

## AMZC-306

Ohmmeters and loop impedance meters



Loop impedance with 0.01  $\Omega$  resolution, without tripping RCDs

## AMZC-306

Short-circuit loop impedance meter

amperis

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Short-circuit loop impedance with 0.01  $\Omega$  resolution and calculated fault current in networks up to 750 V.

## Product overview



Front panel with function selector and display

### The whole loop, in detail

The AMZC-306 measures the short-circuit loop impedance  $Z_{L-PE}$ ,  $Z_{L-N}$  and  $Z_{L-L}$  with 0.01  $\Omega$  resolution over 0.13 to 1999  $\Omega$  per IEC 61557, in installations from 110/190 V to 400/690 V (100 to 750 V range). It separates the resistive and reactive components, calculates the prospective short-circuit current for the nominal voltage and measures with high current up to 30 A.

### No nuisance tripping

The  $Z_{L-PE}$  RCD mode measures the loop without tripping residual-current devices rated above 30 mA in the 100-440 V range. The meter checks the correct connection of the PE terminal with a contact electrode, keeps measuring when L and N are swapped and warns of overvoltage, and it measures voltage up to 750 V with 0.1 V resolution below 250 V.

### Main features

- Loop impedance resolution of 0.01  $\Omega$  from 0.13 to 1999  $\Omega$ .
- RCD mode without tripping devices rated above 30 mA.
- Resistive and reactive components and calculated fault current.
- PE terminal check by contact electrode; works with L and N swapped.
- Memory of 990 cells (3500 entries) with USB connection to a PC.
- More than 5000 measurements on one set of alkaline batteries.



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# Applications and delivery

## Applications

- Verification of protection against electric shock in LV networks.
- Fault-loop measurements in industrial installations up to 690 V.
- Circuits protected by residual-current devices.
- Periodic inspections with documented results.

## Ready to work

Rated CAT IV 600 V (CAT III 1000 V) with double insulation and IP54 protection, the AMZC-306 switches off automatically after 300 seconds and is supplied with the UNI-SCHUKO adapter, 1.2 m test leads, probes, crocodile clips, carrying case, harness, USB cable, NiMH battery pack and calibration certificate; 5, 10 and 20 m leads and three-phase socket adapters are optional.



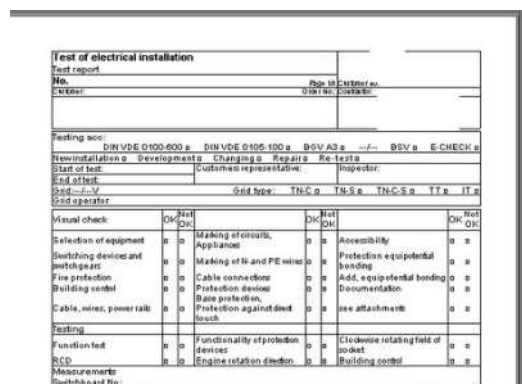
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The stored measurements are transferred to the PC, reviewed and turned into verification reports.

## Software & applications



|                                                                |                       |    |    |
|----------------------------------------------------------------|-----------------------|----|----|
| Test of electrical installation                                |                       |    |    |
| Test report                                                    |                       |    |    |
| No.                                                            | File No. / Client No. |    |    |
| Client                                                         | Date                  |    |    |
| Testing site:                                                  |                       |    |    |
| DIN VDE 0100-600 s DIN VDE 0105-100 s BGV A3 s BGV s E-CHECK s |                       |    |    |
| New installations Developments Changes Repairs Re-tests        |                       |    |    |
| Start of test: Customer representative Inspector:              |                       |    |    |
| End of test:                                                   |                       |    |    |
| Grid type: TN-C s TN-S s TN-C-S s TT s IT s                    |                       |    |    |
| Grid voltage: Grid frequency:                                  |                       |    |    |
| Visual check                                                   |                       |    |    |
| Selection of equipment                                         | OK                    | OK | OK |
| Switching devices and switchgear                               | OK                    | OK | OK |
| Fire protection                                                | OK                    | OK | OK |
| Building control                                               | OK                    | OK | OK |
| Cable, wires, power rails                                      | OK                    | OK | OK |
| Testing                                                        |                       |    |    |
| Function test                                                  | OK                    | OK | OK |
| RCD                                                            | OK                    | OK | OK |
| Measurements                                                   | OK                    | OK | OK |
| Distribution No.                                               |                       |    |    |

Preview of a verification report of the installation, ready to print or export

### From the memory to the PC

The free PC reading software downloads through the USB cable the results stored in the 990 memory cells of the AMZC-306 — up to 3500 entries — and shows them on screen ready to review. Every measurement keeps its description of client, site and measuring point, so complete installations are checked circuit by circuit without transcription errors. The software runs on any Windows computer.

### Reports and export

Results are printed directly or exported to popular formats for spreadsheets and databases. The measured loop impedances and prospective short-circuit currents are gathered into clear tables that support the verification protocol of the installation, and the stored data builds a history of each circuit that reveals its evolution between inspections.

### What the software provides

- Free reading software for Windows.
- Complete transfer of the memory through the USB port.
- Direct printing and export to popular formats.
- Data organised by client, site and measuring point.

## AMZC-306 – TECHNICAL SPECIFICATIONS

|                          |                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------|
| Loop impedance           | $Z_{L-PE}$ , $Z_{L-N}$ , $Z_{L-L}$ ; resolution 0.01 $\Omega$                                                   |
| Measuring range          | 0.13...1999 $\Omega$ (1.2 m leads); 0.25...1999 $\Omega$ (UNI-SCHUKO), IEC 61557                                |
| Accuracy                 | $\pm(5\% \text{ m.v.} + 3 \text{ digits})$ to 19.99 $\Omega$ ; $\pm(4\% \text{ m.v.} + 3 \text{ digits})$ above |
| RCD mode                 | No tripping of RCDs >30 mA; 0.43...1999 $\Omega$ ; 100-440 V                                                    |
| Networks                 | 110/190 V to 400/690 V; range 100...750 V; 45-65 Hz                                                             |
| Short-circuit current    | Calculated for the nominal voltage; R and X components                                                          |
| High-current measurement | Up to 30 A                                                                                                      |
| Voltage measurement      | 0...750 V; 0.1 V resolution up to 250 V                                                                         |
| Memory and interface     | 990 cells (3500 entries); USB                                                                                   |
| Power supply             | 4 $\times$ LR14 alkaline or NiMH batteries; >5000 measurements                                                  |
| Auto-off                 | After 300 seconds                                                                                               |
| Safety                   | CAT IV 600 V (CAT III 1000 V); double insulation                                                                |
| Protection class         | IP54, per EN 60529                                                                                              |
| Operating conditions     | 0...+45 $^{\circ}\text{C}$ ; humidity 20-80 %                                                                   |
| Dimensions and weight    | 288 $\times$ 223 $\times$ 75 mm; 2 kg                                                                           |
| Standards                | IEC 61010-1, IEC 61557, EN 60529                                                                                |



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## AMZC-306 – MEASUREMENT DATA

### Voltage measurement

| Display range | Resolution | Accuracy              |
|---------------|------------|-----------------------|
| 0.0...249.9 V | 0.1 V      | ±(2% m.v. + 4 digits) |
| 250...750 V   | 1 V        | ±(2% m.v. + 2 digits) |

Frequency range: 45...65 Hz.

### Fault loop impedance $Z_{L-PE}$ , $Z_{L-N}$ , $Z_{L-L}$

Measuring range acc. to IEC 61557, from 0.13  $\Omega$  (1.2 m leads) / 0.17  $\Omega$  (5 m) / 0.21  $\Omega$  (10 m) / 0.29  $\Omega$  (20 m) / 0.19  $\Omega$  (UNI-Schuko adapter) up to 1999  $\Omega$ .

| Display range         | Resolution    | Accuracy              |
|-----------------------|---------------|-----------------------|
| 0...19.99 $\Omega$    | 0.01 $\Omega$ | ±(5% m.v. + 3 digits) |
| 20.0...199.9 $\Omega$ | 0.1 $\Omega$  | ±(4% m.v. + 3 digits) |
| 200...1999 $\Omega$   | 1 $\Omega$    | ±(4% m.v. + 3 digits) |

Rated voltages  $U_n$ : 110/190, 115/200, 127/220, 220/380, 230/400, 240/415, 290/500 and 400/690 V; operating range 100...440 V ( $Z_{L-PE}$ ,  $Z_{L-N}$ ) and 100...750 V ( $Z_{L-L}$ );  $f_n$  50/60 Hz; maximum test current 36.7 A (10 ms) at 690 V.  $R_S$  and  $X_S$  indicated for  $Z_S < 200 \Omega$ : ±(5% + 5 digits) of the  $Z_S$  value.

"m.v." – measured value.

### Fault loop impedance $Z_{L-PE}$ RCD (without tripping RCDs)

Measuring range acc. to IEC 61557, from 0.43  $\Omega$  (1.2 m leads) / 0.47  $\Omega$  (5 m) / 0.51  $\Omega$  (10 m) / 0.59  $\Omega$  (20 m) / 0.49  $\Omega$  (UNI-Schuko adapter) up to 1999  $\Omega$ .

| Display range         | Resolution    | Accuracy               |
|-----------------------|---------------|------------------------|
| 0...19.99 $\Omega$    | 0.01 $\Omega$ | ±(6% m.v. + 10 digits) |
| 20.0...199.9 $\Omega$ | 0.1 $\Omega$  | ±(6% m.v. + 5 digits)  |
| 200...1999 $\Omega$   | 1 $\Omega$    | ±(6% m.v. + 5 digits)  |

Does not trip RCDs with  $I_{\Delta n} \geq 30$  mA. Rated voltages  $U_n$ : 110, 115, 127, 220, 230, 240, 390, 400 V; operating range 100...440 V.  $R_S$  and  $X_S$  for  $Z_S < 200 \Omega$ : ±(6% + 10 digits) of  $Z_S$  up to 19.99  $\Omega$ , ±(6% + 5 digits) above.

### Indication of the prospective short-circuit current $I_k$

| Display range   | Resolution | Accuracy                                |
|-----------------|------------|-----------------------------------------|
| 0.055...1.999 A | 0.001 A    | calculated from the fault-loop accuracy |
| 2.00...19.99 A  | 0.01 A     | calculated from the fault-loop accuracy |
| 20.0...199.9 A  | 0.1 A      | calculated from the fault-loop accuracy |
| 200...1999 A    | 1 A        | calculated from the fault-loop accuracy |
| 2.00...19.99 kA | 0.01 kA    | calculated from the fault-loop accuracy |
| 20.0...69.0 kA  | 0.1 kA     | calculated from the fault-loop accuracy |

Calculated from the unrounded fault-loop impedance  $Z_S$  and the rated voltage (IEC 61557); indication up to 69.0 kA in the standard measurement and up to 40.0 kA in the RCD mode.



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