



Instruction Manual

VOLT-Ex 20



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1. Application

The VOLT-EX 20 is a voltage detector for short time testing of electrical fields in hazardous areas (excluding firedamp endangered underground mining) of zones 1 and 2 in accordance with IEC/CENELEC.

2. Safety references

This operating manual contains information and safety recommendations which must be complied with in order to guarantee safe functioning of the unit under the conditions described.

Please read these instructions very carefully before using the unit.

In case of doubt (for example due to mistakes in the translation), the German operating instructions are valid.

3. Damage and inadmissible operation

Should one suspect that the safety of the equipment is endangered, it must be taken out of service and immediately removed from the hazardous area. Precautions must be taken to prevent its unintentional reuse. We recommend that the unit be returned to the manufacturer for checking.

For example, the safe use could be endangered by :

- visible damage to the outside of the housing
- the unit being subjected to improper strain
- the unit being improperly stored
- the unit being damaged in transit.
- lettering on the unit being unreadable
- occurrence of malfunctioning
- the permissible limiting values being exceeded

4. Safety regulations

In order to exclude false operation of the unit, its use assumes that the user is aware of and complies with the usual safety regulations.

The following safety regulations must be complied with:

- the unit must not be opened within the Ex-hazardous area.
- the batteries may only be changed outside the Ex-hazardous area.
- only type approved batteries may be used.
- should the coat of paint protecting the unit against electrostatic charges be damaged, the unit is to be taken out of service.

5. Ex data



EG Test approval: PTB 01 ATEX 2019

Ex designation:  II 2 G EEx ia IIC T4

Approved for Zone 1, equipment group II, gas group C hazardous gases, vapour or fog, temperature class T4

6. Technical details

Detection range: 24 ... 750V AC
Sensitivity: variable adjustment
Display: optical and acoustical
Attachment: clip
Environmental
temperature Ta: -20 ... +50°C
Storage temperature: -40 ... +60°C

Batteries. 9V block 6LR61 as per IEC
(table of approved batteries)

Table of type approved batteries (9-V block/6LR 61 (IEC))	
Manufacturer	Type
Varta	Alkaline No.4822
Varta	Alkaline Universal No.4022
Varta	Alkaline Electric Power No. 8022
Duracell	Alkaline
Duracell	Alkaline Ultra
Duracell	Professional Alkaline Battery Procell
Eveready (Ralston E.S.Sa)	Alkaline Energizer
Panasonic	Alkaline Power Line Industrial Battery
Dalmon	Alkaline

Dimensions: 170 x 40 x 30 mm
 Weight : approx. 150 g (with batteries)
 CE designation: C E 0102

7. Operating instructions

7.1 Introduction

The purpose of the VOLT-Ex 20 voltage detector is to detect remotely (without contact) alternating voltages up to 750 volts in Ex hazardous areas.

It does this principally by detecting alternating fields which are generated by electrical voltages/currents.

With the VOLT-Ex 20, it is possible to determine electrically live parts such as cable wires or terminals in Ex areas.

The probe of the unit senses whether the suspected parts are live. As soon as an alternating voltage is present which in turn generates an electrical field, a LED lights up and an acoustical signal with an alternating rhythm is produced.

7.2. Design

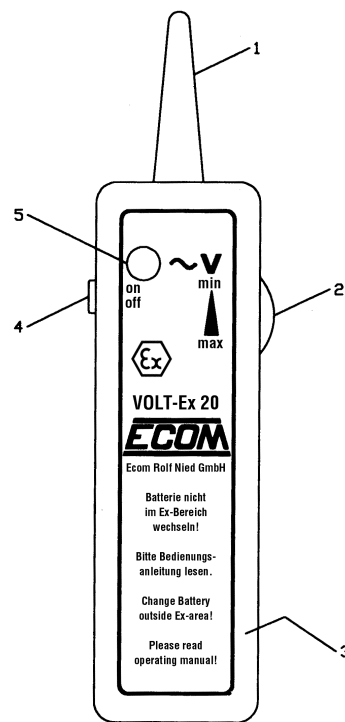


Figure 1
1 Probe
2 Sensitivity setting
3 Special fastening
4 On/off switch
5 Optical indicator

7.3 Battery change

Should the battery be exhausted, the LED will become darker and the acoustical signal noticeably weaker.

The battery should now be changed outside the Ex area. When changing the battery, it must be ensured that only one of the approved cells (see 6. list of type approved batteries in table) is used. The use of a non-approved type is strictly forbidden and results in nullification of the Ex protection.

To change the battery, remove the special catch with the hexagon key supplied with unit and remove the cover.

The battery is now exposed and can be easily removed.

Observe the polarity when inserting the new battery.

The battery compartment can now closed by carrying out the above instructions in the reverse order.

7.4 Application

First of all, a function test should be carried out. To do this, switch the unit on and set the sensitivity to "min". An acoustical signal at one second intervals should now be heard.

Turning the sensitivity towards "max" raises the frequency of this signal. To test whether the VOLT-Ex is working, place the probe on a object known to be live, such as a cable lead, motor cable or power socket. This should result in the frequency of the acoustical signal being increased and the LED lighting up. The higher the alternating voltage to be tested and the sensitivity setting of the VOLT-Ex is, the greater the distance between the unit and the voltage can be.

When detecting whether a part is live, the sensitivity regulator should be turned up until a clear indication from the LED and acoustical generator is recognized. Removing the test probe away from the live parts or reducing the voltage must result in the LED being extinguished and the frequency of the acoustical signal being reduced.

This procedure is to be repeated several times in order to guarantee the unmistakable presence of the voltage.

7.5 Application rules

The following important guidelines must be complied with!

1. Before using the VOLT-Ex 20, a self test is to be carried out (see 7.4)
2. To be absolutely sure that the test object is not live, switch the voltage supply to the test object on and off several times and test with the VOLT-Ex 20. Definite signal changes between the on and off conditions must be recognized.
3. It is not possible to detect voltages in metal screened cables or enclosures.
4. Parts carrying direct currents cannot be detected.
5. In the case of cables carrying three phase currents, the internal twisting of the cores could cause cancellation of the alternating fields. In such situations, it is essential to comply with the above mentioned guideline no. 2. In such cases, definite signals can be detected at the end of the cable, i.e at the terminals or where the cable is no longer twisted.
6. When testing cables or cores, change the position of the VOLT-Ex 20 along the cable. The best way is to move it along about 30 cm in order to find the live core amongst the internally twisted cable cores.
7. The VOLT-Ex 20 is not a measuring instrument. The brightness of the LED or the frequency of the acoustical signal are no indication of the magnitude of the voltage.

7.6 Examples

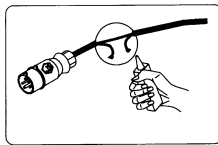


Figure 1
Scanning voltage-carrying cables. Broken conductors can be localised.

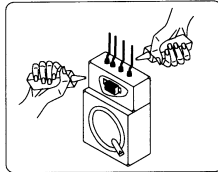


Figure 2
With pressure-proof metal housings, the probe of the VOLT-Ex 20 must be placed against the cable entries.

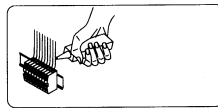


Figure 3
The VOLT-Ex 20 can be used to identify which individual core is live or Which fuse has blown.

8. Repairs

Should repairs be necessary, then the conditions of ELEX V. must be complied with. We recommend that repairs be carried out in the manufacturer's factory as it is necessary for the unit to be checked for technical safety reasons.

9. Cleaning and maintenance

The unit should only be cleaned with a moist cloth or sponge. Detergents or abrasive materials should not be used.

We recommend that the function and sensitivity of unit be checked every two years by the manufacturer.

10. Guarantee and liability

For this product, the ECOM Rolf Nied GmbH guarantees the function and workmanship of the equipment under normal operating and maintenance conditions for a period of two years commencing from the date of delivery .

This guarantee does not apply to products which are improperly used, modified, neglected, damaged in accidents or exposed to abnormal operating conditions or improper handling.

Claims under the guarantee can be made by returning the defective equipment to the factory. We reserve the right to repair, renew the settings or exchange the device.

The above-mentioned guarantee conditions are the sole and only right of the purchaser to compensation, are exclusively valid and replace all other contract or legal warranty obligations. The ECOM company accepts no responsibility for special, direct, indirect, accompanying or consequential damage as well as losses including the loss of data which may arise through the use or acquisition of the equipment. ECOM will not be responsible for any special or consequential damage which may occur independent of whether it was caused by violation of the warranty obligation, lawful or unlawful action, action in good faith or any other action.

If in certain countries, the limitation of a legal guarantee as well as the exclusion or limitation of accompanying or consequential damage is not permissible, it may be that the above-mentioned limitations and exclusions are not valid for every purchaser. Should such clauses of these guarantee terms be declared to be void or not realisable by a competent court, the effectiveness or enforceability of any one of the other conditions of these guarantee terms will be unaffected by the court decision.

11. Declaration of EC-conformity

We **ecom instruments GmbH, Industriestraße 2, D-97959 Assamstadt** declare under our sole responsibility that the product VOLT-Ex 20 to which this declaration relates is in accordance with the provision of the following directives

94/9/EG Equipment and protective systems in potentially explosive areas

and is in conformity with the following standards or other normative documents

EN 50014: 1997 Electrical means of production for hazardous areas general regulations

EN 50020: 1994 Electrical means of production for hazardous areas intrinsic regulations, "i"

ECOM Rolf Nied GmbH

Assamstadt, 04/12/01

Rolf Nied
Managing Director



12. EC-Certificate of conformity



Translation of a document from German into English

Physikalisch-Technische Bundesanstalt (PTB)
(approx. Physical-Technical Federal German Institute)
Braunschweig and Berlin

(1) EC Prototype Test Certificate

(2) Equipment and protection systems used for the purpose it was built in explosion-hazardous areas – Directive 94/9/EC



(3) EC Prototype Test Certificate Number
PTB 01 ATEX 2019

(4) Instrument: Voltage Detector, Type Volt – Ex 20

(5) Manufacturer: ECOM Rolf Nied GmbH

(6) Address: Industriestrasse 2, 97959 Assamstadt, Germany

(7) The type of this instrument as well as the different approval versions are determined in the Appendix to this Prototype Test Certificate.

(8) The Physikalisch-Technische Bundesanstalt (PTB) certifies as the named agency No. 0102 in accordance with Article 9 of the Directives of the Council of the European Communities of 23 March 1994 (94/9/EC) the fulfilment of the basic safety and health requirements for the conception and construction of equipment and protective systems for use for the purpose it is built in explosion-hazardous areas in accordance with Appendix II of the Directive.
The results of the test are laid down in the confidential test report PTB Ex 01-20446.

(9) The basic safety and health requirements are fulfilled in conformity with

EN 50014:1997 + A1 + A2 **EN 50020:1994**

(10) Should the letter "X" be entered behind the certification number this indicates special conditions for the safe use of the instrument in the appendix to this certificate.

(11) This EC Prototype Test Certificate refers only to the conception and construction of the determined instrument in accordance with Directive 94/9/EC. Further requirements under this directive are applicable for the production and distribution of this instrument.

(12) The instrument marking must contain the following details:



II 2 G EEx ia IIC T4

Certification Agency for Explosion Protection Braunschweig, 09.05.2001
By Order:

Signature: illegible
Dr.-Ing. U. Johannsmeyer
Government Director

Round seal: Physikalisch-Technische Bundesanstalt (PTB)
Braunschweig and Berlin

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Physikalisch-Technische Bundesanstalt (PTB)
 approx. Physical-Technical Federal German Institute
 Braunschweig and Berlin

(13) **Appendix**

(14) **EC Prototype Test Certificate PTB 01 ATEX 2019**

(15) Description of instrument

The above instrument, Volt – Ex 20 – is a voltage detector, with which electric fields can be tested in explosion-hazardous areas without contact.

The type of protection of the instrument is as follows:
 II 2 G EEx ia IIC T4.

The permissible ambient temperature is as follows:
 –20°C to +50°C

Electrical data

Power supply: $U_{max} < 9.9\text{ V}$
 9 Volt Battery 6LR61 (primary cells)

(16) Test report PTB Ex 01-20446

(17) Special conditions
 none

(18) Basic safety and health requirements
 Covered by the above-mentioned standards

Certification Agency for Explosion Protection Braunschweig, 09.05.2001
 By Order:

Signature: illegible
 Dr.-Ing. U. Johannsmeyer
 Government Director

Round seal:
 Physikalisch-Technische Bundesanstalt (PTB)
 Braunschweig and Berlin

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I hereby certify that this is a true and complete translation of a document in the German language. D-97209 Veitshöchheim, November 19, 2001





ecom instruments GmbH

Industriestr. 2
D-97959 Assamstadt

Tel.: + 49 (0) 62 94 / 42 24 0
Fax: + 49 (0) 62 94 / 42 24 90

E-Mail: sales@ecom-ex.com
Internet: www.ecom-ex.com

053B0101 01/02, Änderungen vorbehalten