

# BENNING

## Operating manual

Translation of the German original version

BENNING TA 6

5190 / 12/2021 en



# Legal notice

## Notes concerning the documentation

Ensure that the applicable documentation is used for this product. For safe handling, knowledge that is provided in these instructions is required.

The product may only be handled while following this documentation, particularly the safety instructions and warnings it contains. The personnel must be qualified for the respective task and have the capability to recognise risks and prevent possible dangers.

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## Copyright

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## Disclaimer

The contents of the documentation has been checked to ensure that it corresponds to the hardware and software described. Nevertheless, deviations cannot be ruled out, so Benning cannot guarantee complete correspondence. The contents of this documentation are checked at regular intervals, and any corrections that are needed are contained in the versions that follow.

## General non-discrimination

Benning is aware of the importance of language with regard to the gender equality and endeavors to take this into account at all times. To improve readability, we have refrained from consistently using differentiating formulations.

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# 1 Introduction

The BENNING TA 6 measuring adapter described here (in the following only referred to as “device”) is an optional accessory for the BENNING IT 115, IT 130 and IT 200 installation testers. The BENNING TA 6 measuring adapter enables you to perform tests on electrical installations in compliance with DIN VDE 0100-600 (IEC 60364-6) and DIN VDE 0105-100 (EN 50110) using the corresponding installation tester.

The device ensures safe contact between the BENNING installation tester and the 5-pin 16 A CEE socket (3P / N / PE, 400 V, 50 Hz) of the electrical installation.

The device supports the following measurements:

- Insulating resistance measurement  $R_{ISO}$  (L1-PE, L2-PE, L3-PE, N-PE, L1-N, L2-N, L3-N, L1-L2, L2-L3, L3-L1)
- Loop impedance measurement  $Z_{LOOP}$  (L1-PE, L2-PE, L3-PE)
- Line impedance measurement  $Z_{LINE}$  (L1-N, L2-N, L3-N, L1-L2, L2-L3, L3-L1)
- RCD testing
- Phase sequence test, voltage and frequency measurements

## Further information

<http://tms.benning.de/ta6>

On the Internet, you will find the following additional information directly at the specified link or at [www.benning.de](http://www.benning.de) (product search):

- Operating manual of the device in several languages
- Further information depending on the device (e. g. brochures, technical reports, FAQs)

## 1.1 General notes

### Target group

This operating manual is intended for the following groups of people:

- Qualified electricians and qualified technical personnel

### Required basic knowledge

To understand these operating manual, you will need general knowledge of testing and measuring equipment. Moreover, you will need basic knowledge of the following issues:

- General electrical engineering

### Purpose of the operating manual

This operating manual describes the device and provide you information about how to handle it. Keep this operating manual in a safe place for later use. Read this operating manual before handling the device and follow the instructions.

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## NOTE

### Disclaimer of liability

Please make sure that any person using the device has read and understood the instructions of this operating manual before handling the device and that the instructions are adhered to in all points. Non-observance of this operating manual might result in product damage, property damage and/or personal injury.

Benning assumes no liability for damage and malfunctions resulting from the failure to observe the instructions in this operating manual.

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The devices are subject to continuous further development. Benning reserves the right to make changes to the device's design, configuration and technology. The information in this operating manual corresponds to the state of technical knowledge at the time of printing. For this reason, no claims for certain device characteristics can be derived from the contents of this operating manual.

Information in this operating manual can be changed at any time without prior notice. Benning is not obligated to make amendments to this operating manual or to keep it up to date.

Direct any technical questions to Technical Support [[▶ page 8](#)].

## Trademarks

All trade marks that are used are the property of their respective owners, even if they are not separately marked as such.

## 1.2 History

Release number	Amendments
12/2021	• Initial release

Table 1: History

## 1.3 Service & support

Please contact your specialty retailer or the BENNING Service Center for any repair or service work that might be required.

### Technical support

Please contact our Technical support for technical questions on handling the device.

Phone:	+49 2871 93-555
Fax:	+49 2871 93-6555
E-Mail:	helpdesk@benning.de
Internet:	www.benning.de

### Returns management

Easily and conveniently use the BENNING returns portal for a quick and smooth returns processing:

<https://www.benning.de/service-de/retourenabwicklung.html>

Phone:	+49 2871 93-554
E-Mail:	returns@benning.de

### Return address

BENNING Elektrotechnik und Elektronik GmbH & Co. KG  
Retourenmanagement  
Robert-Bosch-Str. 20  
D - 46397 Bocholt

## 2 Safety

### 2.1 Warning system

This operating manual contains notes that must be taken into consideration for your personal safety and in order to avoid injuries and damage to property. Warnings about your personal safety and to prevent personal injuries are marked with a warning triangle. Warnings on sole prevention of material damage are shown without a warning triangle. The warnings are shown in descending order depending on the hazard level as follows.



#### **DANGER**

##### **Extremely dangerous situation for humans**

If you do not pay attention to this warning, irreversible or deadly injuries will occur.



#### **WARNING**

##### **Hazard to humans**

If you do not pay attention to this warning, irreversible or deadly injuries could occur.



#### **CAUTION**

##### **Minor hazard to humans**

If you do not pay attention to this warning, minor or moderate injuries could occur.



#### **NOTICE**

##### **Danger to property, not to persons**

If you do not pay attention to this warning, material damage could occur.

If multiple hazard levels occur, the warning for the highest respective hazard level will be used. In addition, a warning about personal injuries can also include a warning about material damage.

### 2.2 Standards applied

The device has been built and tested in compliance with the following standards and has left the factory in perfectly safe condition.

- IEC / DIN EN 61010-031 (VDE 0411-031)

## 2.3 Symbols used

### Symbols on the device

Symbol	Meaning
	Please observe the information provided in this operating manual in order to avoid dangers.
CAT II	Measuring category II is applicable to testing and measuring circuits which are directly connected to user connections (e. g. sockets) of the low-voltage mains installation.
	The device complies with EU directives.
	At the end of product life, dispose of the unserviceable device via appropriate collecting facilities provided in your community.
	The device is provided with protective insulation (protection class II).
	Please observe the operating manual.
	(AC) alternating voltage or alternating current
	Earth (voltage to earth)

Table 2: Symbols on the device

### Symbols used in the operating manual

Symbol	Meaning
	General warning
	Warning of electric voltage!

Table 3: Symbols used in the operating manual

## 2.4 Intended use

Only use the device within the framework of the corresponding technical data. Any operating conditions that deviate from this shall be considered as improper use. Solely the user of the device shall be liable for any resulting damage.

In particular, note the following:

- In case of improper use, the liability and warranty claims become void. Solely the user of the device shall be liable for any damage resulting from improper use. Uses not complying with the intended use include e. g.:
  - Use of components, accessories, spare or replacement parts that have not been released and approved for the respective application by Benning
  - Non-observance, manipulation, changes or misuse of the operating manual or the instructions and notes contained therein
  - Any form of misuse of the device
  - Any use other than or beyond that described in this operating manual
- Warranty and liability claims are generally excluded if damage is due to force majeure.
- If any prescribed services are not performed regularly or not on time according to manufacturer specifications during the warranty period, a decision about a warranty claim can only be made once the findings are available.

Direct any questions to Technical Support [► page 8].

### Using the device

Please observe the following basic obligations when using the device:

- The device may only be used in a technically perfect and safe condition. Always check the device for damages before using it.
- Make sure the personnel using the device is qualified for the respective task.
- Observe relevant regulations on occupational safety and health as well as those on environmental protection.
- The device may only be used in dry environments.
- Use the device exclusively for measuring purposes with the BENNING IT 115, IT 130 and IT 200 installation testers. In addition, observe the operating manual of the installation tester.
- The device is intended for short-time use only (continuous operation is not permitted). Disconnect the device from the test object after use.
- Use the device only in electric circuits of overvoltage category II with a conductor for a maximum of 300 V to earth.



#### **⚠ WARNING**

##### **Opening the device**

Danger to life or serious injury is possible due to contact with high electric voltage when opening the device. The device might get damaged.

- Do not open the device.
- Please contact your specialty retailer or the returns management [► page 8] for any repairs.

## Securing the device

If the device is not in a technically perfect and operationally safe condition, safe operation is no longer guaranteed. Make sure that the following measures are taken:

- Switch off the device.
- Remove the device from the measuring point.
- Secure the device against unintentional operation.

The following characteristics indicate that safe operation is no longer guaranteed:

- The device (housing, cables or plugs) shows visible damage or is damp/wet.
- The device does not work properly in compliance with regulations (e. g. errors during measurements).
- The device shows recognisable consequences of prolonged storage under inadmissible conditions.
- The device shows recognisable consequences of extraordinary stress due to transport.

## 2.5 Special types of risks



### **WARNING**

#### **Dangerous voltage**

Danger to life or serious injury is possible due to contact with high electric voltage when working on live components or equipment. Even low voltages from 30 V-AC and 60 V-DC on can be dangerous to human life!

- Please observe relevant regulations on occupational safety and health.
- If necessary, use appropriate protective equipment.

### **3 Scope of delivery**

The scope of delivery of the device includes the following components:

- 1 x BENNING TA 6 measuring adapter
- 1 x operating manual

# 4 Device description

## 4.1 Device structure

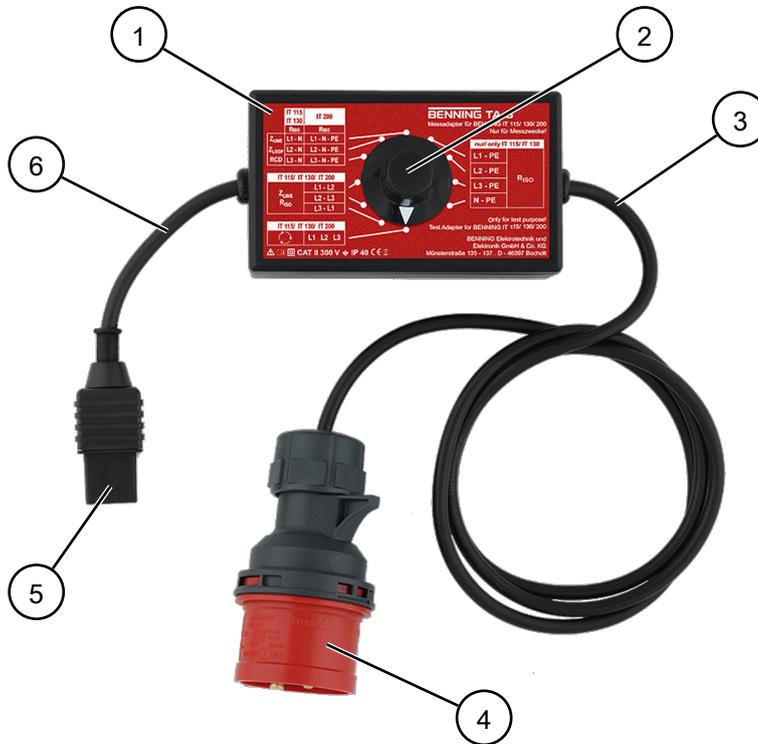


Figure 1: BENNING TA 6 device structure

1	Housing	2	Rotary switch
3	Test cable	4	16 A CEE plug (3P / N / PE, 400 V, 50 Hz, 5-pin)
5	Connecting plug	6	Connecting cable

## 4.2 Functions

The device supports the following measurements:

- Insulating resistance measurement  $R_{ISO}$  (L1-PE, L2-PE, L3-PE, N-PE, L1-N, L2-N, L3-N, L1-L2, L2-L3, L3-L1)
- Loop impedance measurement  $Z_{LOOP}$  (L1-PE, L2-PE, L3-PE)
- Line impedance measurement  $Z_{LINE}$  (L1-N, L2-N, L3-N, L1-L2, L2-L3, L3-L1)
- RCD testing
- Phase sequence test, voltage and frequency measurements

### Switch positions

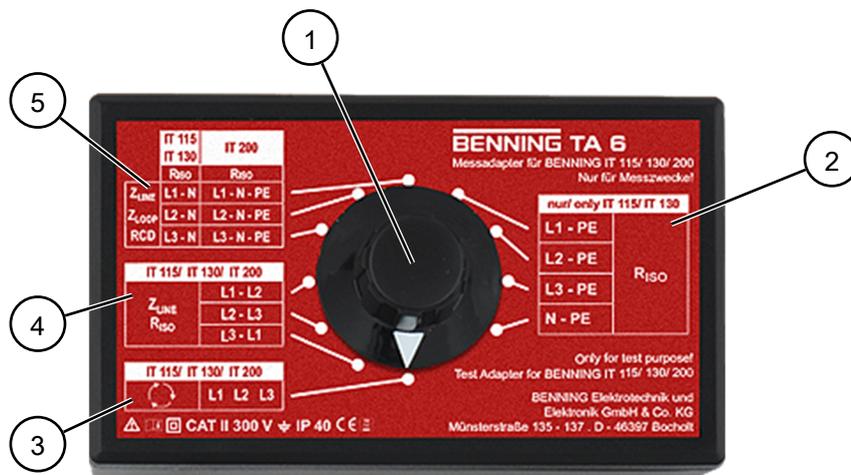


Figure 2: Switch positions of the BENNING TA 6

1	Rotary switch
2	4 switch positions for insulating resistance measurement $R_{ISO}$ (L1-PE, L2-PE, L3-PE, N-PE), only applicable in combination with the installation testers BENNING IT 115 or IT 130
3	1 switch position for phase sequence test, voltage and frequency measurements
4	3 switch positions for line impedance measurement $Z_{LINE}$ and insulating resistance measurement $R_{ISO}$ (L1-L2, L2-L3, L3-L1), for insulating resistance measurements in combination with the installation tester BENNING IT 200: a corresponding setting of the parameter "Type Riso" is required
5	3 switch positions for line impedance measurement $Z_{LINE}$ , loop impedance measurement $Z_{LOOP}$ , RCD testing and insulating resistance measurement $R_{ISO}$ , insulating resistance measurements that can be carried out depend on the installation tester used (BENNING IT 115 and IT 130: L1-N, L2-N, L3-N or BENNING IT 200: L1-N, L1-PE, L2-N, L2-PE, L3-N, L3-PE, N-PE), for insulating resistance measurements in combination with the installation tester BENNING IT 200: a corresponding setting of the parameter "Type Riso" is required

# 5 Operation

You can perform tests with an installation tester.

## 5.1 Testing with an installation tester

### Requirements

- Installation tester BENNING IT 115, IT 130 or IT 200
- Please observe the operating manual of the installation tester used (especially the safety instructions and warnings contained therein).
- Test object compatible with the device (16 A CEE socket, 3P / N / PE, 400 V, 50 Hz, 5-pin)

### NOTE

#### Insulating resistance

- Measurements of the insulating resistance must be carried out only at test objects which are free of voltage.
- Insulating resistance measurements that can be carried out depend on the installation tester used.
- In combination with the BENNING IT 200 installation tester: To obtain correct results, you have to set the parameter “Type Riso” correspondingly in the BENNING IT 200 before measurement.

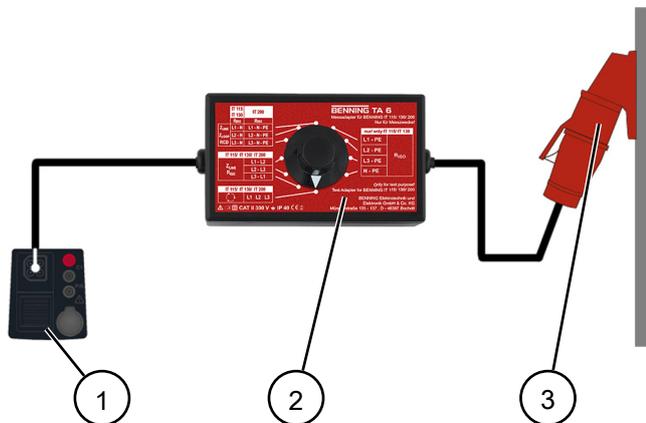


Figure 3: Connecting the BENNING TA 6

1	BENNING installation tester	2	BENNING TA 6
3	Test object		

**Procedure**

1. Connect the connecting plug of the device to the test connection of the installation tester.
2. Connect the 16 A CEE plug of the device to the test object.
3. Set the desired measuring function on the installation tester.
4. Set the corresponding switch position on the rotary switch of the device.
5. Start the measurement on the installation tester.
6. After having carried out the measurement, save the measuring result (optional).
7. Repeat the described procedure for further intended measurements on the test object.
8. Disconnect the device from the test object after having completed the measurements.

## 6 Maintenance

There are no components in the device that you can replace.



### **WARNING**

#### **Opening the device**

Danger to life or serious injury is possible due to contact with high electric voltage when opening the device. The device might get damaged.

- Do not open the device.
- Please contact your specialty retailer or the returns management [▶ page 8] for any repairs.

## 6.1 Cleaning the device

Clean the device regularly and as the need arises.

### Requirements

- A clean and dry cloth or special cleaning cloth



### **NOTICE**

#### **Wrong cleaning agents**

Using the wrong cleaning agents can damage the device.

- Do not use any solvents, abrasives or polishing agents.

### Procedure

Clean the exterior of the device with a clean and dry cloth or a special cleaning cloth.

## 7 Technical data

Input voltage	Up to 430 V (three-phase)
Frequency	50 Hz, 60 Hz
Protection class	II (double insulation)
Contamination level	2
Protection category (DIN VDE 0470-1, IEC / EN 60529)	IP 40 1st digit: 4 = protection against granular foreign objects 2nd digit: 0 = no protection against water
Overvoltage category	CAT II 300 V to earth
Housing dimensions (length x width x height)	145 mm x 85 mm x 70 mm
Length of test cable	1.5 m
Weight	0.5 kg
<b>Operation</b>	
Operating duration	Short-term use (no continuous operation)
Max. barometric altitude	2 000 m
Operating temperature	0 ... 40 °C
Max. relative air humidity	95 % RH (0 ... 40 °C), non-condensing
<b>Storage</b>	
Ambient temperature	-10 ... 70 °C
Max. relative air humidity	90 % RH (-10 ... 40 °C) 80 % RH (40 ... 60 °C) 70 % RH (60 ... 70 °C)

Table 4: Technical data

## 8 Disposal and environmental protection



At the end of product life, dispose of the unserviceable device via appropriate collecting facilities provided in your community.

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