

Installation and operating manual VARIABOX



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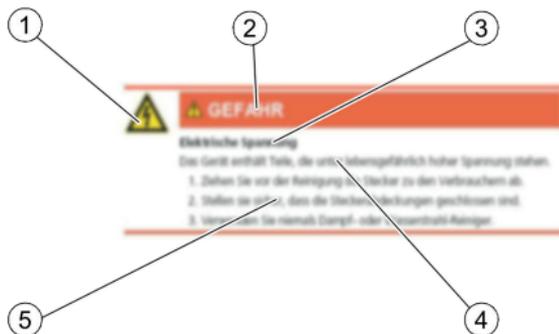
1 About this manual

This manual

- describes the installation and operation of the VARIABOX of Bals Elektrotechnik GmbH & Co. KG
- is an integral part of every VARIABOX and must be kept in safe custody during the product service life
- must be read carefully and understood before use and any work.

1.1 Structure of the warnings

The following picture illustrates the structure of a sample warning.



1	Hazard-specific symbol
2	Signal word
3	Type and source of the hazard
4	Possible consequences of failing to comply
5	Procedure for avoiding hazards

1.2 Symbols used

	General warning of a hazardous area
	Warning – dangerously high voltage
	Notice

1.3 Signal words used

All warnings in this manual are clearly highlighted. The following signal words are used for warnings:

DANGER	Warns of dangers which will lead to serious injuries or to death if the instructions are not followed.
WARNING	Warns of dangers that may lead to serious injuries or to death and/or cause considerable damage to property if the instructions are not followed.
CAUTION	Warns of dangers that may lead to reversible injuries and/or considerable damage to property if the instructions are not followed.
NOTICE	Warns of dangers that may lead to operational disruptions and/or considerable damage to property. Damage to the environment, too, may occur if the instructions are not followed.

2 Intended use

The VARIABOX is used as a power distributor indoors and outdoors as a wall combination or as a portable distributor.

The VARIABOX is built for professional use. The installation and the fixed connection to the mains supply should be carried out only by trained and qualified experts.

Any use going beyond the intended use is considered to be improper. The manufacturer is not liable for damages resulting from improper use. Any such risk shall be borne solely by the user.

In case of unauthorised modifications or conversions, the CE conformity becomes null and void, and thus, also all claims for warranty. Modifications may lead to risks for life and limb as well as damage to the VARIABOX or loads connected.

Factory-fitted labels and markings on the VARIABOX should not be removed, modified or blurred.

Protect against foreign bodies and impact of weather

The VARIABOX complies with the protection degree IP44, IP54 or IP67 according to DIN EN 60529 (VDE 0470-1), (depending on the respective design, see Design and function [8]). Each of these mean:

- Protection degree IP44:
 - Protected against solid bodies with a diameter beyond 1.0 mm, e.g. a wire
 - Protection against water sprayed from all sides
- Protection degree IP54:
 - Protected against dust in damaging quantity
 - Complete protection against contact
 - Protection against water sprayed from all sides
- Protection degree IP67:
 - Dust-proof
 - Complete protection against contact
 - Protection against temporary immersion

If a VARIABOX with protection degree IP44 or IP54 is to be installed outdoors, we recommend also installing a suitable weather protection roof, available in the accessories from Bals Elektrotechnik GmbH & Co. KG.

Environment

The following operating conditions apply for the safe operation of the product:

Size	Value
Temperature	-25 °C ... +40 °C
Humidity	10 %rH ... 90 %rH

3 General safety instructions



- Safe use is ensured only if this manual is followed completely.
- Before installation, commissioning or operation, read this manual thoroughly.
- The VARIABOX must be installed, maintained and put into operation in accordance with the laws, ordinances and standards.
- Never cover the VARIABOX in order to avoid the heat being generated from getting trapped and thus, the risk of a fire.
- Keep easily combustible and explosive materials away from the VARIABOX.
- Handle the cables with care
 - by always pulling at the plug and not the cable when unplugging
 - by preventing the cable from getting damaged mechanically
 - by keeping intense heat away.
- Protect the housing from mechanical damage such as shocks and hard impacts.
- Never operate a defective VARIABOX.
- Avoid tripping hazards.

4 Packaging and transport

4.1 Packaging



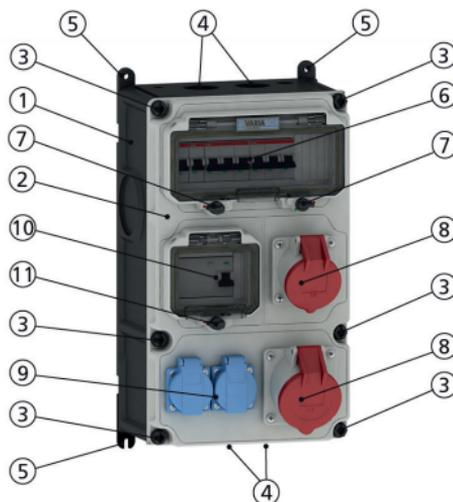
Packaging materials are valuable raw materials and can be reused. The packaging materials of the VARIABOX should therefore be brought to an appropriate recycling facility. If this is not possible, dispose of the packaging materials according to the locally applicable regulations.

4.2 Transport

Check the delivery for completeness and integrity. If you identify transit damage or if the delivery is incomplete, notify your dealer immediately.

5 Design and function

The following figure illustrates the typical design of a VARIABOX.



1	Housing
2	Housing cover
3	Captive housing screws
4	Prepared cable entries
5	Variable fasteners
6	Fuse panel
7	Toggle viewing window (OTC flap), fuse panel
8	CEE socket outlet
9	Domestic socket outlet
10	FI circuit breaker
11	Toggle viewing window (OTC flap), FI circuit breaker

Each VARIABOX consists of the components 1 to 5. All other components vary, depending on the design, in the quantity and type.

The nameplate on the left side of the housing displays the technical specifications of the VARIABOX, as illustrated in the figure given below based on an example.

		Typ Made in Germany	IP44
②	Spannung voltage	200V/346V 240V/415V ~	Frequenz frequency
③	I_n	40A	Maße <small>dimension</small> 390x230x145mm
④	RDF	0,8	I_{cc}
		$\leq 10\text{kA}$	U_{imp}
		4kV	Gewicht <small>weight</small> 5,898kg
⑤	Temp	- 25/ + 40°C	Baujahr <small>year of construction</small> 10/14
	DIN EN 61439	3 C E	

1	Item number
2	Rated voltage
3	Rated current of the combination
4	Rated load factor
5	Product standard
6	Rated conditional short-circuit current
7	Rated impulse withstand voltage
8	Protection degree
9	Rated frequency
10	Dimensions
11	Weight

6 Installation and operation

The VARIABOX can be used as a wall combination or as a portable power distributor. In both cases, the supply cable is connected in the same way (see Connecting the supply cable [► 13]).

The OTC flaps can be locked securely with the lock fittings (available separately as accessories) at the openings provided for this purpose. All VARIABOX housings can be sealed from the top to the bottom.

6.1 Changing the opening direction of the housing cover

If the local conditions require that the housing cover's direction of opening needs to be changed, proceed as follows:

1. Loosen the captive housing screws and open the VARIABOX.
2. Loosen the screws (1), with which the hinges are fixed to the housing and remove the hinges.
3. Push the hinge piece to the side and replace the screw (1) in the borehole (maximum torque 1 Nm).
4. Loosen the screws (2), with which the hinges are fixed to the cover and remove the hinges.



5. Fix the hinges to the other side of the housing in the reverse order, and pay attention to the marking ("A", "B").
 6. Fix the hinge with screws to the cover (maximum torque 1 Nm).
- ▼ In this way, you have changed the direction of opening of the housing cover.

6.2 Wall mounting

For use as a wall combination, the VARIABOX must be fixed with plugs and screws to the wall (fastening set is available in our accessories).

You have two options available for this purpose. One option is to use the outer fastenings as described below.

The other option is that the screw connection to the wall takes place through the threaded shafts for the captive housing screws (Design and function [▶ 8]). The shafts are intended for 6 mm screws.

1. Loosen the screws of the outer fastenings on the back side of the VARIABOX and push them out either downwards or upwards.



2. Tighten the screws again.



3. Hold the VARIABOX against the wall and mark the boreholes.

4. Drill the holes and insert suitable plugs into them.
 5. Fix the bottom screws in place. Make sure that the screw heads have sufficient clearance to the wall, in order to hook in the VARIABOX.
 6. Break out the cable entry provided for the supply cable and put the cable gland in place. The supply cable can be routed either from the bottom or from the top into the VARIABOX.
 7. Place the VARIABOX with the outer fastenings on the lower screws.
 8. Fix the VARIABOX with screws to the four outer fastenings on the wall.
- ▼ This completes the wall mounting.

6.3 Connecting the supply cable



DANGER

Electrical voltage

The supply cable may carry high electrical voltage that is fatal. Pay attention to the five safety rules of electricity:

1. De-energise.
2. Secure the supply from being switched on again.
3. Ensure the de-energised condition.
4. Connect to earth and short circuit.
5. Cover or cordon off adjacent live parts.

Choose the required cable cross-sections and line fuses based on the specifications given on the nameplate (see Design and function [8]).

1. Loosen the captive housing screws and open the VARIABOX.
2. Press the brackets of the supporting rails inside and pull the supporting rails out from the front.
3. Strip the cable such that the sheath reaches about 1 cm wide through the cable gland in the VARIABOX. Remove the insulation from the cable cores.



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4. Guide the stripped and uninsulated supply cable through the cable gland and below the supporting rails up to the terminal strip. Once the cable length required for the wiring has been reached, fix the cable gland with screws.
5. Press the brackets of the supporting rails inside and press the supporting rails back to their original position.
6. Connect the cores to the terminal strip.



7. Close the cover of the VARIABOX and tighten the captive screws.
8. If necessary, switch the fuse elements and the FI circuit breaker on.

- ▼ Your VARIABOX has now been installed completely and is ready for operation.

6.4 Routine inspections

Before each use

Check the device including the flaps and viewing window for any externally visible signs of damage. Inform a qualified electrician if you identify any damage.

Every six months

If in the respective design of the VARIABOX an FI circuit breaker is installed, it must be tested regularly. The test intervals depend on the specific application and may vary.

1. Put the switch lever to the "I" position.
2. Press the "T" test button.
 - ▼ The FI circuit breaker trips and the switch lever jumps to the "0" position.
3. If the FI circuit breaker does not trip, the VARIABOX must be put out of operation. Inform an electrician.

7 Cleaning and care

It is recommended to clean the device as required. Use a dry cloth to clean the device. Use a wet cloth if the device is very dirty.



DANGER

Electrical voltage

The device contains parts that carry hazardous voltage that may be fatal.

1. Pull out the plugs to the loads before cleaning them.
2. Make sure that the plug covers are closed.
3. Never use steam or water jet cleaners.



NOTICE

Damage to the plastic parts.

Corrosive cleaning agents may attack or destroy the plastic parts.

1. Use only a cloth moistened with water for cleaning.

8 Faults and their rectification



DANGER

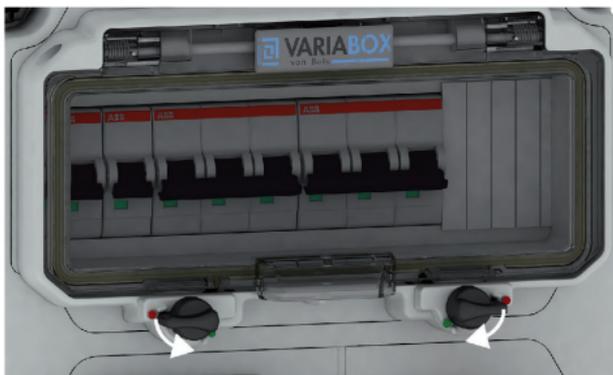
Electrical voltage

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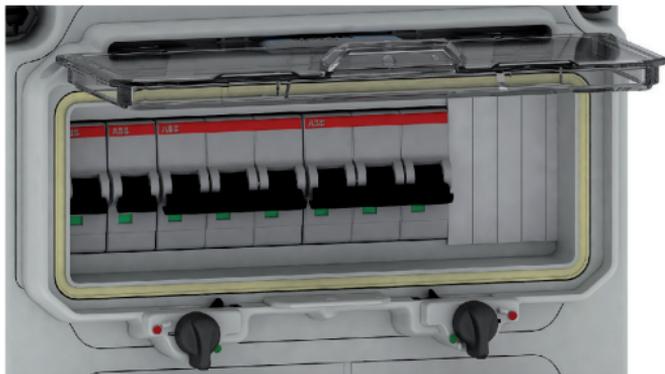
1. Entrust all repair work to employees of specialist workshops.
2. Never operate a defective VARIABOX.

If one of the loads connected is no longer supplied with power, proceed as follows:

1. Pull out the corresponding plug from the VARIABOX.
2. Check whether the associated fuse element or the FI circuit breaker has tripped. If this is the case, continue with step 3, otherwise inform a qualified electrician.
 - ∨ This completes the troubleshooting here.
3. Unlock the OTC flap of the corresponding fuse element by operating the lever(s).



4. Open the OTC flap completely. In doing so, overcome the perceptible resistance until the flap latches audibly in the completely opened position.



5. Switch the fuse element or the FI circuit breaker on.
6. If the fuse element trips once again, the fault lies in the VARIABOX. Continue with step 7. If the fuse elements are not tripping, continue with step 9.
7. Close the OTC flap by tapping it slightly. The flap locked securely with the pre-tensioned spring mechanism.
8. Put the VARIABOX out of operation and notify your supplier immediately.
 - ∨ This completes the troubleshooting here.
9. Insert the plug for the load once again. If the fuse elements trip again, then the fault lies in the load or its supply cable.
10. Close the OTC flap by tapping it slightly. The flap locked securely with the pre-tensioned spring mechanism.
11. Inform an electrician.
 - ∨ This completes the troubleshooting here.

9 Decommissioning and disposal



Send a worn-out VARIABOX for recycling or for proper disposal. Always make sure to observe and follow the local regulations.

The VARIABOX should not be disposed of in household waste. Environmental damage and risk to personal health are avoided with proper disposal.

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