

## IEC 61557 operating uncertainty table for ESA712 and ESA715

|  | Intrinsic uncertainty | E <sub>1</sub> | E <sub>2</sub> | E <sub>3</sub> | E <sub>9</sub>   | E <sub>11</sub>  | Operating uncertainty | Fiducial value | Percentage operating uncertainty |
|--|-----------------------|----------------|----------------|----------------|------------------|------------------|-----------------------|----------------|----------------------------------|
| Mains voltage [V]                              | 0.10                  | 0              | 0.96           | 0.72           | N/A <sup>1</sup> | 0.88             | 1.7                   | 264            | 0.65 %                           |
| Equipment current [A]                          | 0.03                  | 0              | 0.02           | 0.13           | N/A <sup>1</sup> | 0.04             | 0.16                  | 10             | 1.6 %                            |
| Protective earth resistance [mΩ]               | 5.9                   | 0              | 4.2            | 11.4           | N/A <sup>1</sup> | N/A <sup>2</sup> | 15.2                  | 20000          | 0.08 %                           |
| Point to point resistance [mΩ]                 | 4.0                   | 0              | 5.7            | 3.3            | N/A <sup>1</sup> | N/A <sup>2</sup> | 8.6                   | 20000          | 0.04 %                           |
| Insulation resistance 500 V (0-10 MΩ) [MΩ]     | 0.1                   | 0              | 0.1            | 0.1            | N/A <sup>1</sup> | 0.2              | 0.3                   | 10             | 2.7 %                            |
| Insulation resistance 500 V (10-100 MΩ) [MΩ]   | 1.8                   | 0              | 3.0            | 2.3            | N/A <sup>1</sup> | 0.4              | 4.7                   | 100            | 4.7 %                            |
| Insulation resistance 250 V (0-10 MΩ) [MΩ]     | 0.1                   | 0              | 0.1            | 0.1            | N/A <sup>1</sup> | 0.0              | 0.2                   | 10             | 1.9 %                            |
| Insulation resistance 500 V (10-100 MΩ) [MΩ]   | 0.5                   | 0              | 2.0            | 0.7            | N/A <sup>1</sup> | 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 <sup>1</sup> | 0.22             | 0.44                  | 300            | 0.15 %                           |

**Intrinsic uncertainty** and all variations (E<sub>1</sub>-E<sub>11</sub>) 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 (E<sub>1</sub>-E<sub>11</sub>), the **operating uncertainty** is calculated as defined in IEC 61557-16:2023 and other relevant subversions of the IEC 61557 series.

<sup>1</sup> Not required by IEC 61557-16:2023.

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