

### MIC-RSx-SCP

communication  
protocol

### MODBUS

communication  
protocol



**CAT II**

**1000 V**

## Designed for the industry



### Features

- Measurement voltage selected within the range of:
  - » **MIC-RS2 | 50...2500 V**
  - » **MIC-RS3 | 50...5000 V**
- Automatic discharge of the measured object's capacitance upon completion of insulation resistance measurement
- Measurement current **1,4 mA**
- Protection against measurement of live objects

### Additional features

- Capacitance measurement after measurement of  $R_{iso}$
- RS-485 interface
- Data transmission to a controlling device through the MIC-RSx-SCP or Modbus communication protocol
- External power supply
- The instrument meets the requirements laid down by standard EN IEC 61557

It is possible to prepare a version of the meter with the interface and communication protocol requested by the customer.



## Application

The instrument is dedicated for companies and sites, in which continuous or random assessment of the insulation resistance is required as part of production. It is also perfect for automated production systems.

The meter can be installed in the distribution board, at the operator's station (assembly or quality control bench), in the control cabinet or even in the rack enclosure. It can be controlled by switchgear management devices, such as Siemens S7 Simatic controllers. The measurement is performed by means of clamps, used to connect the test leads of the system, in which the instrument is installed.

## Features

The meter is designed for building in/permanent installation. It plays a Secondary/Slave role, meaning that it executes the commands issued by the Main/Master control device and it does not initialise the transmission on its own. It enables measuring the insulation resistance with the test voltage of up to 2500 V (**MIC-RS2**) or 5000 V (**MIC-RS3**).

There are two measurement modes available: **automatic** (continuous) and **manual** (one-time). Under automated testing, the meter can be programmed to measure the capacity or not.

## Response and communication

The meter is operated from the Main/Master control device by means of the **MIC-RSx-SCP serial communication protocol** or **Modbus protocol**. It enables, for example, starting and stopping the measurement of resistance, reading the measurement result or changing the configuration of the instrument.

## Objective: Industry 4.0

The meter is engineered for seamless integration with leading automation and energy management platforms (e.g., systems based on Schneider Electric's EcoStruxure architecture). Utilizing the industry-standard Modbus RTU protocol over an RS-485 bus, it enables:

- **PLC and SCADA integration** – direct connectivity to Programmable Logic Controllers (PLCs) and SCADA visualization systems allows for centralized data acquisition and analysis.
- **Automation and predictive maintenance** – remote measurement control (start/stop, continuous mode) and real-time data retrieval support the transition from preventive to predictive maintenance strategies,
- **Flexibility and scalability** – the implementation of Modbus RTU simplifies the deployment of meters in both new and retrofitted Medium Voltage (MV) switchgear, ensuring continuous monitoring of the insulation status of critical equipment.

This approach ensures not only high technical reliability but also tangible operational benefits and compliance with modern industrial infrastructure management standards.

## Specifications

### Insulation resistance measurement

Measurement range acc. to IEC 61557-2:

**MIC-RS2** |  $R_{ISOmin} = U_{ISOnom} / I_{ISOnom} \dots 2500 \text{ G}\Omega$  ( $I_{ISOnom} = 1,4 \text{ mA}$ )

**MIC-RS3** |  $R_{ISOmin} = U_{ISOnom} / I_{ISOnom} \dots 5000 \text{ G}\Omega$  ( $I_{ISOnom} = 1,4 \text{ mA}$ )

Range	Resolution	Accuracy
0.0...999.9 kΩ	0.1 kΩ	±(3% m.v. + 20 digits)
1.000...9.999 MΩ	0.001 MΩ	
10.00...99.99 MΩ	0.01 MΩ	
100.0...999.9 MΩ	0.1 MΩ	
1.000...9.999 GΩ	0.001 GΩ	
10.00...99.99 GΩ	0.01 GΩ	
100.0...999.9 GΩ	0.1 GΩ	
<b>MIC-RS2</b>   1.000...2.500 TΩ	1 GΩ	±(3% m.v. + 20 digits)
<b>MIC-RS3</b>   1.000...5.000 TΩ	1 GΩ	±(4% m.v. + 50 digits)

### Values of measured resistance depending on measuring voltage

Voltage $U_{ISO}$	Measurement range
0...100 V	50 GΩ
200 V...400 V	100 GΩ
500 V...900 V	250 GΩ
1000 V...2400 V	500 GΩ
2500 V	2500 GΩ
<b>MIC-RS3</b>   5000 V	5000 GΩ

## Other technical data

### Safety and work conditions

Type of insulation according to EN 61010-1 and IEC 61557	double
Measuring category according to EN 61010	II 1000 V
rated operating altitude ≤2000 m	external, isolated
Power supply of the meter	<b>MIC-RS2</b>   24 or 48 V DC (19...50 V DC) / 0.5 A / 12 W <b>MIC-RS3</b>   24 or 48 V DC (19...50 V DC) / 0.8 A / 19 W
Dimensions	241 x 202 x 90 mm
Meter weight	1.5 kg
Storage temperature	-20...+60°C
Operating temperature	-15...+40°C
Humidity	20...90%
Reference temperature	23 ± 2°C
Reference humidity	40%...60%

### Memory and communication

Memory of measurement results	-
Data transmission	RS-485

### Other information

Quality standard for design, construction and manufacturing compliant with	ISO 9001, ISO 14001, ISO 45001
The device meets the requirements of	EN 61010-1, EN IEC 61557, EN IEC 61010-2-030
The product meets EMC requirements (immunity for industrial environment) according to the following standards	EN IEC 61326-1, EN IEC 61326-2-2

„m.v.“ - measured value

## Standard accessories



Test lead 2 m 5 kV  
(banana plug,  
whitewashed) red

WAPRZ002REBW5K



Test lead 2 m 5 kV  
(banana plug,  
whitewashed) black

WAPRZ002BLBW5K



LAN network cable,  
shielded, 5 m

WAPRZRJ45005E



Mains power  
cable 24 V

WAPRZZAS24V



Factory calibra-  
tion certificate

## Optional accessories



Calibration  
certificate  
with accreditation

