



PVM-1020

reSYNC

automatic
synchronization of
STC parameters



PVM-1020
Photovoltaic meter



IRM-1
Solar radiation
and temperature meter

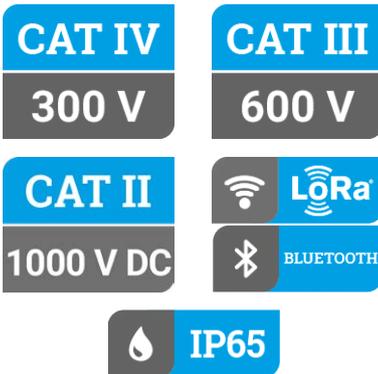


MRU-10
Earth resistance meter

Comprehensive measurements of photovoltaic installations

Capabilities

- **PVM-1020** | It can be used for category 1 measurements according to IEC 62446-1.
- **PVM-1020** | It converts measured parameters into STC conditions according to IEC 60891 by cooperation with the IRM-1 solar radiation and temperature meter.
- **IRM-1** | Measurement of solar radiation and temperature.
- **IRM-1** | The LoRa interface for communication with a master meter – offers a larger range than the Bluetooth technology!
- **MRU-10** | Earthing resistance measurements of photovoltaic installations using the 3-pole method.



PVM-1020

Photovoltaic meter

Features

- It can be used for category 1 measurements according to IEC 62446-1.
- AUTO mode for performing a sequence of measurements after one press of the START button.
- It converts measured parameters into STC conditions according to IEC 60891 by cooperation with the IRM-1 solar radiation and temperature meter.
- reSYNC function – automatic completion of results with environmental parameters and their conversion to STC conditions after restoring connection with IRM-1.
- The built-in LoRa radio interface ensures cooperation with the IRM-1 meter over long distances.
- Built-in Bluetooth module for communication with a computer.
- Large measurement memory: 100 objects with 40 cells each.
- Backlit display and buttons.

Measured parameters

- The open circuit voltage of the PV panel or a chain of panels, up to 1000 V DC.
- RMS voltage of the AC network up to 600 V with frequency measurement.
- Short circuit current of a PV panel or chain of panels – up to 20 A DC.
- Insulation resistance of PV panels – measuring voltage of 250, 500 or 1000 V, simultaneous measurement of two values: R_{ISO+} and R_{ISO-} .
- Insulation resistance of AC circuits – measuring voltage 250, 500 or 1000 V.
- Resistance of protective conductors and equipotential bonding with ± 200 mA current. Low-current resistance measurement, audible and visual signalling.
- Measurement of PV panels operating current and AC current – all with external clamp.
- AC/DC power Measurement.
- Diode test with 200 mA current, automatic polarity detection. Test of blocking diodes with 1000V DC voltage.



IRM-1

Solar radiation and temperature meter

Features

- Measurement of solar radiation and temperature.
- The LoRa interface for communication with a master meter – offers a larger range than the Bluetooth technology!
- Automatic data synchronization with a master meter with reSYNC function.
- Built-in compass and inclination sensor.
- Built-in recorder that can be used to record solar radiation before constructing PV systems, as well as to measure the shading of existing systems.
- Large measurement memory: 999 cache memory cells and 5000 recorder records available (one-time recording) with the option of overwriting them (continuous recording).

Measured parameters

- Solar radiation intensity (irradiance) in W/m^2 or BTU/ft^2h .
- PV panel temperature in $^{\circ}C$ or $^{\circ}F$.
- Ambient temperature in $^{\circ}C$ or $^{\circ}F$.
- Inclination angle of panels
- Orientation of the panels with the built-in compass.



CAT III

300 V



IP67

MRU-10

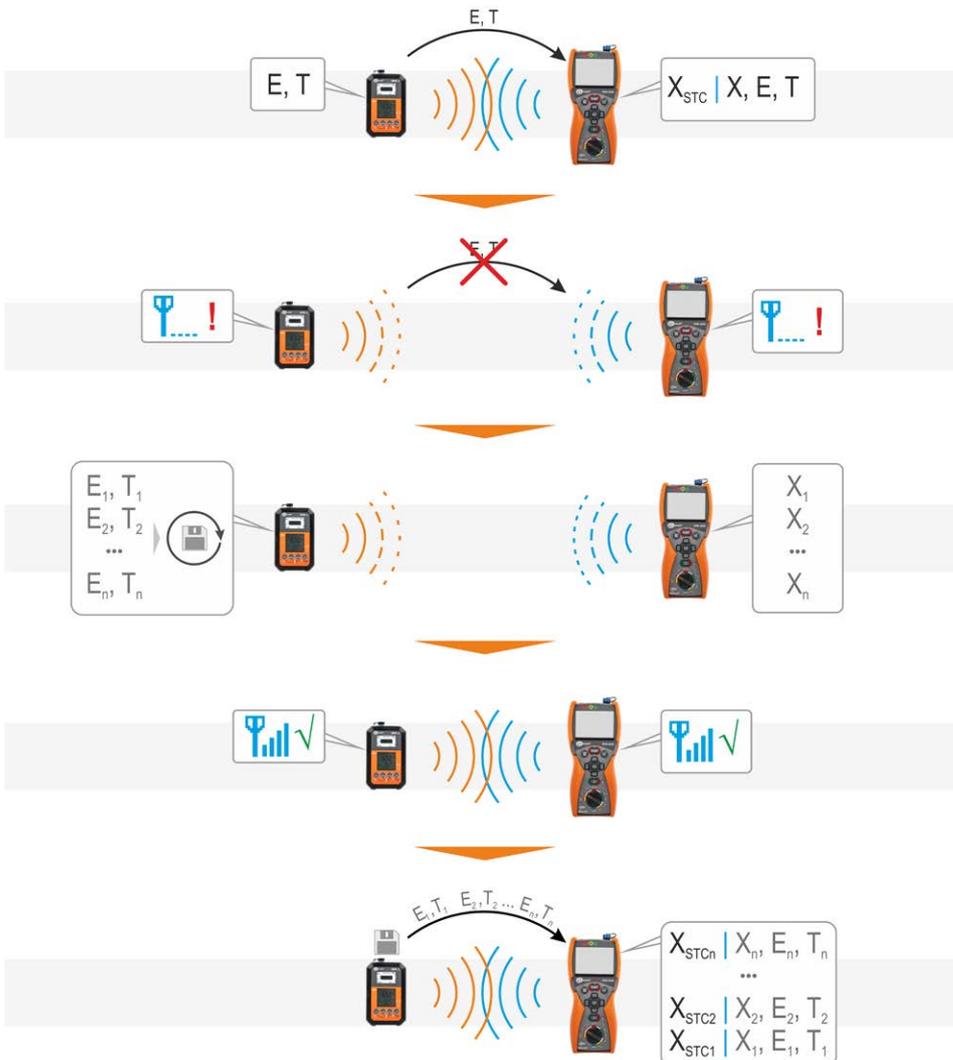
Earth resistance meter

Earthing resistance measurements

- 3-pole method – measurement of earthing systems using auxiliary probes.
- 2-pole method.

Features

- Resistance of auxiliary electrodes R_H and R_S .
- Measurement of interference voltage to 100 V.
- Indication of battery state.
- Selection of maximum measuring voltage (25 V and 50 V).
- Auto-OFF function.



Trouble? reSYNC!

It may happen that in the course of measurements the master meter moves away from the IRM-1 so far, that communication between them is lost. If the measurements are continued, then after the connection is restored, the results will be automatically **supplemented with environmental parameters**, which in the meantime were recorded by the IRM-1 in its **temporary memory**, and converted into STC conditions.



Technical data

Safety and work conditions	PVM-1020	IRM-1	MRU-10
Measuring category according to EN 61010	IV 300 V, III 600 V, II 1000 V DC	-	III 300 V
Ingress protection	IP65	IP65	IP67
Dimensions	228 x 102 x 61 mm	134 x 79 x 28 mm	220 x 102 x 61 mm
Weight	ca. 1.0 kg	ca. 0.2 kg	ca. 0.7 kg
Memory and communication			
Memory of measurement results	4 059 records	user measurement memory: 999 records recorder: 5000 records	-
Data transmission	Bluetooth	USB	-
Communication with IRM-1	LoRa	-	-
Communication with a master meter	-	LoRa	-



Standard accessories



PVM-1020 meter
WMGBPVM1020



IRM-1 meter
WMGBIRM1



MRU-10 meter
WMGBMRU10



**2x crocodile clip
1 kV 20 A black**
WAKROBL20K01



**Crocodile clip
1 kV 20 A red / yellow**
WAKRORE20K02
WAKROYE20K02



**Pin probe 1 kV
(banana socket) red**
WASONREOGB1



**Test lead 2.2 m
(banana plugs)
black**
WAPRZ2X2BLBB



**Test lead 1.2 m
(banana plugs)
black / red / yellow**
WAPRZ1X2BLBB
WAPRZ1X2REBB
WAPRZ1X2YEBB



**Test lead on a reel
15 m / 30 m**
WAPRZ015REBBSZ
WAPRZ030YEBBSZ



C-PV clamp
WACEGCPVOKR



**MC4-banana
sockets adapter
(set of 2 pcs.)**
WAADAMC4



**5 V power supply
with USB 2.0 output
and a detachable
micro-USB cable**
WAZASZ24



**Solar radiation meter
mounting kit for PV
panels + probe for mea-
suring the temperature
of PV panels and the
ambient temperature**
WASONTPVCKPL



**XL-14 hard
carrying case**
WAWALXL14



**8x AA 1.5 V
alkaline battery**

**2x AAA 1.5 V
alkaline battery**



**Factory calibra-
tion certificates:**
PVM-1020
IRM-1
MRU-10

