

Operating Instructions



F00072+73y



TERRACLAMP

Ground Clamps Series TERRA-C

for active grounding with the Eltex ground monitoring systems and for passive grounding

BA-en-4014-2508



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Dear Customer,

The active Eltex ground clamps **TERRACLAMP** series TERRA-C are designed for making and - in connection with Eltex TUE30 Terra-Control and **TERRALIGHT** Ground Monitoring Systems - for monitoring ground connections.

Special ground monitoring systems operating with two ground clamps are capable of monitoring the correct grounding of conductive BIG-BAGs by measuring the electric resistance between two opposing grounding flags.

The passive Eltex Ground Clamps Series TERRA-C are designed for making ground connections for discharging static charges.

The appliances are used in areas where potentially explosive materials and substances are loaded, discharged, refilled or transported. Any developing static charges are safely and effectively eliminated and led to ground. This means that the risk of ignition caused by static discharges is eliminated at source.

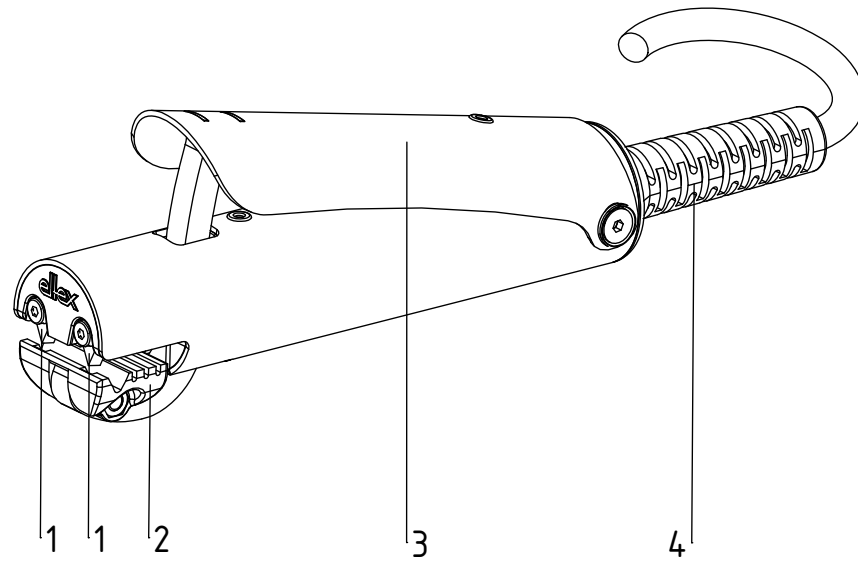
Different design variants of ground clamps are available for active, passive and BIG-BAG grounding and for use in potentially explosive atmospheres.

Please read the operating instructions carefully before starting the instrument. This will help you prevent personal injuries and damage to property.

Please give us a call if you have any suggestions, proposals or ideas for improvements. We greatly appreciate the feedback from the users of our appliances.

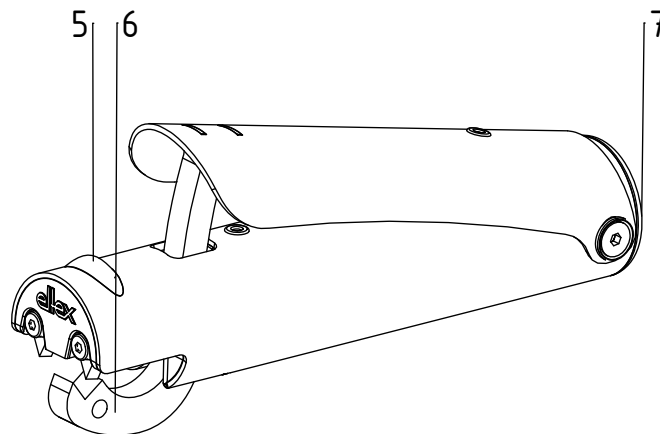
1. Overview

Fig. 1:
Ground clamps
series
TERRA-C
with fixed cable
connection



- 1 Contact element
- 2 Pressure plate
- 3 Operating lever
- 4 with fixed cable connection
- 5 Status LED
- 6 Clamping lever
- 7 Cable connection, pluggable

Fig. 2:
Ground clamps
series
TERRA-C
with LED,
plug-in cable
connection



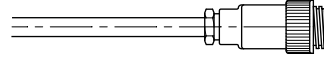
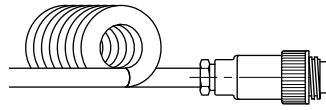
Z-116357y_1

Z-116357y_2

Cables

helix ground cable

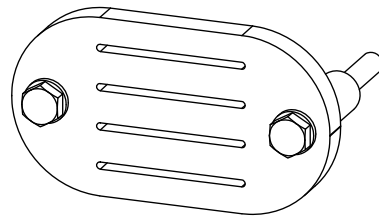
ground cable



*Fig. 3:
Cables*

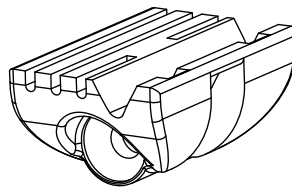
Z01156y

Accessory



*Fig. 4:
Clamp holder
wall mounting*

Z-116357y_7



*Fig. 5:
Pressure plate*

Z-116357y_8

Design Variants

Ground clamps for use with the components of the
Terra-Control TUE30 (only versions without LED display) and
TERRALIGHT ground monitoring systems:

TERRA-C / [a] [b] [c] [de] [fgh] [ijk]

	Version		
a	Object contact	B S T	BIG-BAG Cutting inserts Tooth row
b	Elektronic	O L P	without LED passive
c	electrical connection	S B A L R	Plug Socket (onlyr with cable length > 0) Wire end sleeve (only with cable length > 0) Wire end sleeve assembled for TERRALIGHT (only with cable length > 0) Ring lug, only for passive (only with cable length > 0)
de	Approval	XX BX	without approval ATEX and IECEx approval
fgh	Connection cable	not specified 030, 060, 090, 120, 150, 180 050, 100	Plug / Socket on the unit Standard cable, length in dm Helix calbe, length in dm
ijk	Customer variants	000	Standard variante

Passive ground clamps for use without ground monitoring systems:

Cable for active grounding:

- KG/BSAB050: helix ground cable
with wire end sleeve and coupling socket
extensible 1 to 5 m
cable color: light blue
- KG/BSAB100: helix ground cable
with wire end sleeve and coupling socket
extensible 2 to 10 m
cable color: light blue
- KG/BSB050: helix ground cable
with coupling connector and coupling socket
extensible 1 to 5 m
cable color: light blue
- KG/BSB100: helix ground cable
with coupling connector and coupling socket
extensible 2 to 10 m
cable color: light blue
- KG/BNAB_: ground cable
with wire end sleeve and coupling socket
1 to 95 m in steps to 5 meters (specify length)
cable color: light blue
- KG/BNBS_: ground cable
with coupling connector and coupling socket
1 to 95 m in steps to 5 meters (specify length)
cable color: light blue

Cable for passive grounding:

- KG/GSAB050: helix ground cable
with wire end sleeve and coupling socket
extensible 1 to 5 m
cable color: orange
- KG/GSBS100: helix ground cable
with coupling connector and coupling socket
extensible 1 to 5 m
cable color: orange
- KG/GNAB_: ground cable
with wire end sleeve and coupling socket
1 to 95 m in steps to 5 meters (specify length)
cable color: orange

KG/GNBS_: ground cable
with coupling connector and coupling socket
1 to 95 m in steps to 5 meters (specify length)
cable color: orange

Clamp holder:

116740: wall mounting
optionally available as accessory
dimensions see Fig. 12

116738: installation on monitoring system **TERRALIGHT**
optionally available as accessory
dimesions see Operating instructions **TERRALIGHT**

Optional accessories:

For use on extremely hard surfaces (e.g. VA, rough surfaces) there are optional contact elements in a robust design available; for contacting flexible media, such as BIG-BAGs or small contact areas (e.g. bucket handles) an optional pressure plate is available, see [chapter 8 "Spare parts and accessories", page 25](#).

2. Safety

The units have been designed, built and tested using state-of-the-art engineering, and have left the factory in a technically and operationally safe condition. If used improperly, the units may nevertheless be hazardous to personnel and may cause injury or damage. Read the operating instructions carefully and observe the safety instructions.

For warranty conditions, please refer to the General Terms and Conditions (GTC), see www.eltex.de.

2.1 Identification of risks and hazards

Possible risks and hazards resulting from the use of the units are referred to in these operating instructions by the following symbols:



Warning!

This symbol appearing in the operating instructions refers to operations which, if carried out improperly, may result in serious personal injuries.



Caution!

This symbol appearing in the operating instructions refers to operations which, if carried out improperly, may result in damage to property.



Ex Warning!

Only for units with Ex approval.

This symbol denotes the special conditions which must be observed when operating the units in explosion hazard areas as specified in the approvals.

2.2 Technical advance

The manufacturer reserves the right to make changes to the technical specifications without prior notice in order to adapt the units to state-of-the-art engineering. Eltex will provide the latest information on any changes or modifications in the operating instructions on request.

2.3 Proper use

Active grounding

The active ground clamps series TERRA-C and the associated ground cable series KG as well as the cable rewinders series 601KR must be used only for static grounding and must be connected to the appropriate Eltex ground monitoring systems.

The application area are for example: refilling and filling stations, agitators or dryers for liquid or powdery substances, and in conveyor and transportation equipment with potentially explosive atmosphere.

The Eltex active ground clamps generate a transitory electric connection between the plant and equipment in use and the equipotential bonding (PA).

Together with the TUE30 Terra-Control and **TERRALIGHT** ground monitoring systems, this configuration provides the ultimate grounding effect for static charges.

Passive grounding

The passive Eltex ground clamps series TERRA-C and the associated ground cable series KG must be used only for “static grounding” in refilling and filling stations, agitators or dryers for liquid or powdery substances, and in conveyor and transportation equipment with potentially explosive atmosphere.

The passive Eltex ground clamps generate a transitory electric connection between the plant and equipment in use and the equipotential bonding (PA). The purpose of the ground clamps is to leak off or discharge static charges from these plants and equipment to ground. The passive ground clamps must not be connected to analyzing devices.

The ground clamps (with an internal resistance of $>200\text{ k}\Omega$) can also be connected to systems linked to the protective circuit. With this protective suppressor circuit, no explosive sparking can occur between the PA and the equipment connected to the protective circuit system in the event of potential differences of $<120\text{ V}$.

The manufacturers will not assume any liability and warranty if the units are used improperly or used outside the intended purpose.

Modifications or changes made to the devices are not permitted.

Use only original Eltex spare parts and equipment.

2.4 Work and operational safety



Warning!

Carefully observe the following notes and the complete [chapter 2 "Safety", page 11!](#)

- The local standards, rules and regulations relating to the installation and operation of electrical appliances in potentially explosive atmospheres must be observed.
- Appliances designed for use in potentially explosive atmospheres must not be modified. The technical specifications for ambient conditions and operation must be maintained and observed (see [chapter 6 "Technical specifications", page 22](#)).
- Electrical systems in potentially explosive atmospheres must always be in perfect technical condition. Defects must be rectified immediately (see [chapter 4 "Operation", page 20](#)).
- Any work involving the units must be carried out by qualified electricians (see [chapter 3 "Installation and assembly", page 16](#), [chapter 5 "Maintenance", page 21](#)).

- The unit may only be used by qualified personnel trained for explosion hazard areas.
- Observe the type plate with the connection ratings (supply voltage) of the units (see [chapter 4 "Operation", page 20](#)).
- A „Connect/Disconnect Approval“ by the plant operator must be obtained before carrying out any installation, assembly, service, repair or maintenance work in potentially explosive atmospheres. Make sure that there is no potentially explosive atmosphere prevailing in the working area (see [chapter 3 "Installation and assembly", page 16](#), [chapter 5 "Maintenance", page 21](#)).
- **Before starting the plant in use, connect the clamps to the equipment and make sure that no potentially explosive atmosphere exists in the working area.**
The clamp connection of the ground clamp must make good and secure contact throughout the whole time the plant is in operation (see [chapter 3.1 "Electrical connection of the ground clamps", page 16](#)).
- The maximum cable length in the intrinsically safe circuit must not exceed the maximum rated capacitance and inductance (see the operating instructions of the ground monitoring unit). The ground monitoring unit must always be connected to the equipotential bonding (see [chapter 3.1 "Electrical connection of the ground clamps", page 16](#)).
- The ground clamps must not be installed under load, to avoid uncontrolled snapping back of the cable together with the ground clamp (see [chapter 3.1 "Electrical connection of the ground clamps", page 16](#)).
- Cables and clamps must not be damaged. Damaged cables and clamps must be replaced with new parts (see [chapter 5 "Maintenance", page 21](#)).
- To make sure that the proper ground connection exists with the equipotential bonding and that no malfunctions occur in active clamps, the ground clamp must be cleaned when dirty (see [chapter 5.2 "Ground clamps", page 21](#)).

2.5 Special conditions according to the certificate of conformity



Active Eltex ground clamps:

- Equipotential bonding must be provided along the entire length of the measuring circuit. (see [chapter 3.1 "Electrical connection of the ground clamps", page 16](#)).
- Ground monitoring devices, which are connected to the grounding clamp, must have a protective device against transient powers. Electrostatic discharges that might appear while the ground clamp is connected, shall not affect the voltage and current-limiting components of the intrinsically safe circuit.
- The non-detachably connected mains cable of the corresponding types of ground clamps must be protected against intensive electrostatic charges e.g. intense vapour or dust flows.
- In compliance with EC-Type Examination Certificate, the clamps type TERRA-C/*O... as well as the cable rewinders may be used in the potentially explosive zone with the following intrinsically safe ground monitoring units:
 - **TERRALIGHT** Typ TERRA-L/_ _ _ _ _ (PTB18ATEX2005X)
 - Terracompact II Type TCO030S and TCO030B (PTB99ATEX2188X)
 - Terrabox Type TCB030/_ _ _ (PTB00ATEX2174X)
 - or other ground monitoring systems with the following max. output values:

voltage:	$U_o \leq 35 \text{ V DC}$
current strenght:	$I_o \leq 250 \text{ mA}$
power:	$P_o \leq 650 \text{ mW}$

In compliance with EC-Type Examination Certificate, the clamps type TERRA-C/*L... may be used in the potentially explosive zone with the following intrinsically safe ground monitoring units:

- **TERRALIGHT** Typ TERRA-L/_ _ _ _ _ (PTB18ATEX2005X)
- or other ground monitoring systems with the following max. output values:

voltage:	$U_o \leq 15 \text{ V DC}$
current strenght:	$I_o \leq 250 \text{ mA}$
power:	$P_o \leq 650 \text{ mW}$

Passive Eltex ground clamps:

See [chapter 3.1.2 "Passive ground clamps", page 17](#).

- The use of the ground clamps is strictly limited to leading potentially hazardous static charges to ground.
- Before connecting the ground clamps, make sure that no potentially explosive atmosphere exists in the working area.
- The use of the clamps in areas requiring Category 1 is not permitted for Explosion Class IIC.

3. Installation and assembly



When installing the systems in potentially explosive zones, every possible precaution must be taken to ensure that no explosive atmosphere exists!

3.1 Electrical connection of the ground clamps



- **Before starting the plant in use, connect the clamps to the equipment and make sure that no potentially explosive atmosphere exists in the working area**

The clamp connection of the ground clamp must make good and secure contact throughout the whole time the plant is in operation.

- The ground clamps must not be installed under load, to avoid uncontrolled snapping back of the cable together with the ground clamp.

3.1.1 Active ground clamps



Notes for use in atmospheres with potentially explosive zones!

In areas in which potentially explosive atmospheres can exist, simple power equipment such as the Eltex ground clamps can be connected to the measuring circuit of the ground monitoring devices. Simple power equipment must comply with the appropriate requirements of EN 60079-11, but no certification and marking is required.

The active ground clamps are equipped with either

- a coupling connector which is connected to the cable rewriter
- a coupling socket to which an other ground clamp with cable can be connected
- with fixed lead length and differently prefabricated cable end (wire end sleeve, coupling connector or coupling socket)
- with fixed helix lead length and differently prefabricated cable end (wire end sleeve, coupling connector or coupling socket).

All active grounding components have a light blue cable.

For the terminal assignment of the ground monitoring system, please refer to the appropriate operating instructions.



Warning!

The maximum cable length in the intrinsically safe circuit must not exceed the maximum rated capacitance and inductance (see the operating instructions of the ground monitoring system). The ground monitoring system must always be connected to the equipotential bonding!



An equipotential bonding connection (PA) must be established along the entire intrinsically safe measuring circuit.



3.1.2 Passive ground clamps

- The use of the ground clamps is strictly limited to leading potentially hazardous static charges to ground.
- Before connecting the ground clamps, make sure that no potentially explosive atmosphere exists in the working area.
- The use of the clamps in areas requiring Category 1 is not permitted for Explosion Class IIC.

The passive ground clamps are equipped with either

- a coupling connector which is connected to the cable rewriter
- a coupling socket to which an other ground clamp with cable can be connected
- with fixed lead length and differently prefabricated cable end (wire end sleeves, coupling connector, coupling socket or cable lug)
- with fixed helix lead length and differently prefabricated cable end (wire end sleeves, coupling connector, coupling socket or cable lug).

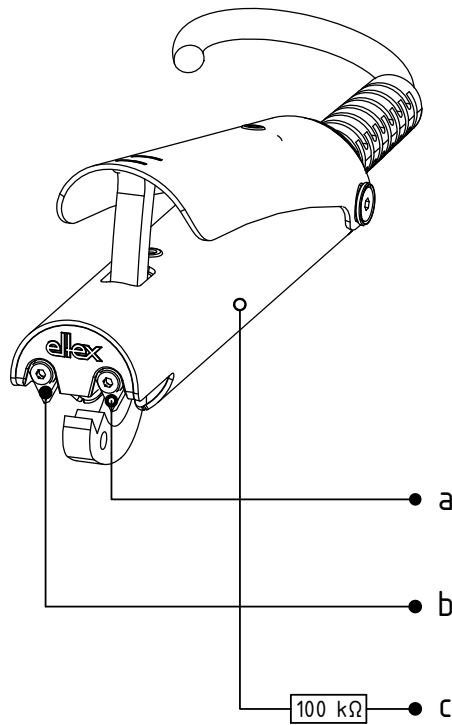
All passive grounding components have an orange cable.

3.2 Wiring diagram of the ground clamps

The resistance circuitry is encapsulated in the clamp.

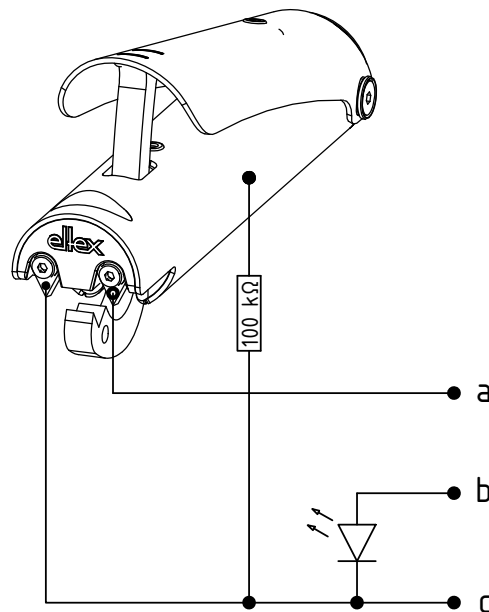
Active ground clamps

Fig. 6:
Type
TERRA-C/_O
active clamp
without LED
connecting cable
3 x 1.5 mm²



*a = blue
b = brown
c = green/yellow
resp. yellow*

Fig. 7:
Type
TERRA-C/_L
active clamp
with LED
plug-in cable
connection

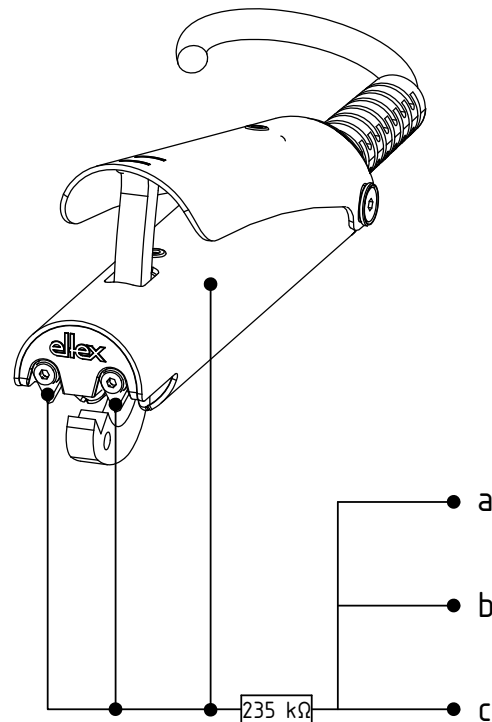


*a = blue
b = brown
c = green/yellow
resp. yellow*

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Z-116357y_5

Passive ground clamps

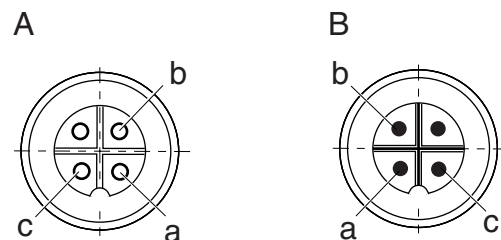


a = blue
b = brown
c = green/yellow
resp. yellow

Fig. 8:
 Type
 TERRA-C/_P
 passive clamp
 without LED
 connecting cable
 3 x 1.5 mm²

Z-116357y_6

3.3 Pin assignment of the coupling connector / coupling socket



a = blue
b = brown
c = green/yellow

A = socket
B = connector

Fig. 9:
 Pin assignment
 of the coupling
 connector /
 - socket

Z00108y

3.4 Cable specifications

- three-core 3 x 1.5 mm²
- wire color blue, brown, green/yellow resp. yellow
light blue-sheathed for active grounding
orange-sheathed for passive grounding
- oil and gasoline resistant

4. Operation



Electrical systems in potentially explosive atmospheres must always be in perfect technical condition. Defects must be rectified immediately.



Caution!

Observe the type plate with the connection ratings (supply voltage) of the units.

4.1 Start-up

Active ground clamps

If all connections (supply voltage, ground clamp, etc.) have been made correctly, the supply voltage of the corresponding ground monitoring device can be switched on. The units are operational now.

Passive ground clamps

Once the clamps are properly connected to the equipotential bonding, they can be used for grounding.



5. Maintenance

- When maintaining or servicing the systems in potentially explosive zones, every possible precaution must be taken to ensure that no explosive atmosphere exists.
- Any work involving the units must be carried out by qualified electricians.
- Cables and clamps must not be damaged. Damaged cables and clamps must be replaced with new parts.

5.1 Checking the resistance to earth for passive clamps

Measurement of the earthing resistance between clamp jaw and ground (PAL):

ground clamp TERRA-C/_P:

earthing resistance: 235 kOhm $\pm$ 10 %

clamping force: 100 N $\pm$ 20 %

5.2 Ground clamps



It is essential to ensure that the ground clamp is dry and free of dirt and deposits.

Moisture and dirt between the contacts can lead to faulty switching in active contactors. Insulating dirt can insulate the ground contact and prevent the release.

Store the ground clamp such that it cannot be damaged. Replace damaged cables and clamps with new parts. Whenever possible, the ground clamp should either be hung up freely or be clamped to a non-conductive object.

6. Technical specifications

6.1 Active ground clamps

as shown on
appliance
marking:



Types TERRA-C/_O, TERRA-C/_L	
Clamp material	stainless steel, PP
Operating ambient temperature	with coupling connector, -socket: −40...+70 °C (−40...+158 °F) with fixed cable −30...+70 °C (−22...+158 °F)
Ground cable	oil and gasoline resistant control lead 3 x 1,5 mm ² , color: light blue temperature range −40... +90 °C (−40...+194 °F)
effective capacitance inductance	TERRA-C/_O: Li, Ci negligible TERRA-C/_L: Li = 67 µH, Ci = 110 nF
Protection class	IP67 according EN 60529
Dimensions	see Fig. 10
Weight	with coupling connector, -socket: approx. 0.6 kg
Approval / Identification marking	ATEX: BVS 20 ATEX E 017 X Ex II 1G Ex ia IIC T4 Ga, II 1D Ex ia IIIC T135°C Da IECEX: BVS 20.0012.X Ex ia IIC T4 Ga, Ex ia IIIC T135°C Da

6.2 Passive ground clamps

Type TERRA-C/_P	
Clamp material	stainless steel, PP
Operating ambient temperature	with coupling connector, -socket: –40...+70 °C (–40...+158 °F) with fixed cable –30...+70 °C (–22...+158° F)
Ground cable	oil and gasoline resistant control lead 3 x 1,5 mm ² , color: orange temperature range –40...+90 °C (–40...+194 °F)
Protection	IP67 according EN 60529
Dimensions	see Fig. 10
Weight	with coupling connector, -socket: ca. 0.6 kg
Clamping width	35 mm
Clamping force	100 N ±20 %
Earth leakage resistance	235 kOhm ±10 %
max. discharge	120 V



The maximum connectable total cable length to the grounding systems TUE30 resp. **TERRALIGHT** is 200 m.

Please note the information in the separate operating instructions for the Eltex ground monitoring devices **TERRALIGHT**, Terracompact II or Terrabox.

7. Dimensions

Fig. 10:
TERRA-C
maximum clamp
opening 35 mm

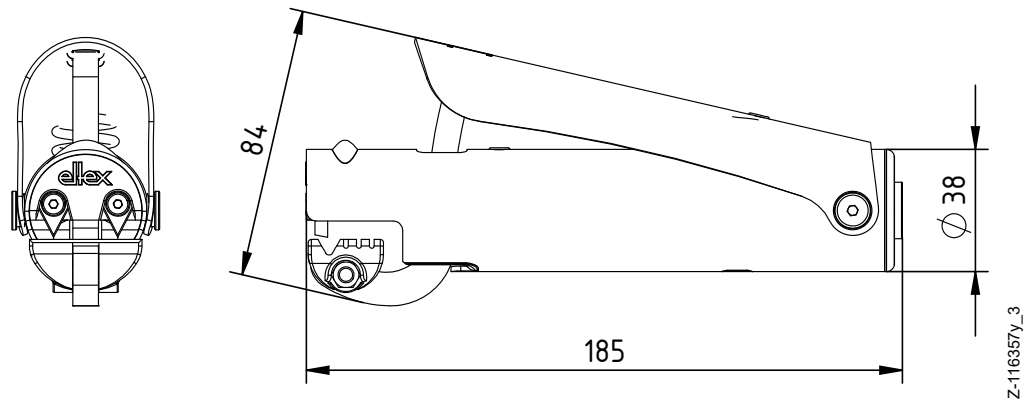


Fig. 11:
Coupling
connector / socket

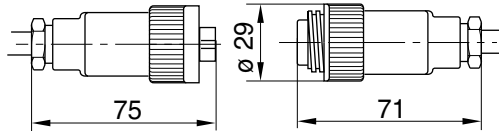
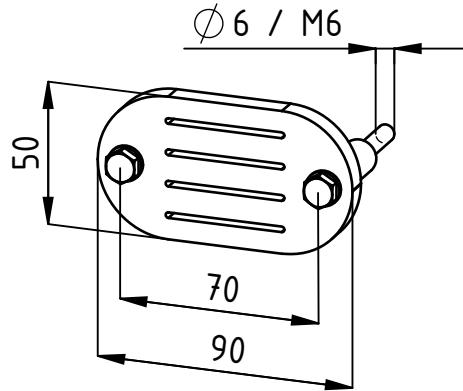


Fig. 12:
Clamp holder
article no. 116740
wall mounting



8. Spare parts and accessories

Article	Article-No.
Active grounding	
Active helix ground cable, 3-pin with wire end sleeve and coupling socket IP67 for connecting ground clamps, extensible 1 to 5, cable color: light blue	KG/BSAB050
Active helix ground cable, 3-pin with wire end sleeve and coupling socket IP67 for connecting ground clamps, extensible 2 to 10, cable color: light blue	KG/BSAB100
Active helix ground cable, 3-pin with coupling connector and coupling socket IP67, extensible 1 to 5, cable color: light blue	KG/BSBS050
Active helix ground cable, 3-pin with coupling connector and coupling socket IP67, extensible 2 to 10, cable color: light blue	KG/BSBS100
Active ground cable, 3-pin with wire end sleeve and coupling socket IP67 for connecting ground clamps, 1 to 95 m in steps to 5 meters (specify length), cable color: light blue	KG/BNAB_
Active ground cable, 3-pin with coupling connector and coupling socket IP67 for connecting ground clamps, 1 to 95 m in steps to 5 meters (specify length), cable color: light blue	KG/BNBS_
Cable rewriter, aluminum, for active grounding, 3.0 meters connecting cable and 20 meters ground cable with coupling IP67 for connecting ground clamps	601KR/AW
Cable rewriter, aluminum, for active grounding, 3.0 meters connecting cable and 12 meters ground cable with coupling IP67 for connecting ground clamps	601KR/DW

Passive Grounding	
Passive helix ground cable, 3-pin with wire end sleeve and coupling IP67 for connecting ground clamps, extensible 1 to 5, cable color: orange	KG/GSAB050
Passive helix ground cable, 3-pin with coupling connector and coupling socket IP67 for connecting ground clamps, extensible 1 to 5, cable color: orange	KG/GSBS050
Passive ground cable, 3-pin with wire end sleeve and coupling socket IP67 for connecting ground clamps, 1 to 95 m in steps to 5 meters (specify length), cable color: orange	KG/GNAB_

Article	Article-No.
Passive ground cable, 3-pin with coupling connector and coupling socket IP67 for connecting ground clamps, 1 to 95 m in steps to 5 meters (specify length), cable color: orange	KG/GNBS_
Cable rewriter, aluminum, for passive grounding, 3.0 meters connecting cable and 12 meters ground cable with coupling IP67 for connecting ground clamps	601KR/EW
Accessories	
Clamp holder, wall mounting	116740
Coupling socket 4-pin, IP67	ELM00714
Coupling connector 4-pin, IP67	ELM00713
Contact element, standard (set)	117318
Contact element, robust use (set)	117319
Contact element, tooth row (set)	117967
Pressure plate	117320
Operating instructions (specify language)	BA-xx-4014

Please specify the article number when ordering.

9. Decommissioning / Disposal

The ground clamps can be disposed of using the general waste disposal methods (electronic waste).

EU-Declaration of Conformity

CE-4014-en-2411



Eltex-Elektrostatik-Gesellschaft mbH
Blauenstraße 67 - 69
D-79576 Weil am Rhein

declares in its sole responsibility that the product

Ground clamp TERRACLAMP type TERRA-C* (according to Eltex reference code)

Identification:  II 1G Ex ia IIC T4 Ga resp. II 1D Ex ia IIIC T135°C Da
Certification-no.: BVS 20 ATEX E 017 X
Notified body: DEKRA Testing and Certification GmbH, Dinnendahlstr. 9, 44809 Bochum, NB No. 0158

complies with the following directives and standards.

Relevant EU-Directive:

2014/34/EU

Directive: Equipment or Protective System intended for use in potentially explosive Atmospheres

Harmonized standards applied:

EN IEC 60079-0:2018

Explosive atmospheres – Equipment – General requirements

EN 60079-11:2012

Explosive atmospheres – Equipment protection by intrinsic safety "i"

Relevant EU-Directives:

2011/65/EU

RoHS Directive

(EU) 2015/863

RoHS Delegated Directive

in the version effective at the time of delivery.

Eltex-Elektrostatik-Gesellschaft mbH keep the following documents for inspection:

- proper operating instructions
- plans
- other technical documentation

Weil am Rhein, 05.11.2024
Place/Date



Lukas Hahne, Managing Director

Eltex offices and agencies

The addresses of all
Eltex agencies can be
found on our website at
www.eltex.de



Z01007y



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