GOSSEN METRAWATT
GMC-INSTRUMENTS GROUP

OPERATING INSTRUCTIONS

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AT3-III E (Z745S) TEST ADAPTER
AT3-III CH (Z744A) TEST ADAPTER

FOR ACTIVE AND PASSIVE TESTING OF SINGLE AND 3-PHASE ELECTRICAL DEVICES AND EXTENSION CORDS IN COMBINATION WITH SECUTEST.../SECULIFE ST TEST INSTRUMENTS (M7050..., M7010... AND M6930...)

TABLE OF CONTENTS

1 SAFETY INSTRUCTIONS

Read and follow these instructions carefully and completely in order to ensure safe and proper use.

The instructions must be made available to all persons who use the device.

Keep for future reference.

General

- The device may only be used by electro-technically trained persons (ETP) and qualified electricians in the commercial field.
- Observe and comply with all safety regulations which are applicable for your work environment.
- Wear suitable and appropriate personal protective equipment (PPE) whenever working with the device.
- The functioning of active medical devices (for example pacemakers, defibrillators) and passive medical devices may be affected by voltages, currents and electromagnetic fields generated by the tester and the health of their users may be impaired. Implement corresponding protective measures in consultation with the manufacturer of the medical device and your physician. If any potential risk cannot be ruled out, do not use the device.

Accessories

- Use only the specified accessories (included in the scope of delivery or listed as options) with the device.
- Carefully and completely read and adhere to the product documentation for optional accessories. Retain these documents for future reference.

Handling

- Use the device in undamaged condition only.
  Inspect the device before use. Pay particular attention to damage, interrupted insulation or kinked cables. Damaged components must be replaced immediately.
- Use the accessories and all cables in undamaged condition only.
  Inspect accessories and all cables before use. Pay particular attention to damage, interrupted insulation or kinked cables.
- If the device or its accessories don't function flawlessly, permanently remove the device/accessories from operation and secure them against inadvertent use.
- If the device or accessories are damaged during use, for example if they're dropped, permanently remove the device/accessories from operation and secure them against inadvertent use.
- If there are any signs of interior damage to the device or accessories (e.g. loose parts in the housing), permanently remove the device/accessories from operation and secure them against inadvertent use.
- The device and the accessories may only be used for the tests/measurements described in the documentation for the device.
- Equipment and accessories from Gossen Metrawatt GmbH are designed to function ideally with products from Gossen Metrawatt GmbH which are specifically intended for this purpose. Unless expressly confirmed otherwise in writing by Gossen Metrawatt GmbH, they are not intended or suitable for use with other products.
- Route cables in an orderly fashion, e.g. the mains power cable and accessory cables. Loose, disorderly cables result in unnecessary danger of tripping and falling.

Operating Conditions

- Do not use the device and its accessories after long periods of storage under unfavorable conditions (e.g. humidity, dust or extreme temperature).
- Do not use the device and its accessories after extraordinary stressing due to transport.
- Do not expose the device to direct sunlight.
- Only use the device and its accessories within the limits of the specified technical data and conditions (ambient conditions, IP protection code, measuring category etc.).
- Do not use the device in potentially explosive atmospheres. Danger of explosion!

- Do not use the device in areas subject to the risk of fire. Danger of fire!
- Implement adequate measures for protection against electrostatic discharge (ESD).

Fuses

- The device may only be used as long as the fuses are in flawless condition. Defective fuses must be replaced.
- Never bridge the fuses. Never disable the fuses.

Measurement Cables and Establishing Contact

- Plugging in the measurement cables must not necessitate any undue force.
- Never touch conductive ends (for example of test probes).
- Fully unroll all measurement cables before starting a test/measurement. Never perform a test/measurement with the measurement cable rolled up.
- Avoid short circuits due to incorrectly connected measurement cables.
- Ensure that alligator clips, test probes or Kelvin probes make good contact.
- As far as possible, do not move or remove plugs, test probes, alligator clips or Kelvin probes until testing/measurement has been completed.

2 APPLICATIONS

Please read this important information!

2.1 INTENDED USE / USE FOR INTENDED PURPOSE

The mobile test adapter AT3-III E (Z745S)/AT3-III CH (Z744A) is used for measuring and testing single and 3-phase electrical devices and extension cords in combination with the test instruments with the following article numbers (basic instrument):

M7010	SECUTEST SIII / SIII+ / SIII+H SECUTEST S2N+ / S2N+10 / N+w
M6930	(SECULIFE ST / ST HV)
M7050	SECUTEST BASE / BASE10 / PRO SECUTEST ST BASE / ST BASE10 / ST PRO / ST PRIME SECULIFE ST BASE / ST BASE25 / ST PRO / ST PRIME

In these operating instructions, the suitable instruments are referred to as test instrument for short.
These tests must be carried out by qualified electricians after repairs or modifications, as well as for periodic testing, in accordance with DIN EN 50678 and DIN EN 50699 using an appropriate test instrument.
According to these regulations, testing must be performed for protective conductor resistance, insulation resistance, protective conductor current and touch current, as well as dielectric strength depending upon the type of device under test and the respective application.

Note

The AT3-III E/AT3-III CH test adapter is equipped with electronic residual current monitoring which disconnects the device under test from the mains in the event of residual currents of greater than 18 mA.

Safety of the user, as well as that of the instrument, is only assured when it's used for its intended purpose.

2.2 USE FOR OTHER THAN INTENDED PURPOSE

Measurements within electrical systems are prohibited!
Use of the instrument for any purposes other than those described in these operating instructions is contrary to use for intended purpose. Use for other than intended purpose may lead to unforeseeable damage!

2.3 REPAIRS AND MODIFICATIONS

Unauthorized modification of the product is prohibited. Only authorized, trained personnel is permitted to perform repairs.

2.4 LIABILITY AND GUARANTEE

The warranty provided by Gossen Metrawatt GmbH, and its liability, are governed by the applicable contractual and mandatory statutory provisions.

3 DOCUMENTATION

3.1 INFORMATION CONCERNING THESE INSTRUCTIONS

Read these instructions carefully and attentively. They contain all necessary information for safe use of the device. Comply with them in order to protect yourself and others from injury, and to avoid damaging the device. The latest version of these instructions is available on our website:

https://www.gmc-instruments.de/en/services/download-center/

Errors and Suggestions for Improvement

These instructions have been prepared with utmost care in order to ensure correctness and completeness. Unfortunately, errors can never be entirely avoided. Continuous improvement is part of our quality goal, so we always appreciate your comments and suggestions.

Gender Equality

For better readability, only the masculine form is used in these instructions in a grammatically impartial sense. The feminine and diverse forms are of course always implied as well.

Trademark Law

Product designations used in this document may be subject to trademark and patent law. They are the property of their respective owners.

Copyright

3.2 IDENTIFICATION OF WARNINGS

Instructions for your safety and for the protection of the device and its environment are provided as warnings and notes at certain points within these instructions.
They're laid out as shown below and are graded in terms of the severity of the respective hazard. They also describe the nature and cause of the hazard, the consequences of non-observance and what must be done to avoid it.

DANGER

Death or serious injury is almost certain.

WARNING

Death or serious injury is possible.

CAUTION

Minor or moderate injury is possible.

ATTENTION

Damage to the product or the environment

Note

Important information

Tip

Useful additional information or application tip

3.3 IDENTIFIERS

The following identifiers are used in this documentation:

Identifier	Meaning
Control element	Keys, buttons, menus and other controls
✓ Prerequisite	A condition etc. which must be fulfilled before a given action can be taken
▶ **Procedure**	Beginning of a procedural instruction
1. Procedural step	Steps of a procedure which must be completed in the specified order
↳ Result	Result of a procedural step
■ Enumeration ■ Enumeration	Bullet lists
Fig. 1: Caption	Description of the content of a figure
Table 1: Table 1	Description of the content of a table
Footnote	Comment

Table 2: Identifiers in this Document

3.4 ICONS IN THE DOCUMENTATION

The following icons are used in this documentation:

Icon	Meaning
	Read and adhere to the product documentation.
	General warning symbol
	Warning regarding electrical voltage

Table 3: Icons used in this document

4 GETTING STARTED

This chapter provides an overview of the initial steps for working with the device.

1. Read and adhere to the product documentation. In particular, observe all safety information in the documentation, on the device and on the packaging.
   - Safety Instructions ➪ 3
   - Applications ➪ 4
   - Documentation ➪ 5
2. Familiarize yourself with the device ➪ 8.
3. Inform yourself about how to connect the device ➪ 13.
4. Execute measurements and tests ➪ 14.

5 THE DEVICE

5.1 SCOPE OF DELIVERY

Please check the scope of delivery for completeness and intactness.

1 Test case AT3-III E (Z745S) or AT3-III E CH(Z744A)

1 Plug adapter per EN 60320-C13 to C6 (non-heating devices, 10 A to 2.5 A IBM plug)

1 Operating Instructions

5.2 INSTRUMENT OVERVIEW

5.2.1 CONNECTIONS AND DISPLAYS

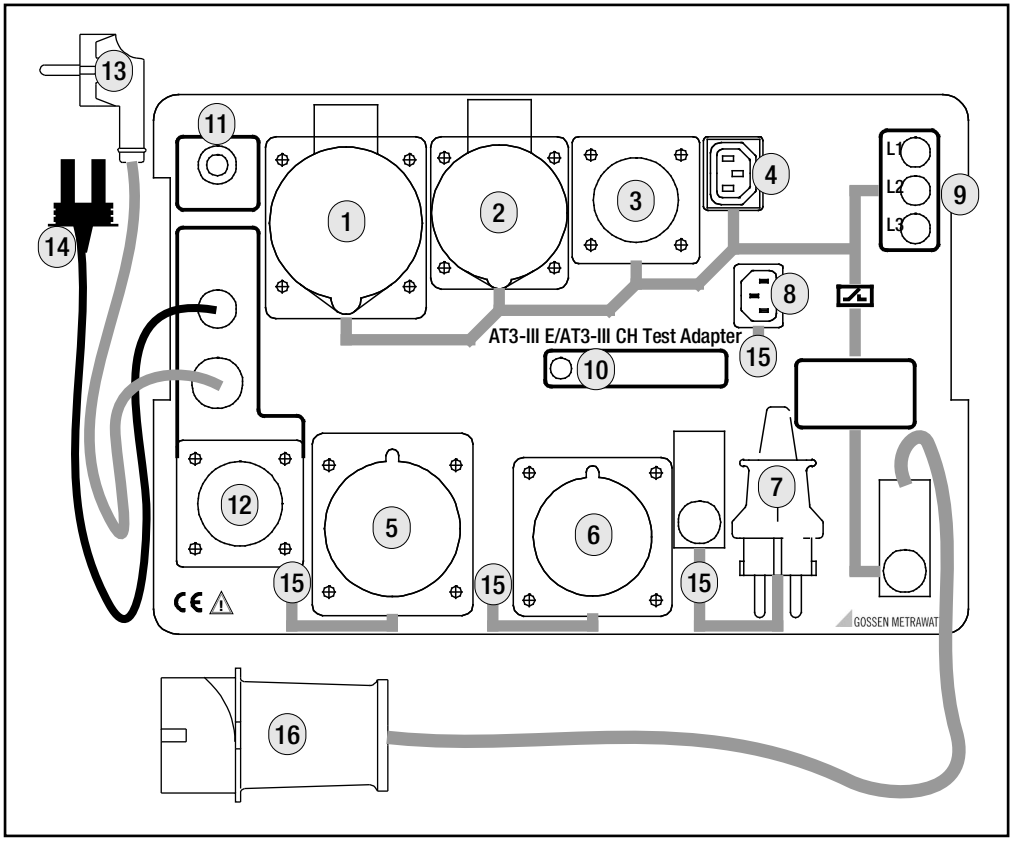


Fig. 2: Connections and Displays

Device Plugs and Sockets

1. CEE outlet
   3P+N+PE, 32 A, 400 V
2. CEE outlet
   3P+N+PE, 16 A, 400 V
3. Earthing contact outlet
   1P+N+PE, 16 A, 250 V
4. Device socket for cable testing
   1P+N+PE, 10 A, 250 V
5. CEE plug for cable testing
   3P+N+PE, 32 A, 400 V
6. CEE plug for cable testing
   3P+N+PE, 16 A, 400 V
7. Earthing contact plug for cable testing
   AT3-III E: 1P+N+PE, 16 A, 250 V
   AT3-III CH: 1P+N+PE, 10 A, 250 V
8. Device plug for cable testing
   1P+N+PE, 10 A, 250 V

Indicator Displays

9. Mains indicators lamps for L1, L2 and L3
10. Function LED

Self-Test

11. Test key, $I_{\Delta n}$ tripping ($I_{\Delta n}$ = residual current)

Connectors for Test Instruments

12. Earthing contact outlet for power supply to the test instrument
13. Earthing contact plug with cable, for plugging into the test socket at test instruments
14. **Connection to SECUTEST SIII / SIII+ / SIII+H; SECUTEST S2N+ / S2N+10 / N+w; SECULIFE ST / ST HV:**
    for plugging into sockets 2 and 3 at the test instrument
    Connection to SECUTEST PRO / ST PRO, SECULIFE ST BASE / ST BASE25 or feature I01:
    for plugging into the V and COM sockets at the test instrument
15. Connector sockets for the test instrument's test probe cable (for testing cables only)

Mains supply for AT3-III E/AT3-III CH

16. Via connector cable with
    CEE plug, 3P+N+PE, 16 A

5.2.2 SYMBOLS ON THE INSTRUMENT AND THE INCLUDED ACCESSORIES

Symbol	Meaning	Symbol	Meaning
	Warning concerning a point of danger (attention, observe documentation!)		The instrument may not be disposed of with household trash ⇨ "Disposal and Environmental Protection" 26.
	European conformity marking		

Table 4: Symbols on the Instrument and the Included Accessories

5.3 INCLUDED FEATURES

The following values are tested by the test adapter in combination with the test instrument:

- Passive testing

- of protective conductor resistance
- of insulation resistance
- of protective conductor current using the equivalent leakage current method / alternative method
- of dielectric strength (HV test up to 1.5 kV)[1)]
- At extension cords:
  - for wire short-circuits,
  - for wire breaks
  - And additionally at 3-phase extension cords:
  - for phase reversal at L1, L2 and L3 in order to substantiate clockwise rotation
- With safety provided by electronic monitoring of residual current including DUT shutdown if residual current exceeds 20 mA, and optical error indication

- Active testing

(16 A nominal current – maximum
20 A current consumption by the device under test, also at the 32 A test socket)

- of protective conductor current [1) 2)]
  - using the residual current method (necessitates voltage measuring sockets on the test instrument [3)])
  - using the direct method (necessitates direct measurement of protective conductor current at the test instrument)
  - of touch current [2)]

Measurement results are displayed at the test instrument.

5.4 RELEVANT STANDARDS

The device has been manufactured and tested in accordance with the following safety regulations:

DIN EN 60529 IEC 60529	Test instruments and test procedures Degrees of protection provided by enclosures (IP code)
DIN EN 61010-1 IEC 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements
DIN EN 61326-1 IEC 61326-1	Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements

Table 5: Relevant Standards

1) Only if the utilized test instrument is capable of performing this measurement
2) Please note that polarity reversal with the help of the utilized test instrument isn't active when the AT3-IIIE adapter is used for testing single-phase DUTs (socket 3 / earthing contact). In this case, all leakage current measurements must be performed manually with the plug in both directions.
3) Not with SECUTEST BASE / BASE10 or without feature I01.

5.5 TECHNICAL DATA

Note

Observe the technical data of the respective test instrument.

Residual Current Measuring Function	Measuring range:	0 … 20 mA
	Transformation ratio:	1 V / 10 mA
	Intrinsic uncertainty:	±(5% rdg. + 0.05 mA)
Nominal Ranges of Use	Mains voltage, L1/L2/L3/N:	207 … 253 V AC
	Frequency:	49 … 51 Hz
	Temperature:	0 °C … +40 °C
	Line voltage waveform:	Sinusoidal
Power Supply	Nominal line voltage:	3~230/400 V/50 Hz/CAT II Connection only permissible with overload protection device, I_n = 16 A $I_2 \leq 1.45\ I_n$
Ambient Conditions	Operating temperature:	-10 ... +40 °C
	Storage temperature:	-25 ... +60 °C
	Relative atmospheric humidity:	Max. 75%, no condensation allowed
	Elevation:	Max. 2000 m
Reference Conditions	Ambient temperature:	+23 °C ±2 K
	Relative atmospheric humidity:	50% ±5%
	Line voltage:	230 V/400 V ±10%
	Measured quantity frequency:	50 Hz ±0.2%
Electrical Safety	Measuring category:	CAT II
	Pollution degree:	2
	Protection category:	I per DIN EN 61140/VDE 0140-1
	4-pole residual current shutdown where	I_{dN} = 14.6 mA, t_a = 82 ms
	Device fuse, 5 × 20	F315 mA L 250 V T32 mA L 250 V DIN EN 60127-2
Electromagnetic Compatibility (EMC)	Interference emission:	EN 61326-1, class B
	Interference immunity:	EN 61326-1

Mechanical Design	Protection:	Case: IP40 per DIN EN 60529 / IEC 60529 (protection against ingress of solid foreign objects: ≥ 1.0 mm diameter, protection against ingress of water: not protected) Connectors: IP20 per DIN EN 60529 / IEC 60529 (protection against ingress of solid foreign objects: ≥ 12.5 mm diameter, protection against ingress of water: not protected)
	Housing (W × H × D):	Approx. 405 × 300 × 220 mm (with cover)
	Weight:	Approx. 6.7 kg

Table 6: Technical Data

6 CONNECTION

6.1 CONNECTING THE AT3-III E/AT3-III CH TO THE MAINS

The following connections must first be established before connecting the test adapter to the mains:

1. Insert the test instrument's mains plug into the earthing contact socket (12) of the AT3-III E/AT3-III CH.
2. Insert the earthing contact plug (13) of the AT3-III E/AT3-III CH into the test instrument's test socket.
3. For measuring protective conductor current:
   Insert the test instrument connector (14) of the AT3-III E/AT3-III CH into sockets 2 and 3 at the SECUTEST SIII / SIII+ / SIII+H; SECUTEST S2N+ / S2N+10 / N+w; SECULIFE ST / ST HV or into the V and COM sockets at the SECUTEST PRO; SECUTEST ST PRO; SECULIFE ST BASE / ST BASE25.
4. In order to test extension cords, insert the test probe at the end of the test instrument's probe cable into the respective socket (15) at the AT3-III E/AT3-III CH.

Connect the test adapter to 230/400 V mains power. The test adapter now performs a self-test. If the test adapter is intact, the red LED lights up briefly.

6.2 CONNECTING A DUT TO THE AT3-III E/AT3-III CH

After the device under test has passed a visual inspection and before connecting it to the appropriate plug or socket at the test adapter, as well as before each new test, the test instrument must be returned to its initial setting depending upon the type of test.

Connect the device under test to the test adapter and switch all of its functions on, making sure that, for example, thermostat contacts are closed etc. Always measure protective conductor resistance first for protection category I devices, because if the protective conductor is defective, insulation resistance, equivalent leakage current / alternative method and protective conductor current cannot be measured, and the high-voltage test cannot be performed.

7 MEASURING/TESTING

Perform testing in accordance with the operating instructions included with the test instrument!

Note

Please observe the following points when using the test instrument in combination with the AT3-III E/AT3-III CH during the automatic test sequence:
With some test sequences, a suitable AT3 adapter must be selected as the connection type.

Observe the following safety precautions:

WARNING

Electric Shock! Risk of Consequential Accidents!

If the red LED (10) remains lit even after the AT3-III E/AT3-III CH has been disconnected from the mains and connected once again, the test adapter is defective. Risk of injury!

- If this is the case, the AT3-III E/AT3-III CH must be removed from service and repaired before it's used again.

- The test adapter's 16 A CEE 3P+N+PE plug (16) may only be connected to 230/400 V 50 Hz mains power. In order to avoid undesired shutdown of defective devices under test, the electrical circuit for the DUT should be separately fused.
- Before connecting the AT3-III E to the mains, the test instrument must first be connected to the AT3-III E.

WARNING

Electric Shock! Risk of Consequential Accidents!

In the case of a faulty protective conductor (interruption / reversed conductors), line voltage may be present at the housing of a defective device under test, the earthing contacts at the test plugs (4 - 7) and the safety socket (15)! Risk of injury.

- The function selector switch at the test instrument may only be set to tests during which mains power is applied after protection category I devices under test have passed the protective conductor test.

- For safety reasons, the device under test must be turned off before switching to "MAINS" so that dangerous devices under test (e.g. a circular saw) can only be switched on intentionally.

Measurement with line voltage:

WARNING

Electric Shock! Risk of Consequential Accidents!

Exposed parts may conduct dangerous touch voltage during testing.

- Do not touch under any circumstances!
- Under certain circumstances, full mains disconnection at the device side may not occur in the event of leakage current, or it may be inadequate to meet the requirements of a PRCD.
- Ensure the conditions of a mobile test station.
- Use a 30 mA RCD.
- Wear personal safety equipment (PSE).

- Be prepared for the occurrence of unexpected voltages at devices under test (e.g. due to charged capacitors).

- Before connecting the device under test to the test adapter, subject it to a thorough visual inspection first. Damaged devices under test must be repaired prior to testing.
- Only extension cords which have been plugged into the test outlets (1 - 4) at the test adapter may be connected to the device plugs (4 - 7) at the test adapter for testing.
- Due to test adapter design in accordance with DIN EN 61557, the “PE” contacts at the outlets (1 - 4) are only connected to the mains protective conductor when the test instrument has been set for testing with mains power.
- If the test adapter and/or its connector cables demonstrate visible damage, no longer functions, has been stored for a lengthy period of time under unfavorable conditions or has been subject to excessive stress during transport, it must be assumed that hazard-free operation is no longer possible. Remove the AT3-III E from service and secure it against inadvertent use.

7.1 MEASURING PROTECTIVE CONDUCTOR RESISTANCE

The clip or the test probe at the end of the probe cable from the test instrument must be connected to the housing of the device under test such that good contact is assured.

Note

Connector cable (13) resistance is 0.07 Ω. In order to compensate for this error, perform zero balancing at the test instrument.

If the AT3-III E/AT3-III CH is not used for a lengthy period of time, the protective surfaces on the plug connectors and the connector plug (13) may corrode, resulting in slightly higher resistance readings. If this is the case, insert and remove the plugs several times until the expected values are restored.

7.2 MEASURING INSULATION RESISTANCE, I_{PE}, ALTERNATIVE METHOD

L1, L2, L3 and N (short-circuited) are measured against PE during insulation testing.

7.3 MEASURING PROTECTIVE CONDUCTOR CURRENT USING THE RESIDUAL CURRENT METHOD (NOT WITH SECUTEST BASE / BASE10 / ST BASE / ST BASE10)

The device under test is placed into operation when using the residual current method. The L1, L2 and L3 mains lamps light up at the AT3-III E/AT3-III CH during this test.
This measurement may not be performed on protection category I devices under test until after the protective conductor test has been passed in accordance with Kapitel 7.1 (⇨ 15).

Note

This measurement must be performed in accordance with the specified sequence. Mains power must be indicated by signal lamps L1, L2 and L3 (9) before switching the device under test on. The test sockets (1 - 4) are disconnected from the mains by the safety shutdown function included with the AT3-III E/AT3-III CH for devices under test with fault currents of greater than 18 mA during measurement of protective conductor current with residual current. Mains power may be disconnected if the AT3-III E/AT3-III CH is used in systems protected with RCCBs rated less than 30 mA. Mains signal lamps L1, L2 and L3 (9) go out. The function LED (10) blinks.

1. Turn off the device under test.
2. Connect your test instrument ⇨ 13.
3. Switch to the IPE switch position (green switch position level / SECUTEST ST).
4. Select AT3 adapter as the measuring parameter.
5. Start the measurement by pressing the START/STOP key.

↳ The line contactor switches mains power to the test sockets (1 - 4) at the AT3-III E/AT3-III CH. Signal lamps L1, L2 and L3 indicate the presence of line voltage.

6. Start up the device under test.

Touch current is measured by means of the residual current method for protection category II devices and protection category I devices with accessible conductive parts which are not connected to the protective conductor.
Contact all accessible conductive parts at the device under test with the test probe at the end of the probe cable from the test instrument to this end.
Disconnect the AT3-III E/AT3-III CH from the mains in order to restart. Reconnect the AT3-III E/AT3-III CH to the mains. The test adapter is once again ready for use after a brief self-test.
The short-circuit test displayed at the test instrument cannot be performed due to safety impedances which have been integrated into the AT3-III E/AT3-III CH for testing 3-phase devices.

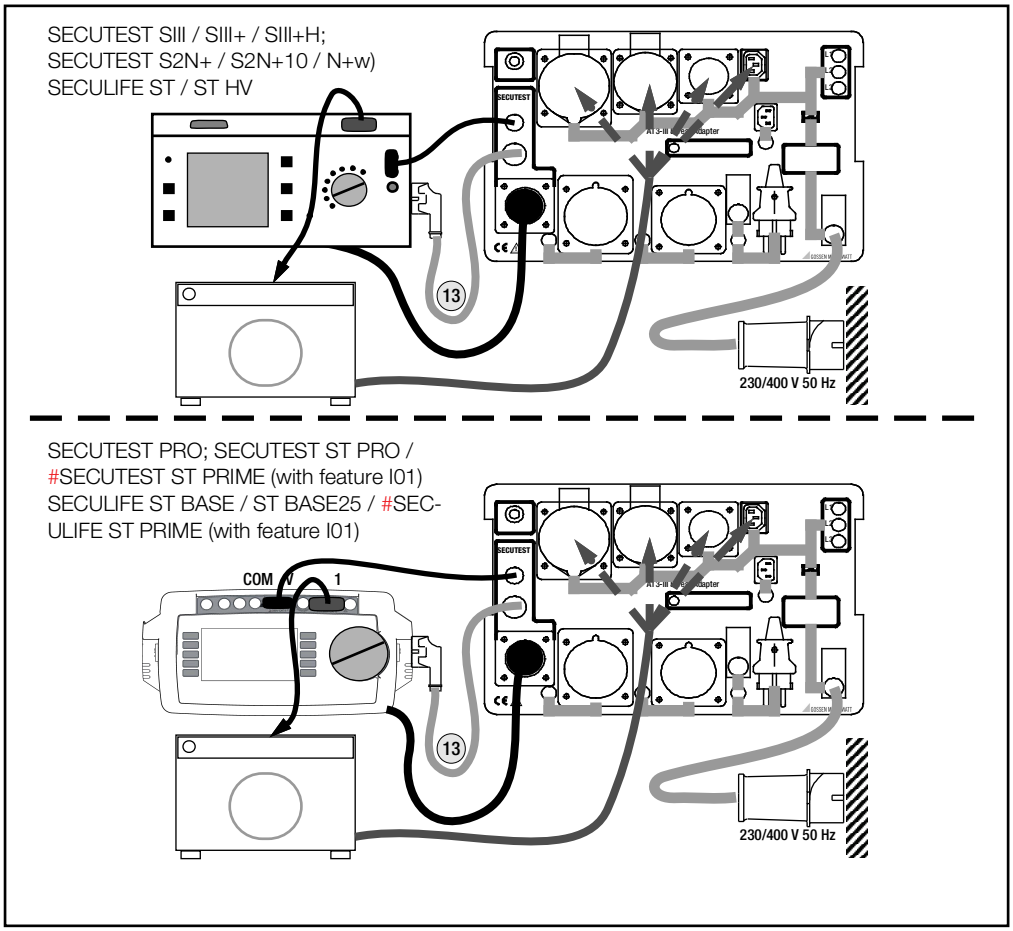


Fig. 3: Connection of Single or 3-Phase Devices to the AT3-III E/AT3-III CH and the Test Instrument

7.4 CHECKING RESIDUAL CURRENT WITH AUTOMATIC TESTING IN ACCORDANCE WITH THE STANDARD

SECUTEST SIII / SIII+ / SIII+H; SECULIFE ST / ST HV:

1. Initialize the standard-specific setup.
2. Select “Sequence” and deactivate the auto-test method.

↳ During testing in accordance with standards, a menu then appears with which either equivalent leakage current / alternative method or residual current can be selected.

3. Select “residual current”.

SECUTEST S2N+ / S2N+10 / N+w:

1. Select the active switch position.

↳ Mains voltage is switched to the device under test via the AT3-III E/AT3-III CH. The DUT’s residual current is measured, and it can be tested for correct functioning at the same time.

SECUTEST PRO / ST PRO; SECULIFE ST BASE / ST BASE25 or feature I01:

1. Select connection type AT3 adapter in the test sequence setup menu for the IPE measurement.

SECUTEST ST PRIME / SECULIFE ST PRIME (feature I01 required)

1. Select connection type AT3 adapter under “classification parameters” in the test sequence.

7.5 HIGH-VOLTAGE TEST

DANGER

High-Voltage!

Life endangering due to electric shock.

- Remove the probe with test tip from sockets 4 and 5 at the test instrument before performing the test!
- Do not touch the DUT, the device plugs or the earthing contact conductor (13) of the AT3-III E/AT3-III CH during high-voltage testing.
- Do not unplug the connector cable (13) of the AT3-III E/AT3-III CH from the test instrument’s test socket, because the DUT may still be charged and high voltage may be present at the earthing contact plug.

During this test, L1, L2, L3 and N (short-circuited) are measured against PE with the selected high voltage value (max. 1.5 kV!).
Observe all further instructions for the performance of this test and the disclaimer in the operating instructions for the utilized test instrument.

7.6 TESTING EXTENSION CORDS

Connection to sockets 2 and 3 at the SECUTEST (14) can remain plugged in during this test. Perform testing in accordance with the operating instructions included with the test instrument!
Please observe the following points when using the tester in combination with the AT3-III E/AT3-III CH. First of all, the test probe at the end of the test instrument's probe cable must be connected to the respective socket (15) (probe 1 to 4) of the corresponding plug on the AT3-III E/AT3-III CH. In order to perform the test, insert only the plug and socket of the extension cord under test into the corresponding device plug and socket of the AT3-III E/AT3-III CH.
The corresponding circuit diagrams can be found on the following pages.

SECUTEST SIII / SIII+ / SIII+H; SECULIFE ST / ST HV:

1. Select the following test sequence from the initial window at the test instrument: "Extension Cord: "X" WITH EL1".

Note

Testing cables with the AT3-III E/AT3-III CH is only possible with this setting.

SECUTEST S2N+ / S2N+10 / N+w:

1. Select the following switch position: VDE 0701-0702 
2. Select EL1 as the connection type.

SECUTEST PRO / ST PRO; SECULIFE ST BASE / ST BASE25 or feature I01:

1. Select AT3-III E Adapter as the connection type.

SECUTEST ST PRIME / SECULIFE ST PRIME

1. Select AT3-III E Adapter as the connection type.

7.6.1 MEASURING PROTECTIVE CONDUCTOR RESISTANCE

Testing is performed according to the instructions included in Kapitel 7.1.

7.6.2 MEASURING INSULATION RESISTANCE

L1, L2, L3 and N (short-circuited) are measured against PE during insulation testing. An anticipated value of 20 MΩ should not be significantly fallen short of.

Note

In the case of cables with indicator lamp (usually a glow lamp in the switch), the results of the continuity test for L and N may be distorted due to additional resistance caused by the glow lamp. In case of doubt, perform a continuity test for L and N by means of resistance measurement (R-PE or R-INS), for example
SECUTEST SIII / SIII+ / SIII+H; SECULIFE ST / ST HV; SECUTEST S2N+ / S2N+10 / N+w: R-PE between probe and socket 3 or R between sockets 1 and 2.
SECUTEST PRO / ST PRO; SECULIFE ST BASE / ST BASE25:
R-PE between probe 1 and probe 2.
SECUTEST BASE / BASE10 / ST BASE / ST BASE10 / ST PRIME and SECULIFE ST PRIME:
R-PE between probe 1 and measurement cable at the protective conductor bar in the test socket (test type PE(TS)-P1).

7.6.3 FUNCTION TEST FOR SHORT-CIRCUIT, INTERRUPTION AND WIRE REVERSAL OF CONDUCTORS L1, L2, L3 AND N

Testing of single-phase cables is performed as described in the instructions included with the test instruments under “Optional EL1 Adapter”. The EL1 test adapter accessory is included as a module in the AT3-III E/AT3-III CH.

Note

When testing the continuity of single-phase extension cords, the AT3-III E/ AT3-III CH must NOT be supplied with mains voltage.
When testing the continuity of 3-phase extension cords, the AT3-III E/ AT3-III CH must be connected to mains voltage.

When testing the cold device connection (socket 4 / plug 4), L/N polarity is not checked.
Testing of 3-phase cables is the same, except that it also includes an additional test for reversing of the L1, L2, L3 and N conductors.
3-phase cables have only passed testing for short-circuits, interruptions and reversed conductors (clockwise rotation) if the test result “Cable OK” appears.
Messages such as “interruption/short-circuit” always indicate that the cable is defective. If this is the case, the L1, L2, L3 and N conductors may also be reversed. The actual defect must be determined.

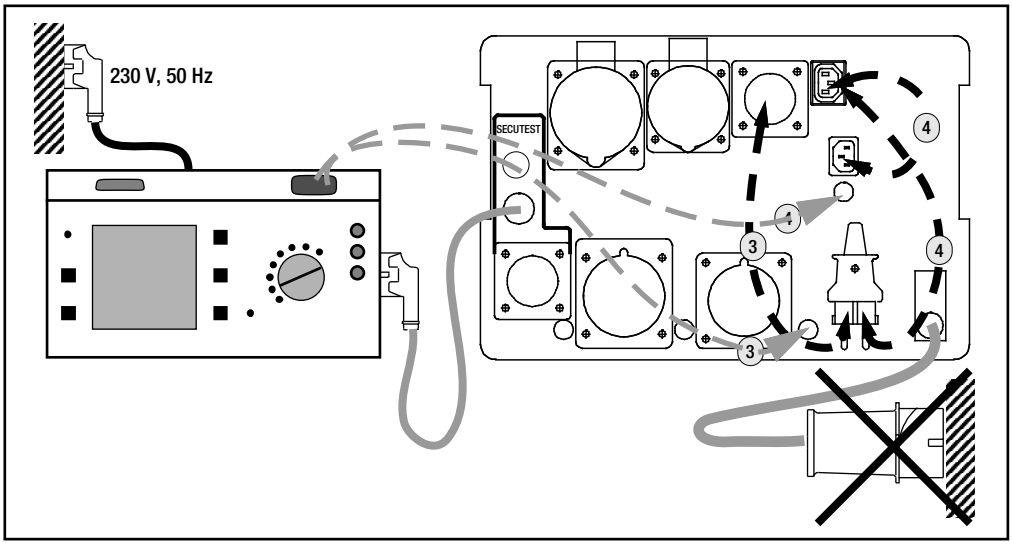


Fig. 4: Connection of Single-Phase Extension Cords to AT3-III E/AT3-III CH and SECUTEST SIII / SIII+ / SIII+H; SECUTEST S2N+ / S2N+10 / N+w; SECULIFE ST / ST HV

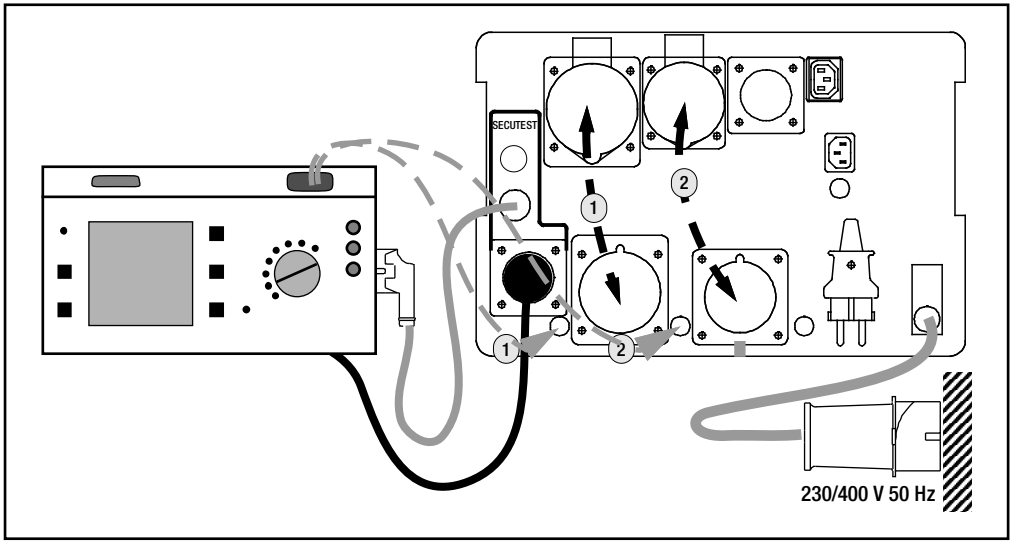
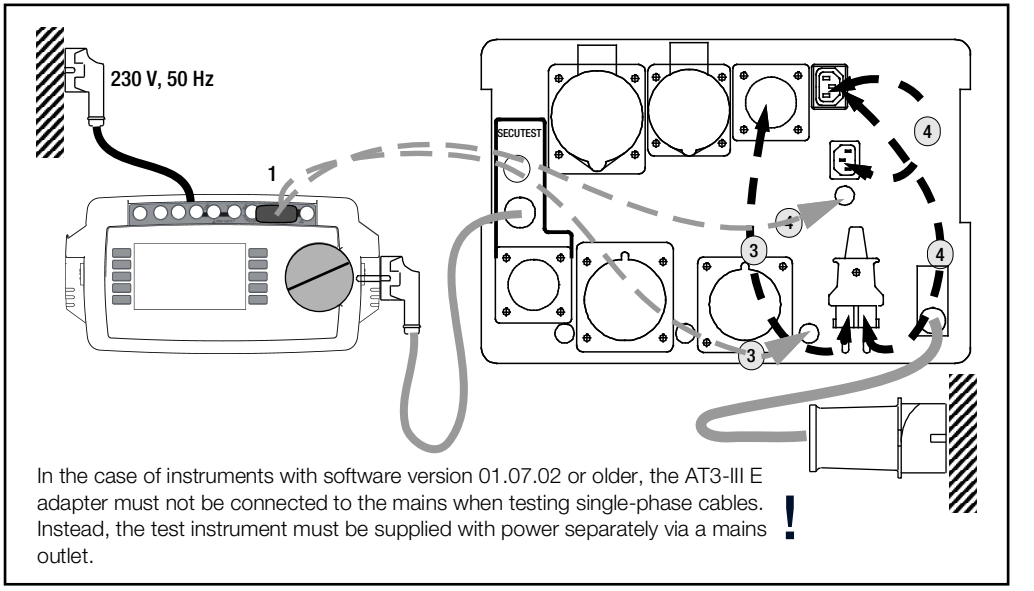


Fig. 5: Connection of 3-Phase Extension Cords to AT3-III E/AT3-III CH and SECUTEST SIII / SIII+ / SIII+H; SECUTEST S2N+ / S2N+10 / N+w; SECULIFE ST / ST HV



In the case of instruments with software version 01.07.02 or older, the AT3-III E adapter must not be connected to the mains when testing single-phase cables. Instead, the test instrument must be supplied with power separately via a mains outlet.

Fig. 6: Connection of Single-Phase Extension Cords to AT3-III E/AT3-III CH and SECUTEST BASE / BASE10 / PRO; SECUTEST ST BASE / ST BASE10 / ST PRO; SECULIFE ST BASE / ST BASE25

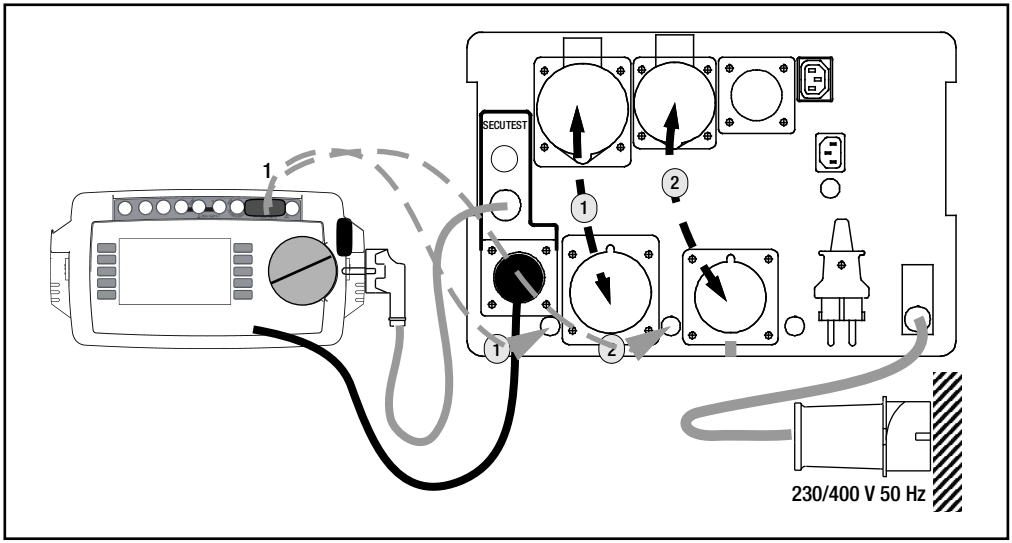


Fig. 7: Connection of 3-Phase Extension Cords to AT3-III E/AT3-III CH and SECUTEST BASE / BASE10 / PRO; SECUTEST ST BASE / ST BASE10 / ST PRO; SECULIFE ST BASE / ST BASE25

7.7 SELF-TEST

The self-test is very easy and should thus be repeated each time before using the AT3-III E/AT3-III CH. During this test, please ensure that the case of the AT3-III E/AT3-III CH is not in contact with devices that conduct PE or earth potential.

Performing the Protective Conductor Test

1. Insert the test instrument's mains plug into the earthing contact socket (12) at the AT3-III E/AT3-III CH. The earthing contact plug (13) and the test instrument connection (14) at the AT3-III E/AT3-III CH must not be plugged into the test instrument.
2. Connect the AT3-III E/AT3-III CH to the mains.
3. Set the test instrument to the protective conductor test, single measurement (RSL/RPE).
4. Contact protective conductor potential at the mains system which is supplying power to the AT3-III E/AT3-III CH with the test probe at the end of the probe cable from the test instrument, e.g. at the earthing contact of an earthing contact outlet.
   If an excessively high value or interruption is indicated, the protective conductor is interrupted.

The AT3-III E/AT3-III CH test adapter must be disconnected from the mains, and the error in the electrical system or the test adapter must be corrected. The AT3-III E/AT3-III CH is equipped with an "$I_{\Delta n}$ trip" test key, so that $I_{\Delta n}$ safety shutdown can be tested at any time.

Performing the $I_{\Delta n}$ Self-Test

1. Remove the device under test (device or extension cord).
2. Set the test instrument to single measurement.
3. Test instrument: Select the "DI current" submenu (residual current).

↳ Signal lamps L1, L2 and L3 indicate the presence of line voltage.

4. Activate the "$I_{\Delta n}$ trip" key (11).

↳ The AT3-III E/AT3-III CH disconnects mains power from the sockets (1 - 4).
Signal lamps L1, L2 and L3 go out.

↳ The function LED (10) blinks.
Disconnect the AT3-III E/AT3-III CH from the mains in order to restart. Reconnect the AT3-III E/AT3-III CH to the mains. The test adapter is once again ready for use after a brief self-test.

Note

If mains power is not connected during this test, the fuses in the AT3-III E/AT3-III CH may have blown. If the AT3-III E/AT3-III CH still does not function correctly after replacing the fuses, it must be removed from service and repaired. Measurement is no longer possible!

8 MAINTENANCE

8.1 CLEANING

DANGER

Life endangering due to electric shock!

The instrument and its accessories are operated with electrical power, thus resulting in a general risk of electric shock. This can be fatal or cause serious injuries.

- The instrument, the accessories and all connected conductors must be voltage-free before and during cleaning. Switch the test instrument off and disconnect it from mains power.
- Never immerse the instrument/accessories in water or other fluids.
- Never touch the instrument/accessories with wet or moist hands.

ATTENTION

Unsuitable Cleaning Agents

Unsuitable cleaning agents such as aggressive or abrasive cleansers result in damage to the instrument/accessories.

- Use a cloth for cleaning, which has been slightly dampened with water.
- Avoid the use of cleansers, abrasives or solvents.

Keep the outside surfaces of the device and any accessories clean.

9 CONTACT, SUPPORT AND SERVICE

Gossen Metrawatt GmbH can be contacted directly and conveniently – we have a single number for everything! Whether you require support or training, or have an individual inquiry, we can answer all of your questions here:

+49 911 8602-0	Monday to Thursday: Friday:	08:00 a.m. - 4:00 p.m. 08:00 a.m. - 2:00 p.m.
Or contact us by e-mail at:	info@gossenmetrawatt.com	

Do you prefer support by e-mail?

Measuring and Test Technology:	support@gossenmetrawatt.com
Industrial Measuring Technology:	support.industrie@gossenmetrawatt.com

Enquiries concerning training and seminars can also be submitted by e-mail and online:

training@gossenmetrawatt.com

https://www.gossenmetrawatt.de/en/knowledge/webinars/

Please contact GMC-I Service GmbH for repairs, replacement parts and calibration[1]:

+49 911 817718-0

service@gossenmetrawatt.com

www.gmci-service.com/en

Beuthener Str. 41
90471 Nürnberg
Germany

1) DAkkS calibration laboratory per DIN EN ISO/IEC 17025
accredited by the Deutsche Akkreditierungsstelle GmbH under reference number D-K-15080-01-01

10 CERTIFICATIONS

10.1 CE DECLARATION

The instrument fulfills all requirements of applicable EU directives and national regulations. We confirm this with the CE mark.

The CE declaration can be found on our website:

https://www.gmc-instruments.de/en/services/download-center/

10.2 CALIBRATION

Use of your device and resultant stressing influence the device and lead to deviation from warranted accuracy values.

In the case of strict measuring accuracy requirements, as well as in the event of severe stressing (severe climatic or mechanical stress), we recommend a relatively short calibration interval of once per year. If this is not the case, a calibration interval of 2 to 3 years is usually adequate.

Please contact GMC-I Service GmbH for calibration services ➪ "Contact, Support and Service" 24.

11 DISPOSAL AND ENVIRONMENTAL PROTECTION

Proper disposal makes an important contribution to the protection of our environment and the conservation of natural resources.

ATTENTION

Environmental Damage

Improper disposal results in environmental damage.

- Follow the instructions concerning return and disposal included in this section.

The following comments refer specifically to the legal situation in the Federal Republic of Germany. Owners or end users who are subject to other regulations must comply with the respectively applicable local requirements and implement them correctly on site. Further information can be obtained, for example, from the responsible authorities or local distributors.

Waste Electrical Equipment, Electrical or Electronic Accessories and Waste Batteries (including rechargeable batteries)

Electrical equipment and batteries (including rechargeable batteries) contain valuable raw materials that can be recycled, as well as hazardous substances which can cause serious harm to human health and the environment, and they must be recycled and disposed of correctly.

The symbol at the left depicting a crossed-out garbage can on wheels refers to the legal obligation of the owner or end user (German electrical and electronic equipment act ElektroG and German battery act BattG) not to dispose of used electrical equipment and batteries with unsorted municipal waste (“household trash”). Waste batteries must be removed from the old device (where possible) without destroying them and the old device and the waste batteries must be disposed of separately. The battery type and its chemical composition are indicated on the battery’s labelling. If the abbreviations “Pb” for lead, “Cd” for cadmium or “Hg” for mercury are included, the battery exceeds the limit value for the respective metal.

Please observe the owner’s or end user’s responsibility with regard to deleting personal data, as well as any other sensitive data, from old devices before disposal.

Old devices, electrical or electronic accessories and waste batteries (including rechargeable batteries) used in Germany can be returned free of charge to Gossen Metrawatt GmbH or the service provider responsible for their disposal in compliance with applicable regulations, in particular laws concerning packaging and hazardous goods. Waste batteries must be returned in the discharged state or with appropriate precautions against short circuiting. Further information regarding returns can be found on our website.

Packaging Materials

We recommend retaining the original packaging materials for the case that you might require servicing or calibration in the future.

WARNING

Danger of Asphyxiation Resulting from Foils and Other Packaging Materials

Children and other vulnerable persons may suffocate if they wrap themselves in packaging materials, or their components or foils, or if they pull them over their heads or swallow them.

- Keep packaging materials, as well as their components and foils, out of the reach of babies, children and other vulnerable persons.

In accordance with German packaging law (VerpackG), the user is obligated to correctly dispose of packaging and its components separately, and not together with unsorted municipal waste (“household trash”). Packaging which is not subject to so-called system participation is returned to the appointed service provider. Further information regarding returns can be found on our website.

GOSSEN METRAWATT
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