User manual

Audio frequency transmitter

TG 600

Table of contents

1 ABOUT THIS MANUAL

1.1 Structure of safety instructions

The safety instructions in this user manual are presented as follows:

Danger symbol 	⚠ SIGNAL WORD
	Type of danger and its source Possible consequences of violation. ▸ Measure to prevent the danger.

If a dangerous situation could arise at a specific step, the safety instruction is displayed immediately before this dangerous step and is shown as follows:

⚠ **SIGNAL WORD**

Type of danger and its source. Possible consequences of violation.

1. Measure to prevent the danger.

Danger levels

Cautioning words in the safety instructions specify the danger levels.

⚠ **DANGER**	Will lead to severe injuries or death.
⚠ **WARNING**	May lead to severe injuries or death.
⚠ **CAUTION**	May lead to light to moderate injuries.
NOTICE	May lead to material damage.

Danger symbols

	**General danger**
	**Risk of electric shock**
	**Warning about explosive materials**

1.2 View settings

Symbol	Meaning
▸	You are requested to perform an action.
1. 2. ...	Perform the actions in this sequence.
a. b. ...	If an operation consists of several operating steps, specify these with "a, b, c". Perform the operating steps in this sequence.
1 2 ...	Numbering in the legend
▪	List
	Indicates further information on the topic.

1.3 Note on the graphics used

The graphics used are intended to illustrate the procedure and may differ slightly from the actual state.

2 FOR YOUR SAFETY

All BAUR devices and systems are manufactured according to the state of the art and are safe to operate. The individual parts and the finished devices are subject to continuous testing by our qualified personnel as part of our quality assurance system. Each device and system is tested before delivery.

However, the operational safety and reliability in practice can be achieved only when all necessary measures have been taken. The responsible body[1] and operator[2] of the device or system are responsible for planning these measures and monitoring their implementation.

Make sure that the responsible body and persons working with the device or system have carefully read through and understood the user manual for the device or system, as well as the user manuals for all associated devices, before starting work.

The responsible body and operator of the device or system are responsible for any injuries or damage resulting from non-compliance with this user manual.

2.1 Intended use

The audio frequency transmitter is used in combination with a pin-pointing system for

- Tracing
- Determining the laying depth of cables or metal pipes
- Cable fault pin-pointing using the audio frequency methods

If the device is not used in accordance with this stipulation, safe operation cannot be guaranteed. The responsible body or operator is liable for any personal injury and damage to property resulting from incorrect operation.

Proper use also includes

- Compliance with all instructions in this manual, and all other applicable documents,
- Compliance with the technical data and connection requirements given on the rating plate and in this manual and any other applicable documents,
- Compliance with the inspection and maintenance instructions.

[1] Responsible body is the person or group that is responsible for the safe operation of the device and its maintenance (EN 61010-1, 3.5.12).

[2] Operator is the person who uses the device for its intended purpose (according to the definition of user in compliance with EN 61010-1, 3.5.11).

2.2 Instructions for the operator

The audio frequency transmitter may only be operated by authorised and trained electrical engineers. An electrical engineer is a person who, owing to his professional education (electrical engineering), knowledge, experience and familiarity with the applicable standards and regulations, can assess the tasks assigned to him and detect possible dangers.

In addition, the operator must have:

- Knowledge of the technical equipment and operation of the audio frequency transmitter as well as the devices used
- Knowledge of tracing and the pin-pointing process
- Knowledge of plant engineering (cable types, switchgear, etc.).

2.3 Avoiding dangers, taking safety measures

- When installing and operating the audio frequency transmitter, you must comply with the following regulations and guidelines:
  - Accident prevention and environmental protection regulations applicable for your country
  - Safety instructions and regulations of the country where the audio frequency transmitter is being used (according to the latest version)
  - EU/CENELEC countries: EN 50110 *Operation of electrical installations*

    Other countries: The standards for operating electrical installations applicable in your country
  - If necessary, other national and international standards and guidelines in accordance with the latest applicable version
  - Local safety and accident prevention regulations
  - Employers' liability insurance association regulations (if any)

2.3.1 Operation of the product only if it is in a technically safe condition

Safety, function, and availability depend on the proper condition of the device. Upgrades, modifications, or alterations to the device are strictly prohibited.

- Operate the device only in a technically perfect condition.
- In case of damage and malfunction, immediately stop the device, mark it accordingly and have the faults rectified by appropriately qualified and authorised personnel without delay.
- Comply with the inspection and maintenance conditions.
- Never take apart the device. There are no operator-serviceable or -repairable components inside the device.
- Use only accessories and original spare parts recommended by BAUR. The use of spare parts, accessories and special fittings that have not been tested and approved by BAUR could adversely affect the safety, function and characteristics of the device.

2.3.2 No operation during condensation

Condensation can form in devices and systems due to temperature fluctuations and high air humidity, which in some components can result in leakage currents, flashovers and short-circuits.

- Always prevent condensation in devices. Temper the device and system before and during the measurements so that no condensation occurs.

2.3.3 No operation in areas with risk of explosion and fire

Measurements in direct contact with water, in environments with explosive gases and in areas with fire risks are not permitted. Possible danger areas include e.g. chemical factories, refineries, paint factories, paint shops, cleaning plants, mills and stores of milled products, tank and loading plants for combustible gases, liquids and solid matter.

2.4 Special personal protective equipment

Personal protective equipment based on the risk assessment for the relevant working conditions is part of the safety concept of BAUR devices.

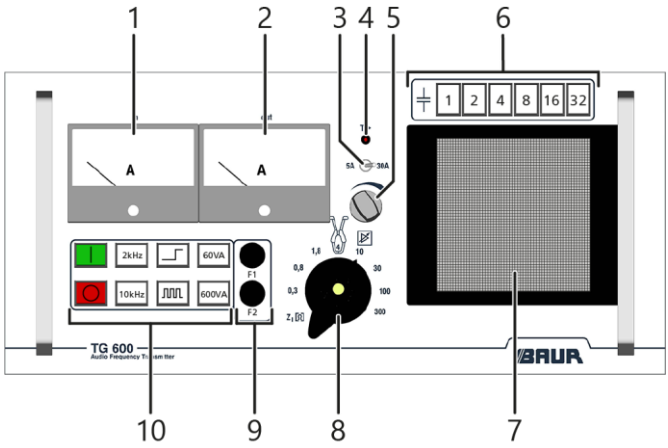
- Observe the internal operating instructions and the safety instructions applicable in your country.

3 PRODUCT INFORMATION

Information on the technical data as well as standard delivery, accessories and options can be found in Chapter *Data sheet* (on page 43).

3.1 Full illustration

Control panel

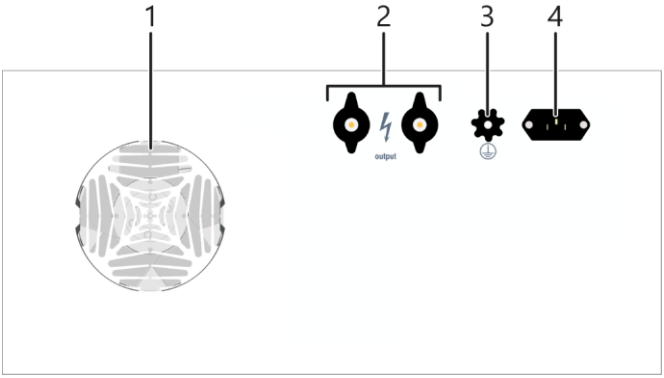


No.	Element	Function
1	*I in* current indicator	Shows the primary current of the output transformer
2	*I out* current indicator	Displays the output current
3	*5 A*/*30 A* toggle switch	Is used to switch the display range for the output current

No.	Element	Function
4	*T* > LED	Indicates when the device is getting too hot Further information: Chapter *Overload protection* (on page 14)
5	 rotary switch	Is used to set the output power
6	Keys  to 	Are used to set the reactive power compensation Further information: Chapter *Reactive power compensation* (on page 14)
7	Fan	Is used to cool the electronics
8	*Zi [Ω]* selector switch	Is used to select the impedance level for impedance adjustment Selectable impedance levels: ▪ 0.3 / 0.8 / 1.8 / 4 / 10 / 30 / 100 / 300 Ω ▪  : For inductive signal coupling with a signal injector, e.g. the BAUR AZ 10
9	*F1* + *F2* device protection fuses	Are used to protect the power supply of the audio frequency transmitter The dimensioning of the device protection fuses depends on the mains voltage. Observe the information on the rating plate.
10	 key	Is used to switch on the audio frequency transmitter
	 key	Is used to switch off the audio frequency transmitter
	 and  keys	Are used to enable the output frequency The output frequency is specified on the respective key. The key for the active output frequency is illuminated. The labelling of the keys is specified for the 2 kHz and 10 kHz standard frequencies as an example. The labelling for other frequencies is the same. Standard frequencies for very long land and submarine cables: 982 Hz and 2 kHz
	 key	Is used to enable continuous operation

No.	Element	Function
10	key	Is used to enable pulsed mode In pulsed mode, the signal of the audio frequency transmitter can be easily distinguished from noise signals.
	60VA and 600VA keys	Are used to enable the low or high output power The output power is specified on the respective key. The key for the active output power is illuminated. The labelling of the keys is specified for the 60 VA and 600 VA standard output power ratings as an example. The labelling for other output power ratings is the same.

Ports on the back



No.	Element	Function
1	Fan (back)	Is used to cool the electronics
2	*output* ports	Are used to connect the device to the test object ▸ Do not connect any live cables to the *output* ports.
3	port	Is used to connect the protective earthing

No.	Element	Function
4	Mains voltage connection Further information: Chapter *Power supply* (on page 14)	

3.2 Power supply

The audio frequency transmitter is supplied via the mains voltage. The permissible mains voltage is specified at the mains voltage connection.

The mains voltage supply is protected by device protection fuses. The *F1* + *F2* device protection fuses are located on the control panel of the TG 600. The dimensioning of the device protection fuses depends on the mains voltage. Observe the information on the rating plate.

3.3 Reactive power compensation

Reactive power compensation reduces the reactive power at the output transformer and thus increases the output effective power. This means that the TG 600 can operate for longer in continuous mode without triggering thermal overload protection.

To compensate the reactive power, the compensating capacitors can be enabled using keys 1 to 32. Keys 1 to 32 correspond to the different sizes of compensating capacitors, starting with the 1 key for the smallest compensating capacitor.

Further information: Chapter *Performing impedance adjustment and reactive power compensation* (on page 29)

3.4 Overload protection

- The device has thermal overload protection. When the device is getting too hot, the *T* > LED lights up and the output power is reduced until the device cools down sufficiently. Once the device has cooled down, the output power is increased again automatically.
- If the output current is greater than 30 A, the lower output power is automatically selected.

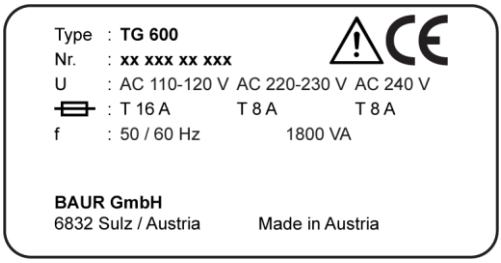
  To enable the higher output power again, proceed as follows:

  ▸ Reduce the output power by turning the rotary switch to the left.

  ▸ Press the key for the high output power.

Further information: Chapter *Full illustration* (on page 11)

3.5 Rating plate



Element	Description
Type	Device designation
Nr.	Serial number
U	Supply voltage If several supply voltages are possible, these are given consecutively one after another.
	Time characteristics and nominal current of the device fuse: time lag (T) If several supply voltages are possible, the corresponding fuses are listed under the respective voltage.
f	Mains frequency
VA	Max. recorded apparent output
	General warning sign Indicates that there is a potential risk of danger when using the product and hence the user manual must be observed
	CE mark Indicates that the device or system conforms to CE.

Element	Description
BAUR GmbH 6832 Sulz / Austria	Name and address of the manufacturer
Made in Austria	Indicates the country in which the device was manufactured.

4 CHECKS TO PERFORM BEFORE COMMISSIONING

1. Operate the device only in a technically perfect condition.
2. Check the device and mechanical connections for damage.
3. Check electrical connections and connection cables for damage.
   Use only undamaged connection cables.

5 CONNECTING THE AUDIO FREQUENCY TRANSMITTER

5.1 Installing the device

- Comply with the applicable accident prevention regulations and local conditions.
- Select the place of installation for the device in such a way that
  - a stable base is guaranteed,
  - the device and the test object are easy to access for the connections and operation.
  - sufficient safety distances are maintained. You must comply with EN 50110 for the operation of electrical installations (EU/CENELEC countries) or the relevant standards applicable in your country.

5.2 Ensuring there is no voltage at the workplace

Before connecting the test object follow the 5 safety rules:

1. Disconnect the test object from all phases.
2. Secure the test object against reconnection.
3. Ensure that there is no voltage.
4. In the station, connect all phases of the test object with the station earth and short-circuit it.
5. Ensure that adjacent live parts are secured against accidental contact and flashovers with suitable covers (insulation mats, insulating safety plates).

Important:

- If the **cable sheath is not earthed**, establish an earth connection to the station earth that is as short as possible – as close as possible to the station earth connection.
- The earth cable should be as short as possible and have a low impedance. Use a **copper earth cable with a cross section of at least 16 mm**^{2}.

5.3 Preparing the test object terminals

The connection point and the far end represent the two terminals of the test object.

1. Disconnect all equipment that is connected to the test object and is not designed for the stipulated test voltage.
2. Cordon off all metal parts, e.g. lighting masts, at the terminals of the test object or insulate them with insulating safety plates.
3. Earth all metal parts at the terminals to avoid dangerous charging.
4. Follow the cable route and ensure that no work is being carried out underground on gas lines and that there are no other danger points.

5.4 Safety instructions

DANGER

Danger due to electric voltage, flashovers at the connection point, or arcing fault on connection

Electric shock on touching live and active parts and due to residual charges and induction voltages;

Burns, electro-ophthalmia, and hearing damage.

- Use suitable personal protective equipment against electric shocks and arcing faults.
- Observe the isolating distances.
- Make sure that the workplace is de-energised.

  Further information: Chapter *Ensuring there is no voltage at the workplace* (on page 17)
- You may touch the parts that were under voltage only if they are visibly earthed and short-circuited.

DANGER

High electric voltage through potential increase

A fault can cause flashovers in the device. In this case, a potential increase of the housing is possible due to high short-circuit currents.

Danger due to the potential increase is reduced when a protective earthing is connected properly.

- Connect the protective earthing carefully. The protective earthing cable should be as short as possible and of low impedance.

5.5 Connecting for tracing

Connection diagram

- Cable with 3 screened phases (on page 21)
- Cable with 1 screened phase (on page 21)
- Unscreened cable with 3 phases (on page 22)

Procedure

At the near end

1. Make sure that the workplace is de-energised.

   Further information: Chapter *Ensuring there is no voltage at the workplace* (on page 17)
2. Make sure that the connection points and the far end are prepared for the measurement tasks.

   Further information: Chapter *Preparing the test object terminals* (on page 18)
3. Connect the protective earthing cable to the protective earthing connection on the device and the station earth – as close as possible to the station earth connection.

   Ensure that the protective earthing cable is as short as possible and there are no loops.

4. Connect the connection cable to the *output* ports on the back of the audio frequency transmitter. Proceed as follows:
   a. Undo the screw caps of the *output* ports.
   b. Screw one of the two cable lugs onto each *output* port using the respective screw cap.
5. Connect the connection cable to the station earth using a connection clip.

   The location for connecting the connection cable to the station earth should be as close as possible to the location where the screens and the test object phases not used for the measurement are connected to the station earth.
6. Connect the connection cable to the test object phase to be tested using the other connection clip. Observe the relevant connection diagram.
7. Remove the earthing and short-circuit connection from the phase to be tested.
8. Ensure that the phases that are not used for the measurement are earthed and shorted.
9. Connect the device to the supply voltage.

   Further information: Chapter *Connecting the device to the supply voltage* (on page 28)

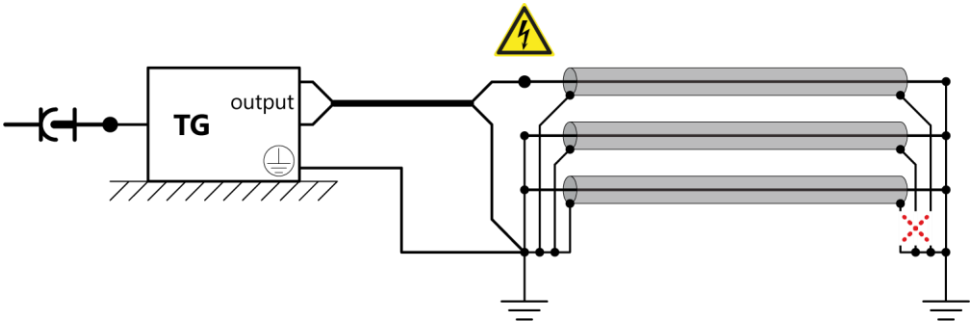
At the far end

10. Make sure that all phases are earthed at the far end.

    The return current is distributed to multiple phases through the earthing at the far end.
11. **Recommendation:** To receive a stronger signal for locating, disconnect the screen of the test object from the station earth.

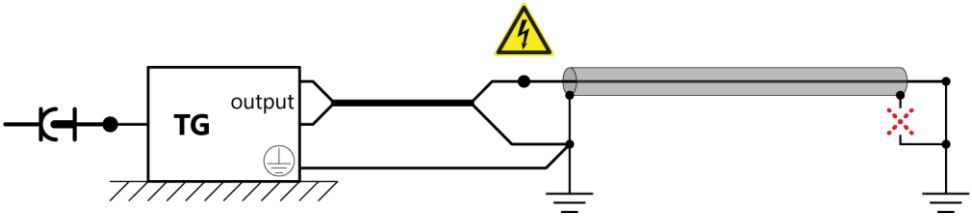
    Disconnecting the screen from the station earth prevents return current from flowing back via the screen and the forward and return currents thus cancel each other out.

5.5.1 Cable with 3 screened phases



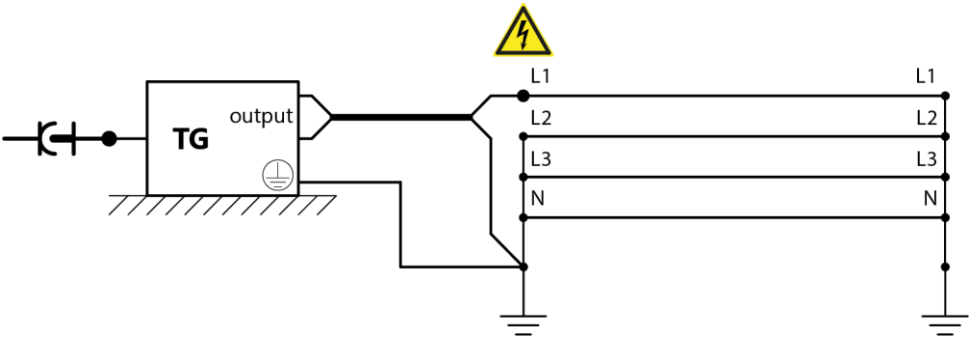
⁙ = optional disconnection of the screens for stronger signal

5.5.2 Cable with 1 screened phase



⁙ = optional disconnection of the screen for a stronger signal

5.5.3 Unscreened cable with 3 phases



5.6 Connecting for fault location using the twist method

Prerequisite

Test object with twisted phases

Connection diagram

- Cable faults between two phases (on page 24)
- Joint location (on page 24)

Procedure

At the near end

1. Make sure that the workplace is de-energised.

   Further information: Chapter *Ensuring there is no voltage at the workplace* (on page 17)
2. Make sure that the connection points and the far end are prepared for the measurement tasks.

   Further information: Chapter *Preparing the test object terminals* (on page 18)
3. Connect the protective earthing cable to the protective earthing connection on the device and the station earth – as close as possible to the station earth connection.

   Ensure that the protective earthing cable is as short as possible and there are no loops.

4. Connect the connection cable to the *output* ports on the back of the audio frequency transmitter. Proceed as follows:
   a. Undo the screw caps of the *output* ports.
   b. Screw one of the two cable lugs onto each *output* port using the respective screw cap.
5. Connect the connection cable to the station earth using a connection clip.

   The location for connecting the connection cable to the station earth should be as close as possible to the location where the screens and the test object phases not used for the measurement are connected to the station earth.
6. Connect the connection cable to the test object phase to be tested using the other connection clip. Observe the relevant connection diagram.
7. Remove the earthing and short-circuit connection from the phase to be tested: at the connection point and at the far end.
8. Ensure that the phases that are not used for the measurement are earthed and shorted.
9. Connect the device to the supply voltage.

   Further information: Chapter *Connecting the device to the supply voltage* (on page 28)

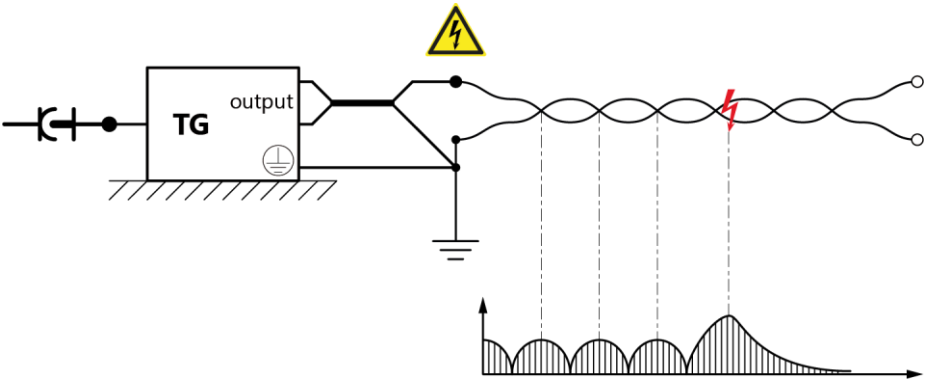
At the far end

For locating joints:

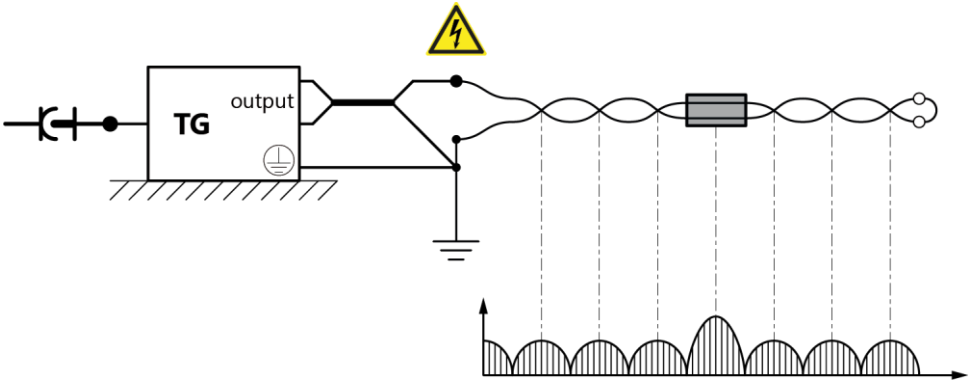
- Short the connected phase and another phase of the test object at the far end.

  For twisted pair phases: Short the connected phase with the second phase of the phase pair.

5.6.1 Cable faults between two phases



5.6.2 Joint location



5.7 Connecting for fault location using the minimum distortion method

Connection diagram

- Cable with 3 screened phases (on page 26)
- Cable with 1 screened phase (on page 26)

Procedure

At the near end

1. Make sure that the workplace is de-energised.

   Further information: Chapter *Ensuring there is no voltage at the workplace* (on page 17)
2. Make sure that the connection points and the far end are prepared for the measurement tasks.

   Further information: Chapter *Preparing the test object terminals* (on page 18)
3. Connect the protective earthing cable to the protective earthing connection on the device and the station earth – as close as possible to the station earth connection.

   Ensure that the protective earthing cable is as short as possible and there are no loops.
4. Connect the connection cable to the *output* ports on the back of the audio frequency transmitter. Proceed as follows:
   a. Undo the screw caps of the *output* ports.
   b. Screw one of the two cable lugs onto each *output* port using the respective screw cap.
5. Connect the connection cable to the station earth using a connection clip.

   The location for connecting the connection cable to the station earth should be as close as possible to the location where the screens and the test object phases not used for the measurement are connected to the station earth.
6. Connect the connection cable to the test object phase to be tested using the other connection clip. Observe the relevant connection diagram.
7. Remove the earthing and short-circuit connection from the phase to be tested.
8. Ensure that the phases that are not used for the measurement are earthed and shorted.
9. Connect the device to the supply voltage.

   Further information: Chapter *Connecting the device to the supply voltage* (on page 28)

At the far end

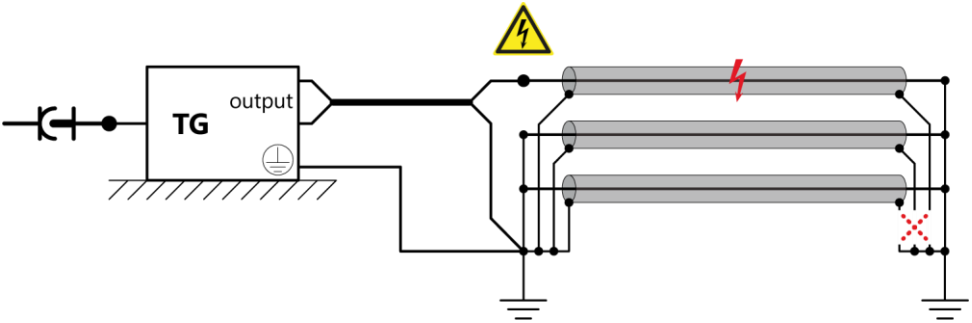
10. Make sure that all phases are earthed at the far end.

    The return current is distributed to multiple phases through the earthing at the far end.

11. **Recommendation:** To receive a stronger signal for locating, disconnect the screen of the test object from the station earth.

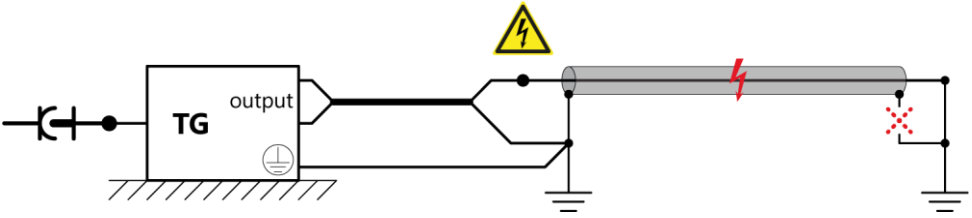
    Disconnecting the screen from the station earth prevents return current from flowing back via the screen and the forward and return currents thus cancel each other out.

5.7.1 Cable with 3 screened phases



⤫ = optional disconnection of the screens for stronger signal

5.7.2 Cable with 1 screened phase



⤫ = optional disconnection of the screen for a stronger signal

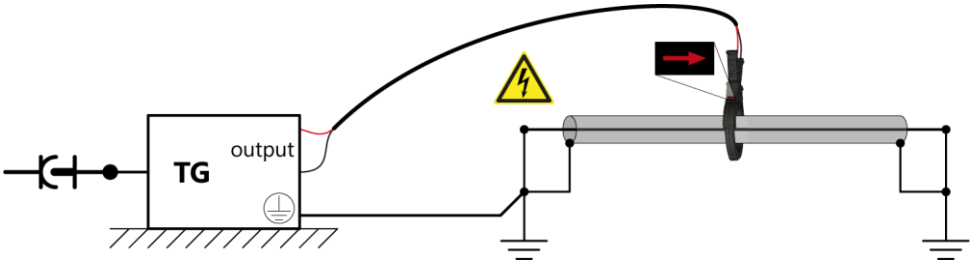
5.8 Connecting the AZ 10 signal injector for inductive signal coupling

Using the optional AZ 10 signal injector, you can inductively couple the signal of the audio frequency transmitter into the test object. Note that the signal is much weaker during inductive coupling than galvanic coupling. Cable routes, cable faults, or joints can be much harder to locate due to the impact of external influences.

Inductive signal coupling can be used in the following scenarios in particular:

- If the test object cannot be taken out of operation
- On inaccessible cables where galvanic connection is not possible
- If tracing is to be carried out on an unknown cable

The illustration shows a connection diagram for a test object with one phase as an example. The device is connected to a test object with several phases in the same way.



1. Connect the protective earthing cable to the protective earthing connection on the device and the station earth – as close as possible to the station earth connection.

   Ensure that the protective earthing cable is as short as possible and there are no loops.
2. Connect the connection cable of the signal injector to its ports.

3. Connect the connection cable of the signal injector to the *output* ports on the back of the audio frequency transmitter.
4. Place the signal injector on the test object phase so that the arrow on the signal injector points towards the far end.
5. Connect the device to the supply voltage.

   Further information: Chapter *Connecting the device to the supply voltage* (on page 28)

5.9 Connecting the device to the supply voltage

- Connect the device to the mains voltage via the mains supply cord. If necessary, use a country-specific adapter.

  Note that the mains supply earth is not isolated from the station earth.

5.10 Securing the test area

1. Mark out the path for pedestrians.
2. Secure the connection cables, e.g. with cable bridges or rubber mats. The connection cables must be protected against damage and there must be no danger of people tripping.
3. Make sure that except for the tester, no other person is able to access the work area.
4. Make sure that unauthorised persons have no access to the device and the parts being tested.
5. Mark the test area and terminals clearly. It should be immediately apparent that measurement tasks are being performed.
6. Make sure that unauthorised persons cannot access the local mains stations.
7. Make sure that the workplace is de-energised, and that the connection point and the far end of the test object are prepared for the measurement tasks.

   Further information:

   - Chapter *Ensuring there is no voltage at the workplace* (on page 17)
   - Chapter *Preparing the test object terminals* (on page 18)

6 COMMISSIONING

6.1 Switching on the audio frequency transmitter

1. Properly connect the audio frequency transmitter to the test object and the mains voltage supply.

   Further information: Chapter *Connecting the audio frequency transmitter* (on page 17)

2. Secure the test area.

   Further information: Chapter *Securing the test area* (on page 28)

3. Turn the rotary switch all the way to the left.
4. Set the *Zi [Ω]* selector switch to impedance level *0,3*.
5. Switch on the audio frequency transmitter by pressing the key.

6.2 Performing impedance adjustment and reactive power compensation

Impedance adjustment (also referred to as power adjustment) is used to inject a high-energy signal that is optimally adjusted in terms of current and voltage into the test object with as little loss as possible.

Perform manual impedance adjustment for high-resistive test objects in particular.

1. Properly connect the audio frequency transmitter to the test object and secure the test area.

   Further information:

   - Chapter *Connecting the audio frequency transmitter* (on page 17)
   - Chapter *Securing the test area* (on page 28)

2. Turn the rotary switch all the way to the left.
3. Set the *Zi [Ω]* selector switch to impedance level *0,3*.
4. Switch on the audio frequency transmitter by pressing the key.

   Further information: Chapter *Switching on the audio frequency transmitter* (on page 29)

5. If reactive power compensation is enabled (the respective 1 to 32 keys are illuminated), disable it. To do this, press the corresponding keys.

No keys are illuminated.

6. Select the output frequency. To do this, press the corresponding key.

   The output frequency is specified on the key.

7. Select the operating mode for the audio frequency transmitter. To do this, press the corresponding key.

   - key: Continuous mode (usually in continuous operation)
   - key: Pulsed mode

   Tracing: To better distinguish the signal of the audio frequency transmitter from noise signals, use pulsed mode for tracing.

8. Select the output power. To do this, press the corresponding key.

   The output power is specified on the key.

   Tracing: To prevent currents being induced in nearby cables during tracing, select a low output power (recommendation: approx. 1 – 60 VA).

9. Using the rotary switch, set the primary current of the output transformer *I in*.

   For standard frequencies:

   - 2 kHz: *I in* < 28 A
   - 10 kHz: *I in* < 21 A

10. Using the *Zi [Ω]* selector switch, increase the impedance levels until output current *I out* reaches a maximum value with a constant primary current of the output transformer.

    If required, correct the primary current of the output transformer *I in* using the rotary switch.

    AZ 10 signal injector: Set the *Zi [Ω]* selector switch to the position.

11. Perform reactive power compensation. To do this, press keys 1 to 32 until the primary current of the output transformer *I in* reaches a minimum value.

    Keys 1 to 32 correspond to the different sizes of compensating capacitors, starting with the 1 key for the smallest compensating capacitor. To set the required reactive power compensation precisely, several keys can be enabled simultaneously. The enabled keys are illuminated.

    Recommendation: Start reactive power compensation with the smallest compensating capacitor (1 key).

    Further information: Chapter *Reactive power compensation* (on page 14)

6.2.1 Notes for tracing on very long cables

Output frequency

- Select the low output frequency for tracing on very long cables.

Output power

To prevent currents being induced in nearby cables during tracing, select a low output power (recommendation: approx. 1 – 60 VA). However, in the case of very long cables, a higher output power is required for tracing.

7 PERFORMING A MEASUREMENT

Required equipment

Pin-pointing system incl. audio frequency probe

Procedure

1. Properly connect the audio frequency transmitter to the test object and secure the test area.

   Further information:

   - Chapter *Connecting the audio frequency transmitter* (on page 17)
   - Chapter *Securing the test area* (on page 28)
2. Switch the audio frequency transmitter on.

   Further information: Chapter *Switching on the audio frequency transmitter* (on page 29)
3. Perform an impedance adjustment.

   Further information: Chapter *Performing impedance adjustment and reactive power compensation* (on page 29)
4. Perform the measurement with the pin-pointing system.

- For information on performing a measurement, refer to the user manual for the pin-pointing system used.

7.1 Notes for measurements with the AZ 10 signal injector

- Make sure that the maximum load of the optional signal injector is not exceeded.

  Maximum load:

  - AZ 10/D 70: approx. 30 A
  - AZ 10/D 80: approx. 30 A
  - AZ 10/D 125: approx. 25 A

8 DECOMMISSIONING THE AUDIO FREQUENCY TRANSMITTER AND TEST AREA

DANGER

High electrical voltage

Electric shock on touching live and active parts and due to residual charges if earthing is removed too early

- Disconnect the earth connections as the last connection of the test assembly.
- Never disconnect the earth connections as long as power and other periphery connections are still connected.

1. Turn the rotary switch all the way to the left.
2. Set the *Zi [Ω]* selector switch to impedance level *0,3*.
3. Disable reactive power compensation. To do this, press the corresponding 1 to 32 keys.

   No keys are illuminated.
4. Switch off the TG 600 by pressing the key.
5. Disconnect the TG 600 completely from the supply voltage. To do this, remove the mains plug.
6. Disconnect the connection cables in the reverse order from the order in which they were connected.

   Important: Finally, disconnect the earth cable last.
7. Clean the connection cables.
8. Put away the connection cables.
9. If necessary, remove the cordoning.
10. Remove the earthing and the short-circuit on the test object only if no subsequent work is required and if the test object is to be put back into operation by the responsible individuals.
11. Remove the barriers and marking of the test area.

9 MAINTENANCE AND CARE

9.1 Safety instructions

NOTICE

Damage to devices due to improper handling

The user is liable for any damage caused due to improper maintenance or care.

- Never take apart the device. This can damage the device. There are no operator-serviceable or -repairable components inside the device.
- Only personnel trained and authorised by BAUR may carry out maintenance tasks.

9.2 Cleaning the device

NOTICE

Device damage due to wrong cleaning agents

- Do not use any abrasive, corrosive cleaning agents or strong solvents.
- Ensure material compatibility.
- Do not clean the product with acetone or thinner.
- Never clean electrical devices with water.

Required equipment

- Mild detergent
- Lint-free cleaning cloth

Procedure

1. Switch off the device and disconnect it from the supply voltage.
   Further information: Chapter *Decommissioning the audio frequency transmitter and test area* (on page 33)
2. Make sure that all live parts in the immediate vicinity are covered.
3. If required, clean the device surfaces with mild detergent and a lint-free cloth.
   NOTICE! Device damage due to leaking fluids.
4. Do not allow liquids to leak into the devices.

9.3 Checking and cleaning connection cables

NOTICE
Damage to cable due to aggressive cleaning agents ▸ Do not use any abrasive, corrosive cleaning agents or strong solvents. ▸ Ensure material compatibility. ▸ Do not clean the connection cables with acetone or thinner.

Required equipment

- Mild cleaning agents or petroleum ether
- Lint-free cleaning cloth

Checking and cleaning after each use

1. Each time after using the device, clean all the connection cables used.
2. Check the connection cables for damage, e.g. cracks, breaks, or other types of damage.

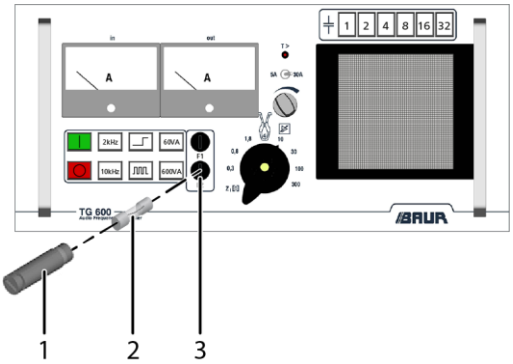
9.4 Checking and replacing the device protection fuses

The *F1 + F2* device protection fuses are located on the control panel of the TG 600. The dimensioning of the device protection fuses depends on the mains voltage.

Required equipment

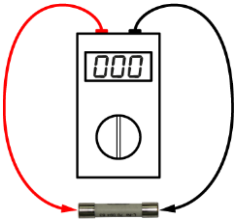
- Multimeter
- Flat-blade screwdriver 1.2 x 6.5 mm
- Fuses:
  - 110 – 120 V: T 16 AH (16 A time lag)
  - 220 – 230 V: T 8 AH (8 A time lag)
  - 240 V: T 8 AH (8 A time lag)

Procedure



1	Fuse cartridge
2	Fuse
3	Groove

1. Unscrew the fuse cartridge (1) from the groove (3).
2. Remove the fuse (2) from the fuse cartridge (1).
3. Check if the fuse (2) is working. For this, perform a continuity check with a multimeter.



If the fuse is not working, replace the faulty fuse with a functioning one.

4. Insert the fuse (2) into the fuse holder (1).
5. Screw the fuse cartridge (1) back into the groove (3).
6. Repeat steps 1 – 5 for the other fuse cartridge (1).

10 TRANSPORTATION AND STORAGE

10.1 Transportation

During transportation, or if you send the device to BAUR GmbH, a BAUR representative, or the Technical Service department for repair or for any other reason, please follow the instructions below:

- *NOTICE!* Damage to device due to improper transportation.

  During transportation, ensure that the environmental conditions are as specified in the technical data for the device.

  Further information: Chapter *Data sheet* (on page 43)
- Protect the device against strong vibrations.
- Protect the device against moisture.
- Protect the device against unauthorised access.

10.2 Storage

- During storage, comply with the ambient conditions specified in the technical data for the device.

  Further information: Chapter *Data sheet* (on page 43)
- Protect the device and its components against moisture.
- Protect the device and its components against unauthorised access.

11 Warranty and After Sales

Warranty

For warranty claims, please contact BAUR GmbH or your local BAUR representative. Warranty is cancelled in case of misuse. Wear parts are excluded from the warranty.

After Sales

For questions contact BAUR GmbH or your BAUR representative.

BAUR GmbH

Raiffeisenstraße 8
6832 Sulz / Austria
service@baur.eu
https://www.baur.eu

12 Disposal

The final decommissioning and disposal of the device must be carried out in compliance with country-specific laws, regulations and standards.

Device components do not belong in the domestic waste.

- Dispose of electrical device components in accordance with the applicable national regulations.
- Dispose of the various device components in an environmentally friendly manner and in accordance with the applicable national regulations.

13 DECLARATION OF CONFORMITY

We

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declare, under our sole responsibility, that the BAUR product

BAUR TG 600 audio frequency transmitter

to which this declaration refers, conforms to the following standards or standard documents:

- Low Voltage Directive 2014/35/EC
  EN 61010-1:2010
  EN 61010-2-030:2010
- EMC Directive 2014/30/EU
  EN 55011:2009 + A1:2010
  EN 61000-4-2:2009
  EN 61000-4-4:2012
- Environmental testing
  EN 60068-2-ff

Signed: Torsten Berth, Technical Director

Dr. Eberhard Paulus, Director QM/QS

Sulz, 14/12/2015

14 INDEX

TG 600

BAUR audio frequency transmitter

The figure is illustrative.

Features

- High-performance audio frequency transmitter up to 600 VA
- Frequency of 2 or 10 kHz, quartz-stabilised (other frequencies on request)
- Floating output
- Eight-level impedance adjustment from 0.3 to 300 Ω
- Optimal reactive power compensation by means of connectable compensating capacitors
- Thermal overload protection
- Display of the primary current and output current of the output transformer

The TG 600 audio frequency transmitter is specifically used for the precise location of cable faults and joints using the twist method and the minimum distortion method.

The thermal load on the high-power output stage can be reduced with the aid of a compensating circuit. This improves the output power and the operating time. In addition to being used for cable fault location, the high power also allows high-frequency burn processes to be performed on signal and telephone cables in particular.

A maximum output power of 60 or 600 VA can be selected, with the 60 VA level primarily intended for tracing and determining the depth of cable routes.

Technical data

Tracing and cable fault location	
Output power	On 2 levels; continuously adjustable on each power level
At 2 kHz	60 VA / 600 VA
At 10 kHz	45 VA / 450 VA
Max. output current	30 A
Frequencies	Switchable between 2 frequencies*: ▪ 2 kHz ±0.1% ▪ 10 kHz ±0.1%
Output impedance	On 8 levels: 0.3 / 0.8 / 1.8 / 4 / 10 / 30 / 100 / 300 Ω
Display	▪ Output current I_{out} in A ▪ Primary current of the output transformer I_{in} in A ▪ Overtemperature display
Output	Pole terminals on the back of the device

* Other frequencies on request

General	
Power supply	▪ 110 – 120 V, 50/60 Hz ▪ 220 – 230 V, 50/60 Hz ▪ 240 V, 50/60 Hz
Power consumption	Max. 2,200 W
Device protection	Thermal overload protection
Dimensions (W x H x D)	Approx. 505 x 255 x 300 mm
Weight	Approx. 38 kg
Ambient temperature (operational)	-20°C to +40°C
Safety and EMC	CE compliant in accordance with Low Voltage Directive (2014/35/EU), EMC Directive (2014/30/EU), EN 60068-2-ff Environmental testing

Standard delivery

- TG 600 audio frequency transmitter
- Mains supply cord, 2.5 m
- Earth cable, 3 m, with earth terminal
- Connection cable, 3 m, with connection clips
- User manual

Accessories and options

- AZ 10/D 70 clip-on current transformer, with connection cable
- AZ 10/D 80 clip-on current transformer, with connection cable
- AZ 10/D 125 clip-on current transformer, with connection cable
- Hinged stand for 19" devices, height 5 RU (222 mm)

Would you like to discover more about this product?
If so, contact us: www.baur.eu > BAUR worldwide

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