

METREL test and measurement accessories:



3-Phase Active Switch A 1507

Instruction manual

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Distributor:

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Mark on your equipment certifies that it meets requirements of all subjected EU regulations.

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Table of contents

1	Preface	4
2	Safety and operational considerations.....	5
2.1	Warnings and notes	5
2.2	Standards applied	6
3	Battery and charging.....	7
3.1	New battery cells or cells unused for a longer period	7
4	A 1507 Description	9
4.1	Connection panel	9
4.2	Bottom side	10
4.3	A 1507 set and accessories	12
4.3.1	<i>Standard set.....</i>	<i>12</i>
4.3.2	<i>Optional accessories.....</i>	<i>12</i>
5	A 1507 Operation	13
5.1	Measuring with A1507	13
5.2	Supported instruments	14
5.3	Supported measurements	14
6	Maintenance.....	15
6.1	Cleaning	15
6.2	Service	15
7	Technical specifications	16
7.1	General data.....	16


1 Preface

Congratulations for purchasing and using METREL A 1507 3-Phase Active Switch accessory with METREL test and measuring instruments. The A 1507 simplifies testing of 3-phase installations with single phase installation testers. It is especially applicable to the instruments containing the Auto Sequence™ option.

2 Safety and operational considerations

2.1 Warnings and notes

In order to reach high level of operator's safety while carrying out various tests and measurements using A 1507 as well as to keep the test accessory and equipment undamaged, it is necessary to consider the following general warnings:

- ›  Warning on the A 1507 means »Read the Instruction manual with special care to safety operation«. The symbol requires an action!
- › If the A 1507 is used in a manner not specified in this Instruction manual or the manual of target test equipment, the protection provided by the A 1507 and equipment may be impaired!
- › Read this Instruction manual carefully, otherwise use of the A 1507 may be dangerous for the operator, for test equipment or for the tested object!
- › Do not use the A 1507 if any damage is noticed!
- › Consider all generally known precautions in order to avoid risk of electric shock while dealing with hazardous voltages!
- › Service intervention is allowed to be carried out only by a competent authorized person!
- › All normal safety precautions have to be taken in order to avoid risk of electric shock when working on electrical installations!

2.2 Standards applied

The A 1507 is manufactured and tested according to the following regulations, listed below.

Safety (LVD)

EN 61010-1	Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements
EN 61010-2-030	Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 2-030: Particular requirements for equipment having testing or measuring circuits
EN 61010-031	Safety requirements for electrical equipment for measurement, control and laboratory use – Part 031: Safety requirements for hand-held probe assemblies for electrical measurement and test

Electromagnetic compatibility (EMC)


EN 61326-1	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements
EN 61326-2-2	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-2: Particular requirements – Test configurations, operational conditions and performance criteria for portable test, measuring and monitoring equipment used in low-voltage distribution systems

3 Battery and charging

The instrument uses three AA size alkaline or rechargeable Ni-MH battery cells. Nominal operating time is declared for cells with nominal capacity of 2000 mAh. Battery condition is present by LED indicator when the A 1507 is turned on.

The battery is charged whenever the power supply adapter is connected to the A 1507. Internal circuit controls charging assuring maximum battery lifetime.

The A 1507 automatically recognizes connected power supply adapter and controls charging. Operation of the A 1507 is disabled during charging. Charging is indicated by blinking blue LED.

- ▶  Before opening battery compartment cover disconnect all measuring accessories connected to the A 1507 and power off the instrument.
- ▶ Insert cells correctly, otherwise the A 1507 will not operate and the battery could be discharged.
- ▶ Remove all battery cells from the battery compartment if the A 1507 is not used for longer period.
- ▶ Do not charge alkaline battery cells!
- ▶ Take into account handling, maintenance and recycling requirements that are defined by related regulative and manufacturer of alkaline or rechargeable batteries!
- ▶ Use only power supply adapter delivered from manufacturer or distributor of the test equipment to avoid possible fire or electric shock!

3.1 New battery cells or cells unused for a longer period

Unpredictable chemical processes can occur during charging of new battery cells or cells that were unused for a longer period (more than 3 months). Ni-MH battery cells are affected to capacity degradation (sometimes called as memory effect). As a result, the instrument operation time can be significantly reduced.

Recommended procedure for recovering battery cells:

Procedure	Notes
Completely charge the battery.	At least 14h with in-built charger.
Completely discharge the battery.	Can be performed with normal work with the adapter.
Repeat the charge / discharge cycle for at least two times .	Four cycles are recommended.

Complete discharge / charge cycle can be performed automatically for each cell using external intelligent battery charger.

Notes:

- The charger in the instrument is a pack cell charger. This means that the battery cells are connected in series during the charging. The battery cells have to be equivalent (same charge condition, same type and age).
- One different battery cell can cause an improper charging and incorrect discharging during normal usage of the entire battery pack (it results in heating of the battery pack, significantly decreased operation time, reversed polarity of defective cell ...).
- If no improvement is achieved after several charge / discharge cycles, then each battery cell should be checked (by comparing battery voltages, testing them in a cell charger, etc.). It is very likely that only some of the battery cells are deteriorated.
- The effects described above should not be mixed with normal decrease of battery capacity over time. Battery also loses some capacity when it is repeatedly charged / discharged. Actual decreasing of capacity, versus number of charging cycles, depends on battery type. It is provided in the technical specification from battery manufacturer.

4 A 1507 Description

4.1 Connection panel

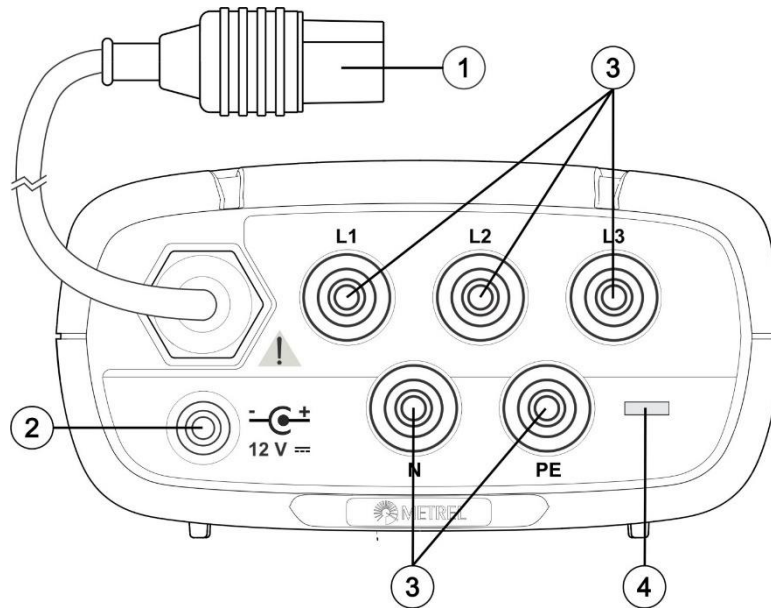


Figure 4.1: Connection panel

Legend:

1 Connection for METREL installation tester.

2 Charger socket



3 Banana safety sockets for connection to tested 3-phase electrical installation.

4 Supply and operational state indicator.

	LED status
Charging	Blue blinking
Battery in good condition	Green
Battery low	Red
Battery voltage too low	Red blinking alternately (Adapter will automatically turn off after 5 s).
Battery fault or absent (Charger connected)	Blue-Red blinking alternately

4.2 Bottom side

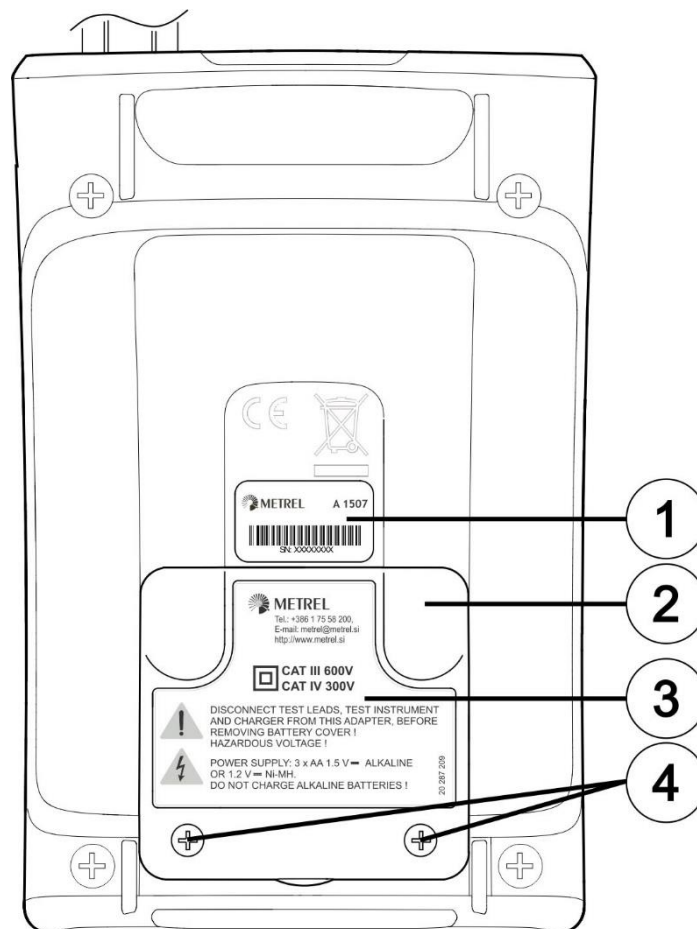


Figure 4.2: Back panel

Legend:

1	Serial number label
2	Battery compartment cover
3	Back panel information label
4	Fixing screws for battery compartment cover

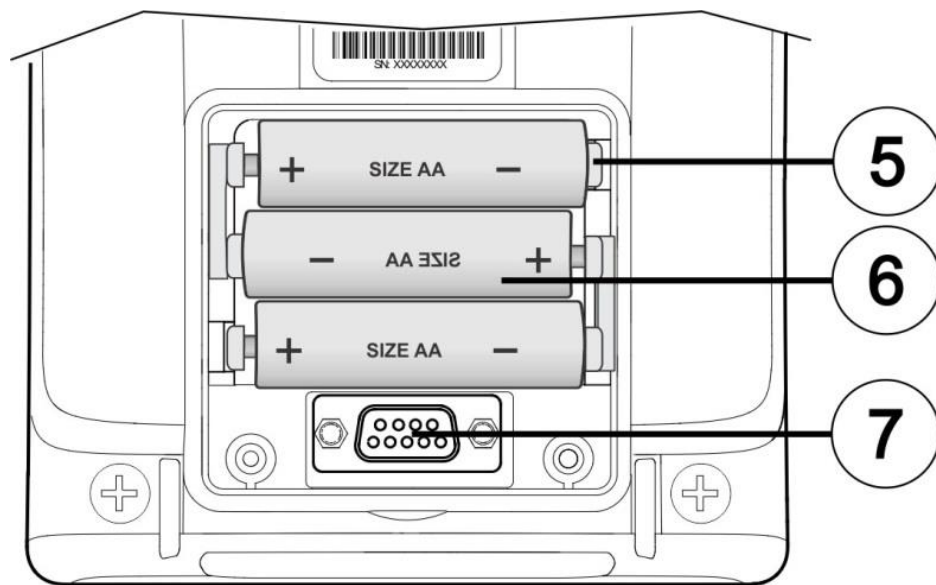


Figure 4.3: Battery compartment

Legend:

- | | |
|----------|---|
| 5 | Battery cells
Size AA, alkaline / rechargeable NiMH. |
| 6 | Battery holder |
| 7 | RS 232 communication port
For A 1507 service purpose only! |

4.3 A 1507 set and accessories

4.3.1 Standard set

- › A 1507 3-Phase Active Switch
- › Test lead 1.5 m, 1.5 mm², 3 pcs, black
- › Test lead 1.5 m, 1.5 mm², 1 pc, blue
- › Test lead 1.5 m, 1.5 mm², 1 pc, green
- › Alligator clips, 3 pcs, black
- › Alligator clip, 1 pc, blue
- › Alligator clip, 1 pc, green
- › Set of Ni-MH battery cells
- › Power supply adapter
- › Soft carrying bag
- › Warranty declaration
- › Declaration of conformity

4.3.2 Optional accessories

See the attached sheet for a list of optional accessories that are available on request from your distributor.




5 A 1507 Operation

5.1 Measuring with A1507



Connecting and pairing with master instrument

- › Connect A 1507 with master instrument via test cable.
- › Enable operation with A 1507 in the master instrument (Set External device parameter to A 1507 in Settings menu).
Pair A 1507 with master instrument via Bluetooth communication.
Refer to **master instrument's Instruction manual** for detailed information.
A 1507 is switched on automatically when it is connected to master instrument via test cable in selected test/measurement and during Bluetooth pairing.
A 1507 is switched off automatically after auto-off period (5 min of non-activity).

Measurement procedure

- › Verify that A 1507 is connected and paired with master instrument as described above.
- › Enter test / measurement function on master instrument.
- › Check Bluetooth communication active sign on master instrument.
- › Set test parameters / limits.
- › A 1507 will automatically set to position according to set parameters.
- › Active communication and correctly set position of A 1507 is displayed on master instrument with  icon.
- › Connect test leads to A 1507.
- › Connect test leads / 3-phase plug to the object under test.
Refer to **master instrument's Instruction manual** for detailed information.
- › Start the measurement or Auto Sequence® using  or  button.
- › Save results (optional).

Notes:

- › If the master instrument can't successfully communicate with A 1507 and set switch to correct position,  icon remains displayed. When measurement is started, warning message "A 1507 is not connected! Proceed with 1-ph test?" is displayed. User must decide to continue with test or abort it.
- › User can switch between 3-phase measurements with A 1507 and single phase measurements without A 1507 by tapping on  button in option menu of selected measurement function. This shortcut is especially helpful if testing on mixed 1-phase and 3-phase installations.

Connection diagram

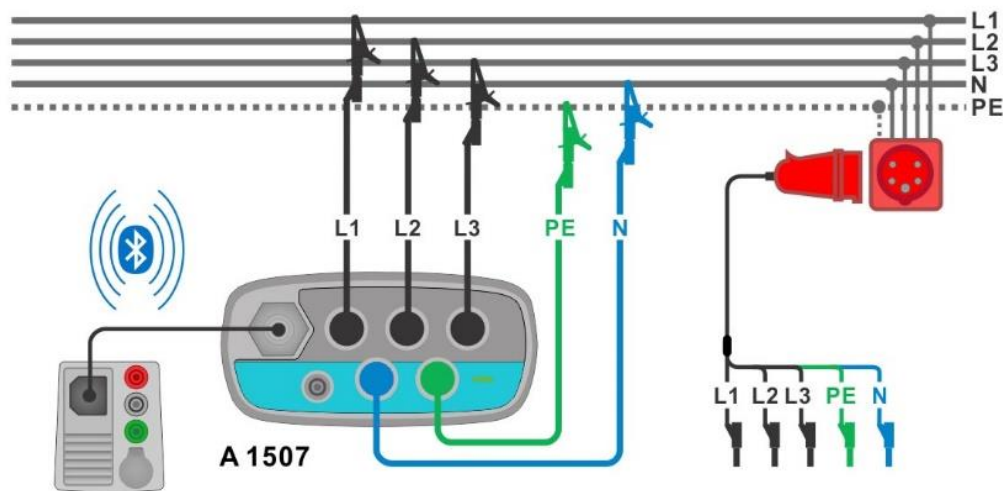


Figure 5.1: Connection principle for the A 1507

5.2 Supported instruments

A 1507 3-Phase Active Switch adapter can be used in combination with the following METREL electrical installation multi-function testers:


- MI 3152 EurotestXC,
- MI 3152H EurotestXC 2,5 kV and
- MI 3155 EurotestXD.

5.3 Supported measurements

In general A 1507 allows to carry out following measurements in 3-phase systems:

- Continuity of protective conductor,
- Resistance N-PE,
- Insulation resistances,
- Resistance to earth,
- Line and Loop impedances,
- Voltage and 3-phase sequence,
- RCD testing.

For exact list of supported measurements refer to the **master instrument's Instruction manual**.

A supported measurement is indicated with the  icon on the instrument.

6 Maintenance

Unauthorized person is not allowed to open the A 1507. There are no user replaceable components inside the adapter.

6.1 Cleaning

No special maintenance is required for the housing. To clean the surface of the adapter use a soft cloth slightly moistened with soapy water or alcohol. Then leave the A 1507 to dry totally before use.

Warnings:

- Do not use liquids based on petrol or hydrocarbons!
- Do not spill cleaning liquid over the adapter!

6.2 Service

For repairs under warranty, or at any other time, please contact your distributor.

7 Technical specifications

7.1 General data

Power supply voltage..... 4.5 V d.c. (3 x 1.5 V battery or accu, size AA)

Operation..... typical 10 h

Charger socket input voltage 12 V d.c. $\pm 5\%$

Charger socket input current 1000 mA max.

Battery charging current 220 mA typ.

Protection classification double insulation

Pollution degree..... 2

Protection degree IP 54

Measurement category 600 V CAT III, 300 V CAT IV

Dimensions (w × h × l) 13 cm × 7 cm × 20 cm

Instrument cable length 0.5 m

Weight 0.6 kg (without batteries)

Reference conditions

Reference temperature range... 10 °C ... 30 °C

Reference relative humidity 40 %RH ... 70 %RH

Operation conditions

Working temperature range 0 °C ... 40 °C

Maximum relative humidity 95 %RH (0 °C ... 40 °C), non-condensing

Storage conditions

Temperature range -10 °C ... +70 °C

Maximum relative humidity 90 %RH (-10 °C ... +40 °C)

80 %RH (40 °C ... 60 °C)