

IEC 61557 operating uncertainty table for ESA712 and ESA715

	Intrinsic uncertainty	E ₁	E ₂	E ₃	E ₉	E ₁₁	Operating uncertainty	Fiducial value	Percentage operating uncertainty
Mains voltage [V]	0.10	0	0.96	0.72	N/A ¹	0.88	1.7	264	0.65 %
Equipment current [A]	0.03	0	0.02	0.13	N/A ¹	0.04	0.16	10	1.6 %
Protective earth resistance [mΩ]	5.9	0	4.2	11.4	N/A ¹	N/A ²	15.2	20000	0.08 %
Point to point resistance [mΩ]	4.0	0	5.7	3.3	N/A ¹	N/A ²	8.6	20000	0.04 %
Insulation resistance 500 V (0–10 MΩ) [MΩ]	0.1	0	0.1	0.1	N/A ¹	0.2	0.3	10	2.7 %
Insulation resistance 500 V (10–100 MΩ) [MΩ]	1.8	0	3.0	2.3	N/A ¹	0.4	4.7	100	4.7 %
Insulation resistance 250 V (0–10 MΩ) [MΩ]	0.1	0	0.1	0.1	N/A ¹	0.0	0.2	10	1.9 %
Insulation resistance 500 V (10–100 MΩ) [MΩ]	0.5	0	2.0	0.7	N/A ¹	0.5	2.5	100	2.5 %
Earth leakage current [μA]	11.9	0	14.2	7.6	21.0	14.6	36.8	20000	0.18 %
Patient leakage current [μA]	14.3	0	15.4	8.3	21.0	14.6	38.5	20000	0.19 %
Touch current [μA]	13.3	0	15.2	8.8	21.0	13.8	37.8	20000	0.19 %
Direct equipment leakage [μA]	5.0	0	35.8	13.1	26.5	5.2	54.1	20000	0.27 %
Alternative equipment leakage [μA]	7.4	0	6.4	7.3	21.0	7.4	29.0	20000	0.14 %
Mains on applied part leakage (IEC 60601) [μA]	3.2	0	3.6	4.1	21.0	3.1	25.5	20000	0.13 %
Direct applied part leakage [μA]	4.2	0	3.8	3.6	21.0	3.7	25.6	20000	0.13 %
Alternative applied part leakage [μA]	5.3	0	3.8	5.9	21.0	4.9	26.7	20000	0.13 %
Point to point leakage [μA]	13.7	0	15.1	8.4	18.2	13.9	35.9	20000	0.18 %
Point to point voltage [V]	0.05	0	0.23	0.20	N/A ¹	0.22	0.44	300	0.15 %

Intrinsic uncertainty and all variations (E₁–E₁₁) in this table are determined as sum of mean deviation (from reference value) and the k=2 standard deviation (of the measurand). The measuring range was sampled according to IEC 61557-16:2023, and the largest variation for each measurand and variation is reported in this table as required.

From the **intrinsic uncertainty** and all variations (E₁–E₁₁), the **operating uncertainty** is calculated as defined in IEC 61557-16:2023 and other relevant subversions of the IEC 61557 series.

¹ Not required by IEC 61557-16:2023.

² Not required for protective earth resistance according to IEC 61557-4:2019.