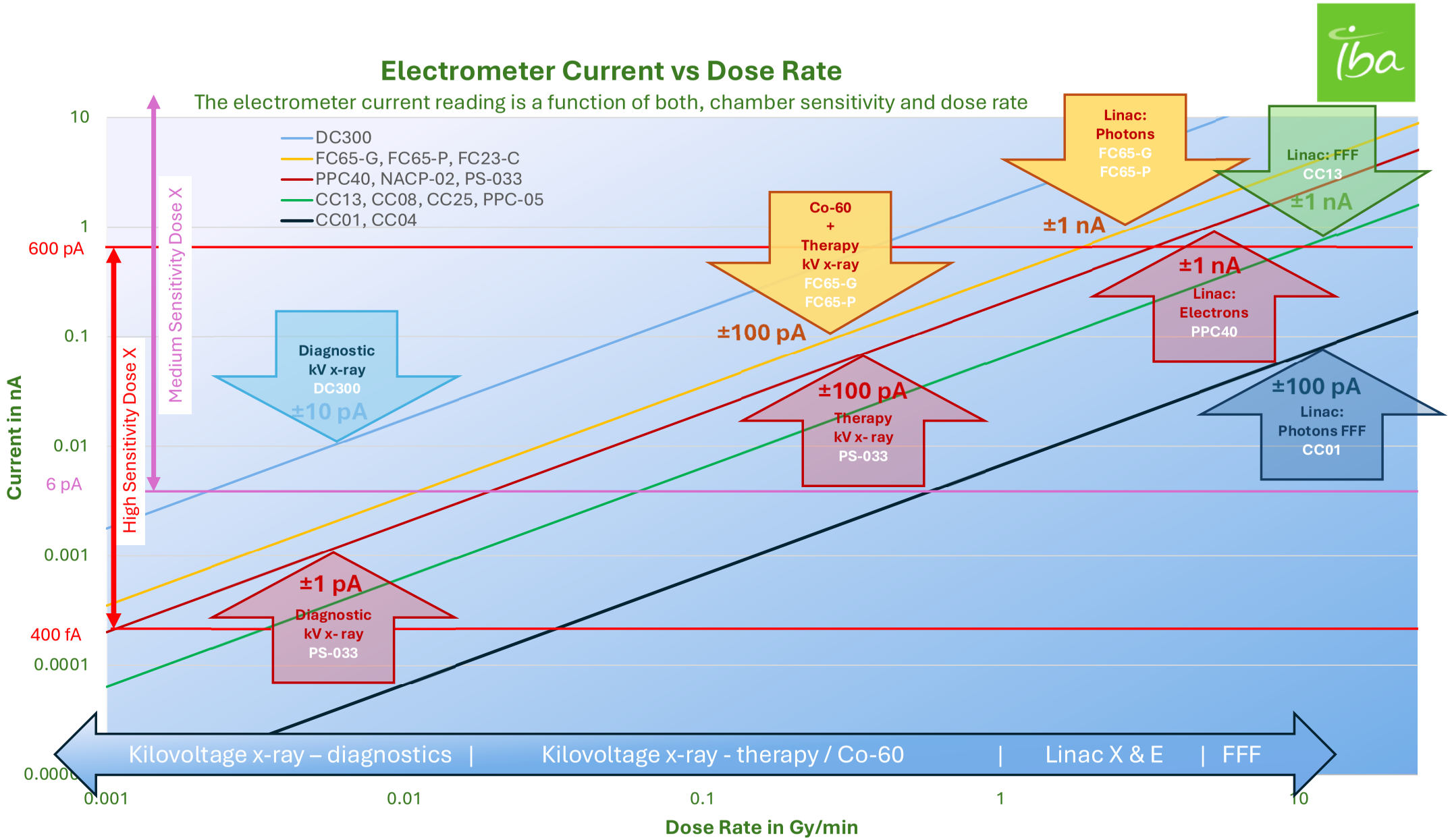
Submit per E-Mail | **Reset Section**

For Internal Use Only (Art. Nr.)	

Electrometer Calibration Guide

Recommended electrometer calibration points with respect to beam type and chamber used
For given beam types, points of typically used absolute dosimetry chambers are highlighted .

Chamber Type	Chamber sensitivity	Beam Type and Typical Dose Rate					
	nC/Gy	Diagnostic KV x-ray 4 mGy/min	Therapy KV x-ray 1 Gy/min	Co-60 1 Gy/min	Linac: Electrons 6 Gy/min	Linac: Photons 6 Gy/min	Linac: FFF 20 Gy/min
CC01	0.4			±10 pA	±10 pA	±10 pA	±100 pA
CC04	1.0			±10 pA	±100 pA	±100 pA	**±100 pA**
CC08	1.9			±10 pA	±100 pA	±100 pA	**±1 nA**
CC13	3.6			±100 pA	±100 pA	±100 pA	**±1 nA**
CC25	7.5			±100 pA	±1 nA	±1 nA	**±1 nA**
FC23-C	7.2		±100 pA	**±100 pA**	±1 nA	**±1 nA**	**±1 nA**
FC65-G	21		**±100 pA**	**±100 pA**	±1 nA	**±1 nA**	±1 nA
FC65-P	21		**±100 pA**	**±100 pA**	±1 nA	**±1 nA**	±1 nA
PPC05	1.7			±10 pA	**±100 pA**	±100 pA	
PPC40	11		±100 pA	±100 pA	**±1 nA**	±1 nA	
NACP-02	6.0		±100 pA	±100 pA	**±1 nA**	±1 nA	
PS-033	16	**±1 pA**	**±100 pA**	±100 pA	**±1 nA**	±1 nA	
DC300	110	**±10 pA**	±1 nA	±1 nA			


Electrometer Current vs Dose Rate
The electrometer current reading is a function of both, chamber sensitivity and dose rate
DC300
FC65-G, FC65-P, FC23-C
PPC40, NACP-02, PS-033
CC13, CC08, CC25, PPC-05
CC01, CC04
Medium Sensitivity Dose X
High Sensitivity Dose X
Current in nA
10
1
600 pA
0.1
0.01
6 pA
0.001
400 fA
0.0001
0.0000
Diagnostic kV x-ray DC300 ±10 pA
±1 pA Diagnostic kV x- ray PS-033
Co-60 + Therapy kV x-ray FC65-G FC65-P ±100 pA
±100 pA Therapy kV x- ray PS-033
Linac: Photons FC65-G FC65-P ±1 nA
±1 nA Linac: Electrons PPC40
Linac: FFF CC13 ±1 nA
±100 pA Linac: Photons FFF CC01
Kilovoltage x-ray – diagnostics | Kilovoltage x-ray - therapy / Co-60 | Linac X & E | FFF
0.001
0.01
0.1
1
10
Dose Rate in Gy/min