Installation, Operating and Maintenance Instructions for

Jola Electrodes
EL/.../...../...../../..../.././Ex-...
⟨Ex⟩ II 1 G Ex ia IIC T6 Ga or
⟨Ex⟩ II 1 G Ex ia IIB T6 Ga or
⟨Ex⟩ II 2 G Ex ia IIC T6 Gb or
⟨Ex⟩ II 2 G Ex ia IIB T6 Gb or
⟨Ex⟩ I M2 Ex ia I Mb
and the system with
the obligatory connection box
OAK/LST/2x1MΩ ⟨Ex⟩ II 2 G Ex ia IIC T6 Gb
⟨Ex⟩ I M2 Ex ia I Mb
and the Jola Electrode Relay
Leckstar 101/Ex ⟨Ex⟩ I (M1) / II (1) GD
[Ex ia Ma] I [Ex ia Ga] IIC [Ex ia Da] IIIC

These Installation, Operating and Maintenance Instructions must always be handed over to the fitter/operator/service personnel of our products together with all other user documentation and information!
They should be stored in a safe place together with all other user documentation and information so they can be consulted again when necessary at any time!

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1. Area of application

The combination of conductive electrodes EL/.../...../...../2/..../.././Ex-...

JOLA
D-67466 Lambrecht

CE 0080

EL/.../...../...../../..../.././Ex-...
Ex II 1 G Ex ia IIC T6 Ga or
Ex II 1 G Ex ia IIB T6 Ga or
Ex II 2 G Ex ia IIC T6 Gb or
Ex II 2 G Ex ia IIB T6 Gb or
Ex I M2 Ex ia I Mb

(serial number)
(production year)
T_{amb}: - 20°C to + 60°C

INERIS 03ATEX0152

the obligatory connection box OAK/LST/2x1MΩ and an electrode relay Leckstar 101/Ex is designed to transmit electrical switching signals coming **from conductive electrodes EL/.../...../...../../..../.././Ex-... installed in a potentially explosive atmosphere,** to non-hazardous areas via an **electrode relay Leckstar 101/Ex**.

The components of the system have to be installed:

<table>
<tr><th colspan="2">in above-ground areas which could be at risk due to a potentially explosive atmosphere</th><th rowspan="2">in underground areas in mines as well as in above-ground areas of mines which could be at risk due to firedamp and/or flammable dusts</th><th rowspan="2">only outside potentially explosive atmospheres</th></tr>
<tr><th>zone 0, 1 or 2</th><th>zone 1 or 2</th></tr>
<tr><td rowspan="2">EL/…/Ex…-0G
Ex II 1 G
or
EL/…/Ex…-0BG
Ex II 1 G</td><td>EL/…/Ex…-1G
Ex II 2 G</td><td>EL/…/Ex…-M
Ex I M2</td><td rowspan="2">Leckstar 101/Ex,
Ex I (M1) /
II (1) GD
[Ex ia Ma] I
[Ex ia Ga] IIC
[Ex ia Da] IIIC</td></tr>
<tr><td>OAK/LST/2x1MΩ
Ex II 2 G</td><td>OAK/LST/2x1MΩ
Ex I M2</td></tr>
</table>

As mentioned before, the above mentioned electrodes are devices for use:

- **in underground areas in mines as well as in above-ground areas of mines which could be at risk due to firedamp and/or flammable dusts:**
  EL/.../...../...../../..../../Ex-M Ⓔx I M2;

- **in above-ground areas which could be at risk due to a potentially explosive atmosphere:**
  EL/.../...../...../../..../../Ex-0G Ⓔx II 1 G: in zone 0, 1 or 2,
  EL/.../...../...../../..../../Ex-0BG Ⓔx II 1 G: in zone 0, 1 or 2,
  EL/.../...../...../../..../../Ex-1G Ⓔx II 2 G: in zone 1 or 2.

°°°°°°°°°°°°°°°°°°°

The combination of the conductive electrodes EL/Z6V2/...../...../2/..../../Ex-... and EL/0/...../...../2/..../../Ex-... and the electrode relays Leckstar 101/Ex is designed to detect leakage of electrically conductive liquids in normally dry rooms or for overflow or run-dry protection in wells or tanks of electrically conductive liquids.

1 conductive electrode EL/Z6V2/...../...../2/..../../Ex-... in which one control electrode and one earth electrode **and a Z6V2 cable break monitoring element are integrated** is connected to **1 electrode relay Leckstar 101/Ex**.

Alternatively, **several electrodes** can be connected in parallel **to one electrode relay Leckstar 101/Ex**.
In this case, the **last electrode must be equipped with the cable break monitoring element Z6V2 (EL/Z6V2/...../...../2/..../../Ex-...) and all the other electrodes have to be without this element (EL/0/...../...../2/..../../Ex-...).**

A combination of conductive electrodes and electrode relay may or must not be used:

- for electrically non-conductive liquids (e.g. mineral oils).
- for pasty or highly viscous liquids.
- for liquids which have a tendency to foam (under certain circumstances beer or washing lyes, for example).
- for liquids with high steam generation and condensation (at high temperatures, for example).
- for liquids which have a tendency to form residues (for example milk of lime, waste water containing fats, certain paints etc.).
- for liquids that contain coarse solid particles (wood chips, material residues, for example).

All **the technical parameters of the conductive electrodes and/or the electrode relay** are listed in this brochure and/or the accompanying product descriptions. These documents also contain the corresponding **installation recommendations**.

You must always observe and follow all the instructions relating to these parameters and installation recommendations. The units may not be used for applications outside the specified parameter range.

If the product descriptions are not supplied with the products or are lost, **you must always request a copy of the descriptions prior to installation, connection or start-up and ensure that they are read and observed by the suitably qualified specialist personnel. Otherwise the conductive electrode and/or electrode relay may not be installed, connected and started up.**

2. Preconditions for safe use

- **Maximum parameters of the conductive electrodes EL/.../...../...../../..../.././Ex-... fitted with a connecting cable**

Electrode type	Type designation	Li	Ci
Rod electrodes	EL/.../SB-1/...../../..../.././Ex-...	0 + 1µH per metre connecting cable	0 + 200 pF per metre connecting cable
Rod electrodes	EL/.../SZ-./...../../..../.././Ex-...		
Rod electrodes	EL/.../SZ/PPLF-./...../../..../.././Ex-...		
Rod electrodes	EL/.../SE-./...../../..../.././Ex-...		
Rod electrodes	EL/.../SE/NL/...../../..../.././Ex-...		
Rod electrodes	EL/.../SE/LF-./...../../..../.././Ex-...		
Plate electrodes	EL/.../PE/...../../..../.././Ex-...		
Plate electrodes	EL/.../PEK..../...../../..../.././Ex-...		
Plate electrodes	EL/.../WDX/NL/...../../..../.././Ex-...		
Plate electrodes	EL/.../WDX/LF-./...../../..../.././Ex-...		
Suspension electrodes	EL/.../EH/...../../..../.././Ex-...		
Suspension electrodes	EL/.../EHK/NL/...../../..../.././Ex-...		
Suspension electrodes	EL/.../EHK/LF/...../../..../.././Ex-...		
Suspension electrodes	EL/.../EHW/NL ./...../../..../.././Ex-...		
Suspension electrodes	EL/.../EHW/LF ./...../../..../.././Ex-...		
Cable electrodes	EL/.../KE/...../../..../.././Ex-...	1.7 µH per metre detection cable + 1 µH per metre connecting cable	25 pF per metre detection cable + 200 pF per metre connecting cable

- **Special requirements/conditions for the safe use of the conductive electrodes EL/.../...../...../../..../../../Ex-...**

  To ensure safe operation, power supply to the conductive electrode EL/.../...../...../../..../../../Ex-... must be via an Ex ia voltage source with output circuits which are approved as Ex ia intrinsically safe for use in the potentially explosive atmosphere which corresponds to the gas explosion group in which the device is installed: IIC, IIB, IIA respectively I.

  The maximum output parameters of this voltage source must not exceed the following values:
  U = 20 V; I = 0.1 A and P = 0.5 W.

- **Maximum parameters of the electrode relay Leckstar 101/Ex**

  Rated supply voltages (terminals J15, J16):
  U = AC 24 V; AC 110 V, AC 115 V, AC 230 V or AC 240 V

  Maximum electrical parameters of the electrical circuit connected to terminals J9, J10 and J11:
  U_{max} = 250 V; I_{max} = 4 A, **but max. P = 100 VA**

  Maximum electrical parameters at output terminals J7 and J8:
  U_o = 11.8 V; I_o = 12 mA, but max. P_o = 0.055 W

- **Special requirements/conditions for the safe use of the electrode relay Leckstar 101/Ex**

  The electrode relay Leckstar 101/Ex must be **installed outside potentially explosive atmospheres** or be protected by a suitable standardised ignition protection class.

  The electrical circuits connected to terminals J7 and J8 must be approved for use in potentially explosive atmospheres in explosion groups IIC, IIB, IIA or I, and their suitability in terms of intrinsic safety must be ensured.

  The maximum parameters of the external circuits that may be connected are as follows:

For explosion group IIC	For explosion group IIB	For explosion group IIA / I
Co(L=0) = 1.5 µF Lo(C=0) = 117 mH or Lo/Ro = 1.6 mH/Ohm	Co(L=0) = 9.9 µF Lo(C=0) = 724 mH or Lo/Ro = 6.6 mH/Ohm	Co(L=0) = 39 µF Lo(C=0) = 1593 mH or Lo/Ro = 12.9 mH/Ohm

3. Additional conditions for safe operation

The admissible temperature range for use of the conductive electrode EL/.../...../...../../..../../../Ex-... is between - 20°C and + 60°C, and the temperature may not be above or below this range.
The ambient temperature at the terminal box or at the body of the conductive electrode EL/.../...../...../../..../../../Ex-... must be between - 20°C and + 60°C.

Before using the conductive electrodes EL/.../...../...../../..../../../Ex-..., you must ensure that the materials used in the respective electrode are sufficiently chemically and mechanically resistant to the liquids to be monitored and all other external influences.

In case of doubt, consult a suitably trained expert prior to use. Do not use the product before these questions have been fully clarified.

4. Installation, connection, start-up and maintenance, general regulations

Installation, connection, start-up and maintenance of the conductive electrode(s) and the electrode relay may only be performed by suitably qualified specialist personnel in line with all the information material and documentation supplied with the units and following all instructions contained therein.

The qualified specialist personnel must ensure that they are familiar with all valid standards, regulations, local requirements and specific conditions, in particular the standards, regulations, local requirements and specific conditions relating to explosion protection – and must proceed accordingly.

In potentially explosive atmospheres with gas hazards, the entire installation set-up of the electrodes EL/.../...../...../../..../../../Ex-... the obligatory connection box OAK/LST/2x1MΩ and the electrode relay Leckstar 101/Ex must always comply with the standard EN 60 079-14 resp. the replacing standard.

You must always read – and adhere to the instructions outlined in - the yellow DIN A 5 leaflet "User information/Instructions for use with mounting, operating and maintenance instructions for the product...". If the leaflet is not supplied with the product or is lost, you must always request a replacement leaflet from Jola.

5. Installation of the conductive electrodes EL/.../...../...../../..../../../Ex-...

The conductive electrodes must be installed **by qualified specialist personnel**.

Follow the instructions supplied with the electrodes when installing the conductive electrodes EL/.../...../...../../..../../../Ex-.... If no specific documents concerning installation are enclosed with the delivery, the electrodes must be installed in accordance with the relevant accepted practices.

6. Mounting of the electrode relay Leckstar 101/Ex

The electrode relay Leckstar 101/Ex must be mounted **by qualified specialist personnel** following the Installation, Operating and Maintenance Instructions for the Jola electrode relay Leckstar 101/Ex.

7. Connection in the form of an intrinsically safe system

The attached connection diagrams show how to connect the conductive electrode EL/Z6V2/...../...../2/..../../Ex-... (and one or several conductive electrodes EL/.../...../...../../..../../Ex-...) and the obligatory connection box OAK/LST/2x1MΩ to the electrode relay Leckstar 101/Ex to create an intrinsically safe system:

55P-7628 dated 03.07.2013,
90P-7570-1 dated 26.07.2013,
90P-7574-1 dated 26.07.2013,
90P-7579-1 dated 26.07.2013,
55P-7644 dated 10.07.2013,
55P-5355a dated 10.07.2013,
55P-5356a dated 10.07.2013 et
55P-5357c dated 10.07.2013.

Always observe the following when connecting the unit:

- **Potential equalisation**

  To avoid the danger coming from the static electricity, potential equalisation is necessary for the conductive electrodes EL/.../...../...../../..../../../Ex-... with body and/or screw-in nipple made of metal or of antistatic PPLF:

  Connect the external earth connection terminals on the screw-in nipple and, if present, on the optional flange of the conductive electrode to the potential equalisation system.

  Connection to the potential equalisation system is essential for safe operation and must never be neglected.

  In potentially explosive atmospheres with gas hazards, the entire installation set-up must always comply with the standard EN 60 079-14 resp. the replacing standard.

- **Use of several electrodes and electrode relays for control operations in the same location**

  The combination of an electrode EL/Z6V2/...../...../2/..../.././Ex-... and optionally one or several electrodes EL/0/...../...../2/..../.././Ex-... and an electrode relay Leckstar 101/Ex may **only** be used "**x" times in the same location,** taking into account the **maximum overall length of all connecting cables taken together of "y" metres** (see table below).

"x" times	1	2	3	4	5	6	7	8
max. overall length "y" of all connecting cables (*)	1000 m	1000 m	350 m	250 m	150 m	125 m	100 m	75 m
max. overall length "y" of all connecting cables (**)	1000 m	1000 m	313 m	200 m	88 m	50 m	13 m	-----

(*) = all electrodes **except** electrodes EL/…/KE/...../2/..../.././Ex-...
(**) = electrodes EL/…/KE/...../2/..../.././Ex-...

- **Connecting cables**

  Use connecting cables with one or more conductors to connect the conductive electrode EL/Z6V2/...../...../2/..../.././Ex-... to the obligatory connection box OAK/LST/2x1MΩ and the electrode relay Leckstar 101/Ex
  or
  to one or serveral conductive electrodes EL/0/...../...../../..../.././Ex-... to the obligatory connection box OAK/LST/2x1MΩ and to an optional terminal box – and to connect the optional terminal box to another optional terminal box and to the electrode relay Leckstar 101/Ex.

  Each connecting cable must possess a dielectric strength of at least AC 500 V test voltage.

  Each conductor must have a cross section greater than or equal to 0.017 mm².

  See the above table for the maximum admissible total length of all connecting cables taken together.

  In all cases, the parameters of these cables must be below or equal to the following values: C = 200 pF/m and L = 1µH/m.

- **Obligatory connection box**

  The intrinsically safe system composed of
  the electrode EL/.../...../...../../..../../../Ex-...,
  the obligatory connection box OAK/LST/2x1MΩ
  and one electrode relay Leckstar 101/Ex must be installed and connected according to the connection diagrams
  55P-7628 dated 03.07.2013,
  90P-7570-1 dated 26.07.2013,
  90P-7574-1 dated 26.07.2013 and
  90P-7579-1 dated 26.07.2013
  to be found in the annex.

  The installation personnel has to control that the 2 resistors of 1 MOhm each are present in the obligatory connection box OAK/LST/2x1MΩ and correctly connected as shown on the above mentioned connection diagrams.

- **Supplementary terminal boxes (optional extra)**

  The protection class of each terminal box must be at least IP 20.
  The terminal box(es) must be **approved** for use in the corresponding potentially explosive atmosphere.

  If the **terminal box is made of metal or of conductive plastic**, the **dielectric strength** between the intrinsically safe circuit and the electrically conductive body of the terminal box must be **greater than or equal to AC 500 V**.

- **Connection terminals**

  Manufacturer: Weidmüller or other manufacturer.
  Type: AKZ4 - PA blue or other connection terminal with equivalent technical data.

- **Dielectric strength between the intrinsically safe circuit and an adjacent non-intrinsically safe circuit**

  The **dielectric strength** between the intrinsically safe circuit and an adjacent non-intrinsically safe circuit **must be greater than or equal to AC 1500 V.**

8. Start-up

Prior to start-up, you must re-check the mounting position, the mechanical fastening and the electrical connection of the units.
In particular, you must check once again that the conductive electrode(s) is (are) also connected to the corresponding, admissible intrinsically safe circuit(s).

In addition, you must also check and verify that there is no possibility whatsoever of hazardous conditions occurring due to non-adherence to any of the relevant instructions, standards or official regulations.
Only then may the unit in question be started up electrically.

9. Maintenance

The electrodes EL/.../...../...../../..../../../Ex-... are maintenance-free when used in low-viscosity, non-adhesive liquids that are free of solids and do not attack the component materials and/or in clean environments.
To rule out any risks, the electrode(s) and the relay must be serviced by qualified specialist personnel at least once a year.
Where risks cannot be ruled out, you should adhere to an inspection frequency suited to the application in question and laid down in consultation with the relevant supervisory authorities.
If electrode(s) and electrode relay are installed as safety elements within a system, they must always be inspected and checked at intervals to be agreed with the local supervisory authorities.
Prior to all maintenance work, the qualified specialist personnel must inform themselves of all valid standards, regulations, local guidelines and special conditions, in particular standards, regulations, local guidelines and special conditions concerning explosion protection and proceed accordingly.

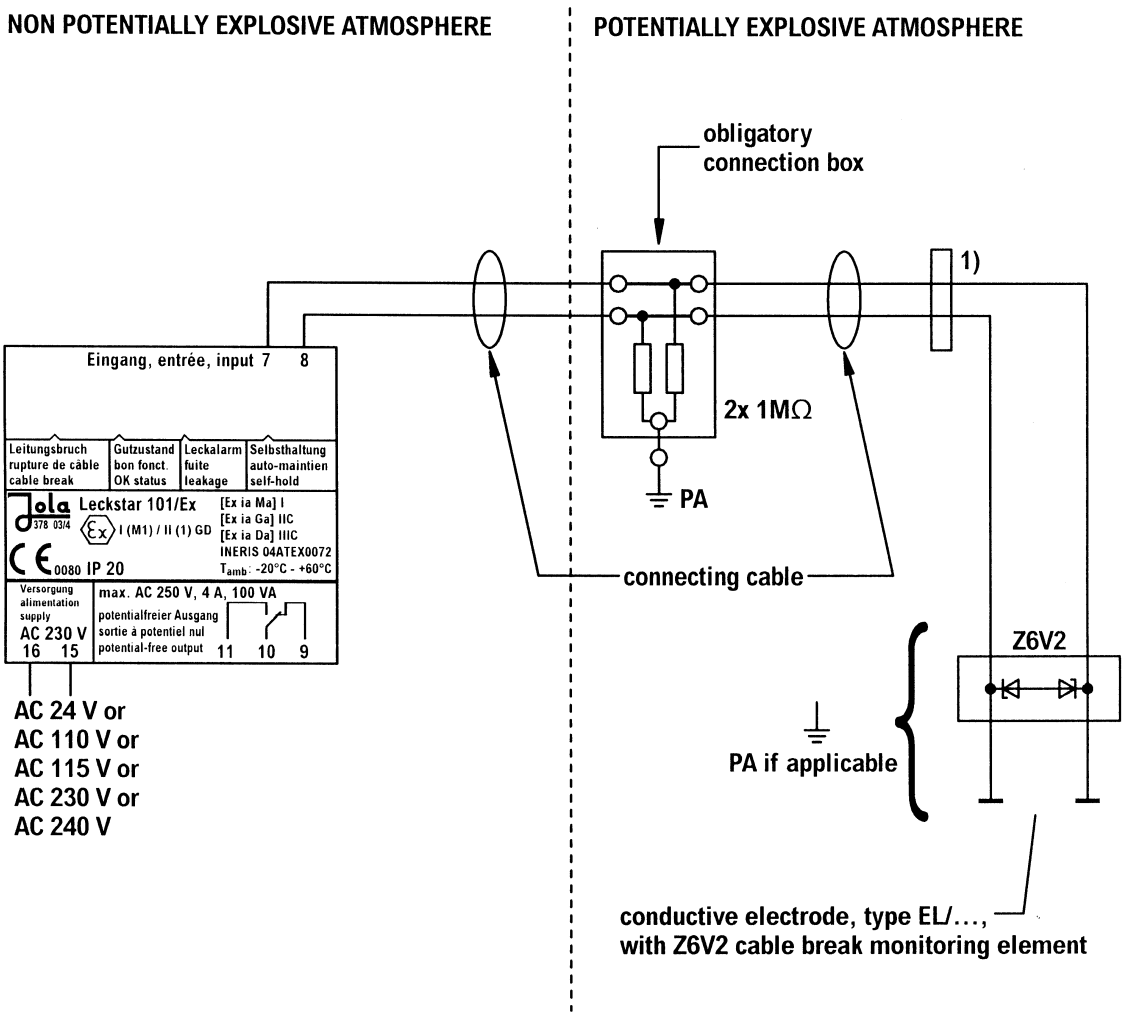
10. Repair

All alterations and repairs to the electrode EL/.../...../...../../..../../../Ex-... and/or the electrode relay Leckstar 101/Ex must be performed in the manufacturer's facility. Under no circumstances may other individuals or companies perform unauthorised alterations or repairs.

11. Disposal

The units must be disposed of by depositing them in conformity with the law at an appropriate collection point for electrical and electronic devices.

SYNOPTIC OF THE SYSTEM



1) Other conductive electrodes without Z6V2 cable break monitoring element can be connected in parallel.

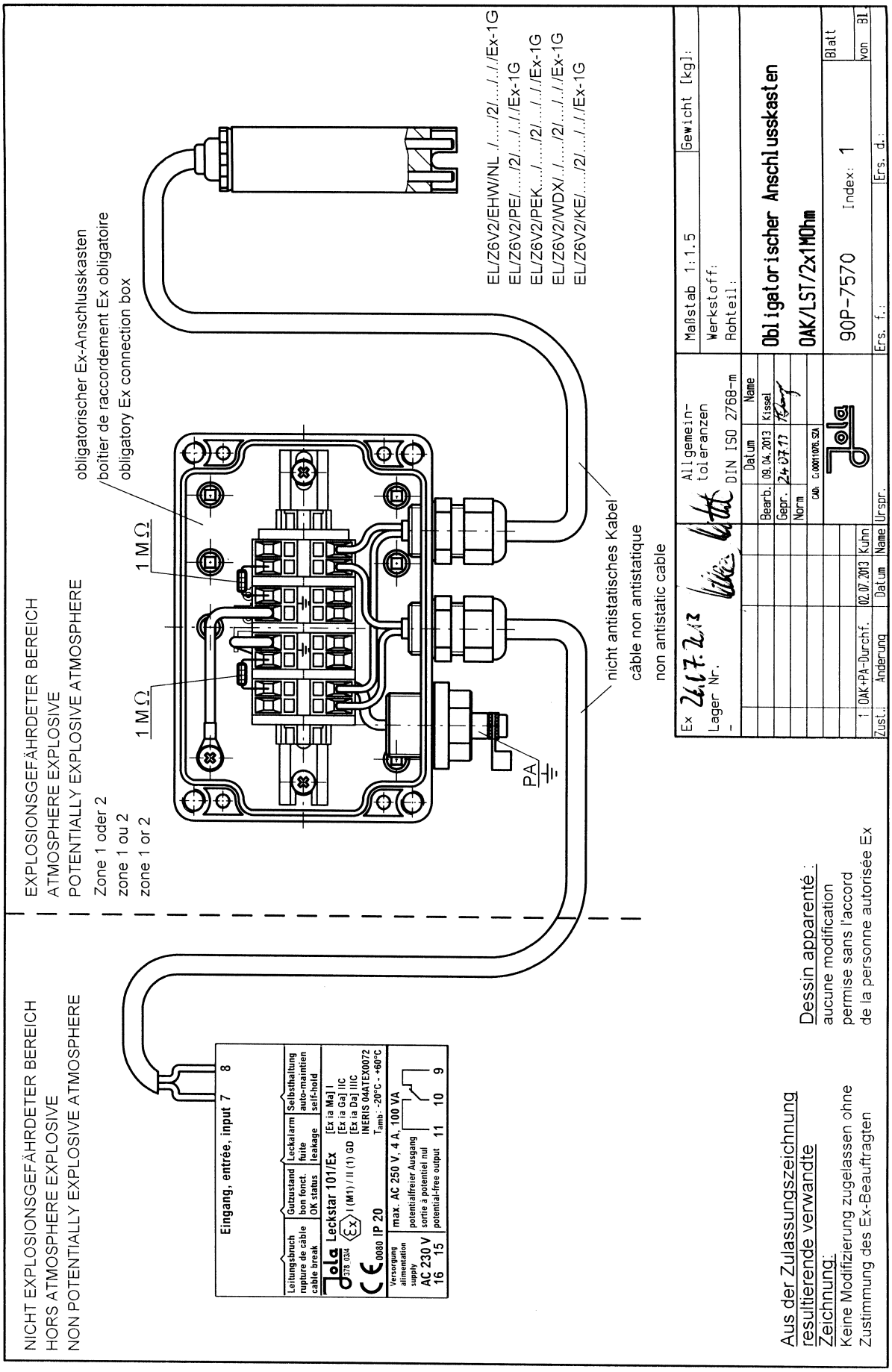
Aus der Zulassungszeichnung resultierende verwandte Zeichnung:
Keine Modifizierung zugelassen ohne Zustimmung des Ex-Beauftragten

Dessin apparenté :
Aucune modification permise sans l'accord de la personne autorisée Ex

03.07.2013

	Datum	Name	
Bearb.	25.06.13	Scherer	Connection diagram Leckstar 101/Ex + conductive electrode with cable break monitoring
Gepr.	25.06.13		
			55P-7628

Ursprung: 55Z-4931a

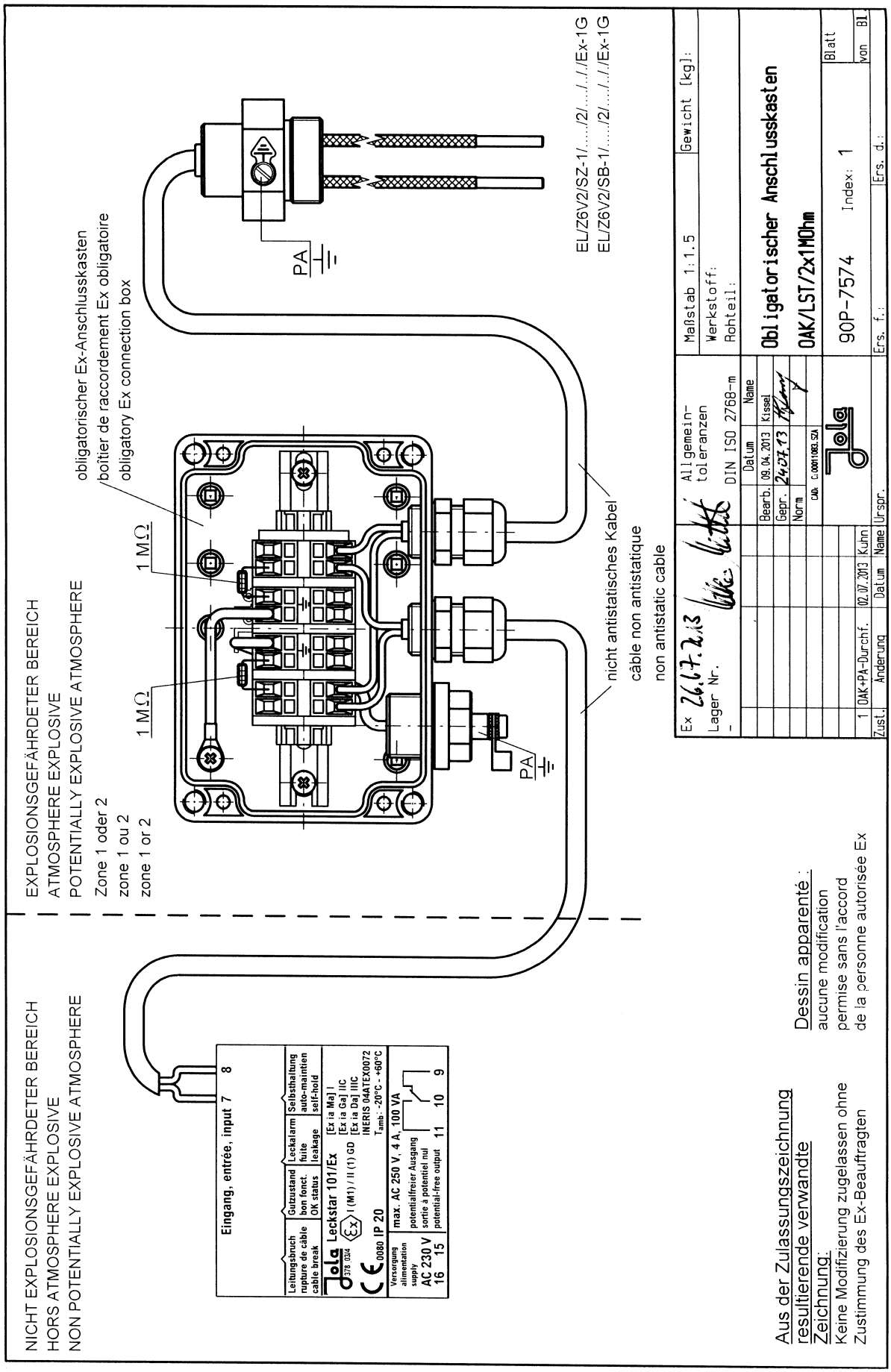


Aus der Zulassungszeichnung resultierende verwandte Zeichnung:

Dessin apparenté : aucune modification

Keine Modifizierung zugelassen ohne Zustimmung des Ex-Beauftragten

permise sans l'accord de la personne autorisée Ex


NICHT EXPLOSIONSGEFÄHRDETER BEREICH
HORS ATMOSPHERE EXPLOSIVE
NON POTENTIALLY EXPLOSIVE ATMOSPHERE
EXPLOSIONSGEFÄHRDETER BEREICH
ATMOSPHERE EXPLOSIVE
POTENTIALLY EXPLOSIVE ATMOSPHERE
Zone 1 oder 2
zone 1 ou 2
zone 1 or 2
obligatorischer Ex-Anschlusskasten
boîtier de raccordement Ex obligatoire
obligatory Ex connection box
1 MΩ
1 MΩ
PA
PA
EL/Z6V2/SZ-1/...../2/...../../Ex-1G
EL/Z6V2/SB-1/...../2/...../../Ex-1G
nicht antistatisches Kabel
câble non antistatique
non antistatic cable
Eingang, entrée, input 7 8
Leitungsbruch rupture de câble cable break
Gutzustand bon fonct. OK status
Leckalarm fuite leakage
Selbsthaltung auto-maintien self-hold
Leckstar 101/Ex
[Ex ia Ma] I
[Ex ia Ga] IIC
[Ex ia Da] IIIC
INERIS 04ATEX0072
T_{amb}: -20°C - +60°C
0080 IP 20
Versorgung alimentation supply
AC 230 V
16 15
max. AC 250 V, 4 A, 100 VA
potentialfreier Ausgang
sortie à potentiel nul
potential-free output
11 10 9
Ex 26.07.2013
Lager Nr.
-
Allgemeintoleranzen
DIN ISO 2768-m
Maßstab 1:1.5
Gewicht [kg]:
Werkstoff:
Rohteil:
Obligatorischer Anschlusskasten
OAK/LST/2x1MOhm
90P-7574
Index: 1
Blatt
von Bl
Ers. f.:
Ers. d.:
Bearb. 09.04.2013 Kissel
Gepr. 24.07.13
Norm
CAD: C:\0001003.SZA
1 OAK+PA-Durchf. 02.07.2013 Kuhn
Zust. Änderung Datum Name Urspr.
Aus der Zulassungszeichnung resultierende verwandte Zeichnung:
Keine Modifizierung zugelassen ohne Zustimmung des Ex-Beauftragten
Dessin apparenté :
aucune modification
permise sans l'accord
de la personne autorisée Ex

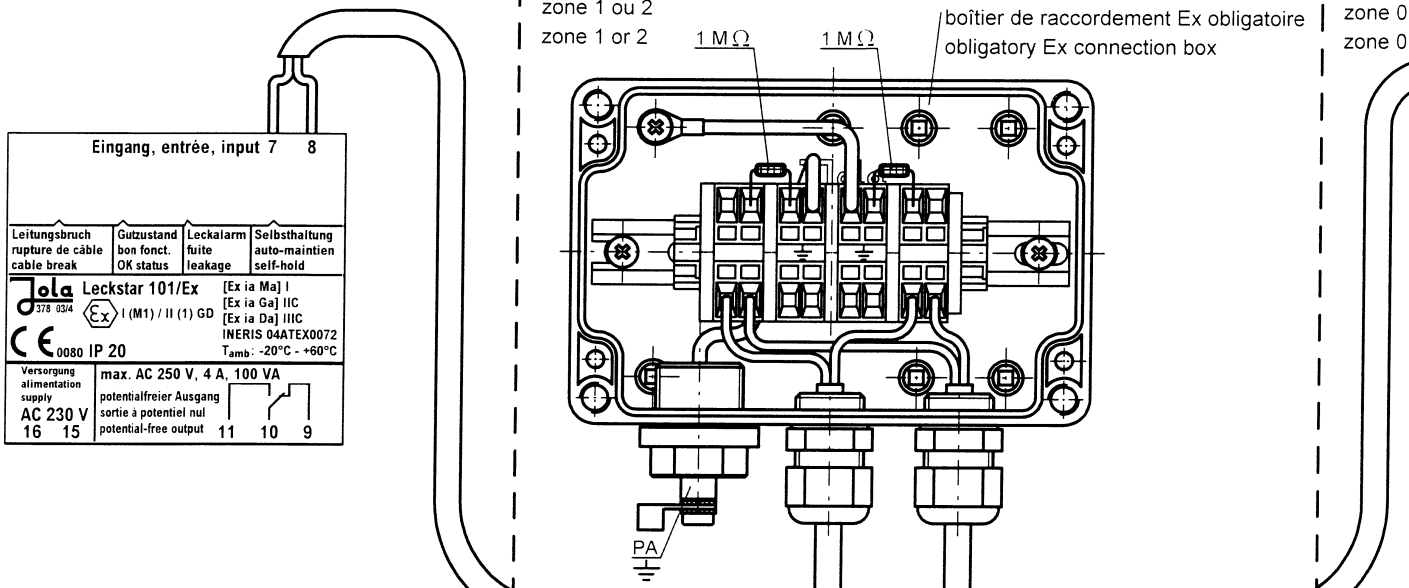
NICHT EXPLOSIONSGEFÄHRDETER BEREICH
HORS ATMOSPHERE EXPLOSIVE
NON POTENTIALLY EXPLOSIVE ATMOSPHERE

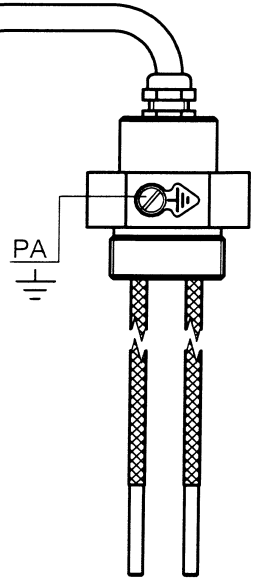
EXPLOSIONSGEFÄHRDETER BEREICH
ATMOSPHERE EXPLOSIVE
POTENTIALLY EXPLOSIVE ATMOSPHERE

Zone 1 oder 2
zone 1 ou 2
zone 1 or 2

obligatorischer Ex-Anschlusskasten
boîtier de raccordement Ex obligatoire
obligatory Ex connection box

Zone 0,1 oder 2
zone 0,1 ou 2
zone 0,1 or 2





nicht antistatisches Kabel
câble non antistatique
non antistatic cable

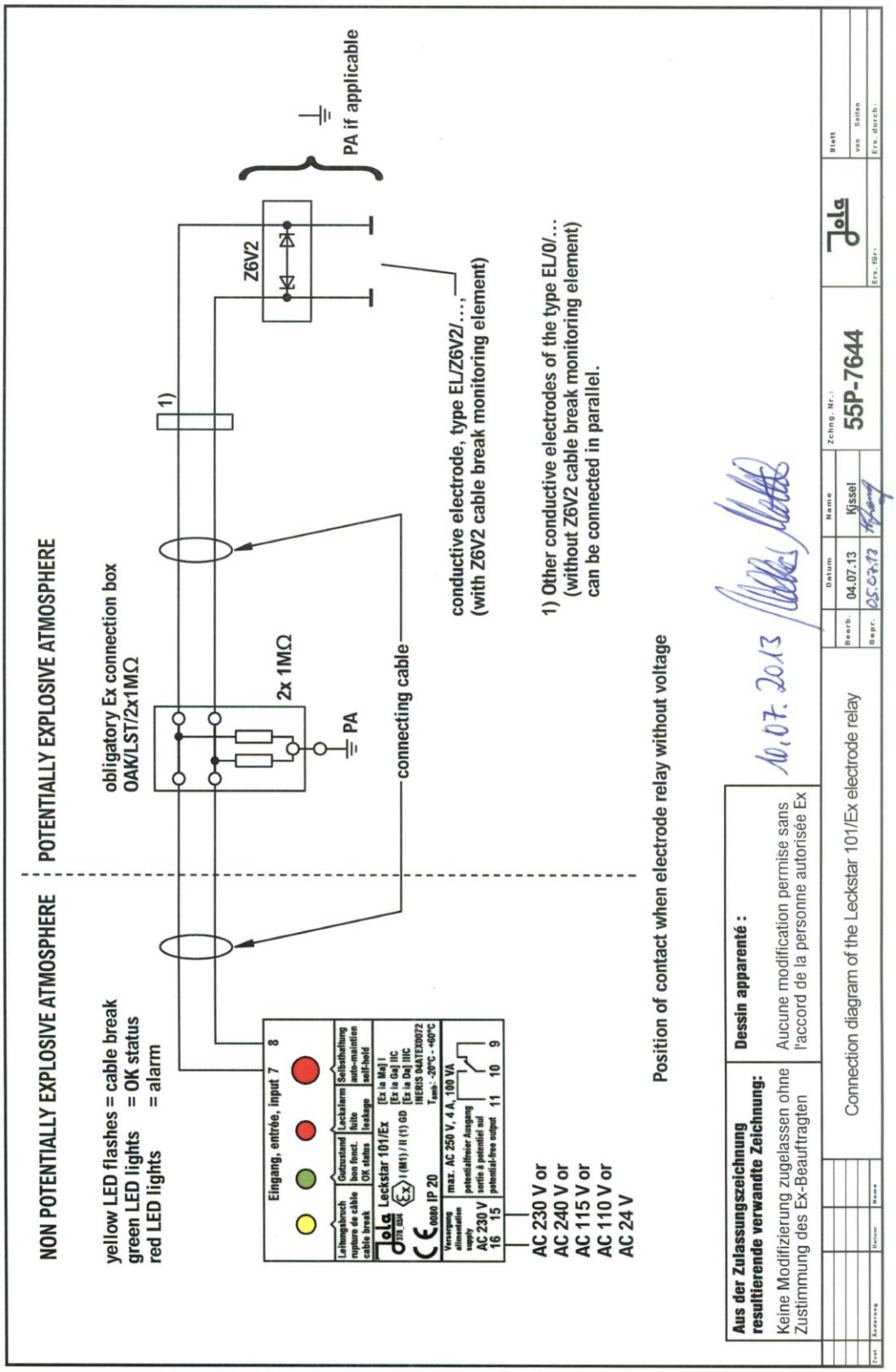
antistatisches (leitfähiges) Kabel
câble antistatique (conducteur)
antistatic (conductive) cable

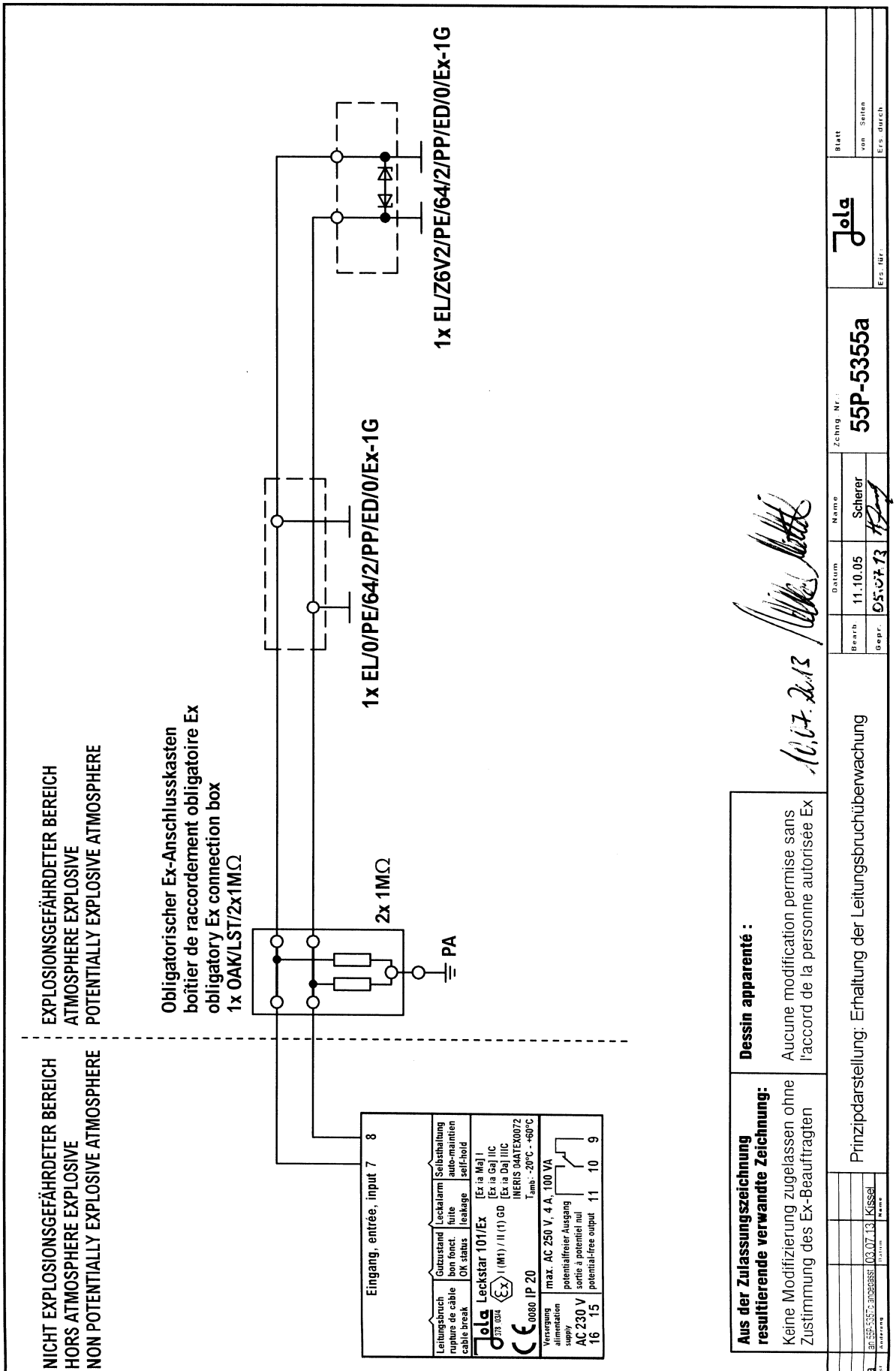
EL/Z6V2/SZ-0/...../2/..../../../Ex-0G

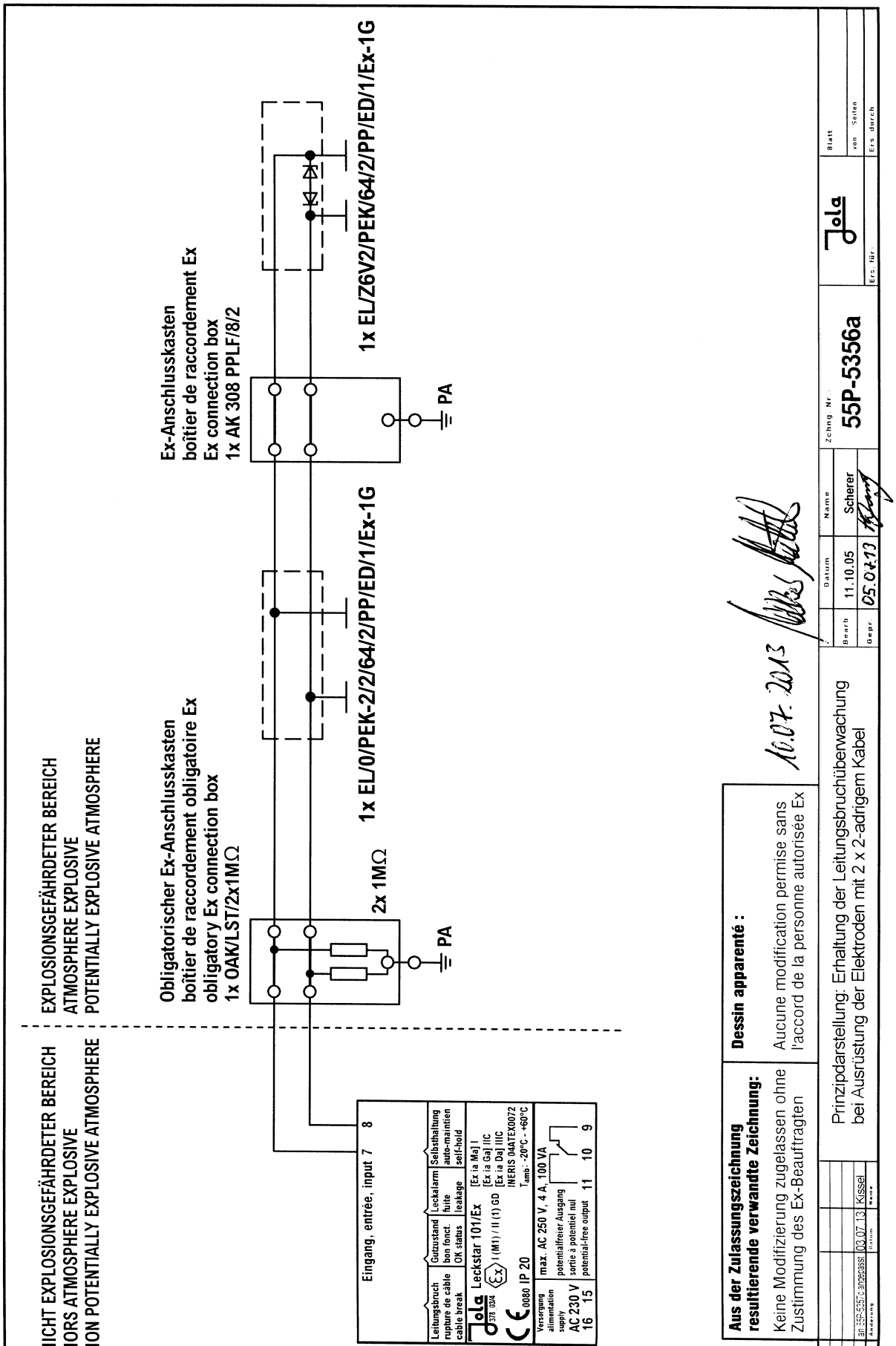
Aus der Zulassungszeichnung resultierende verwandte Zeichnung:
Keine Modifizierung zugelassen ohne Zustimmung des Ex-Beauftragten

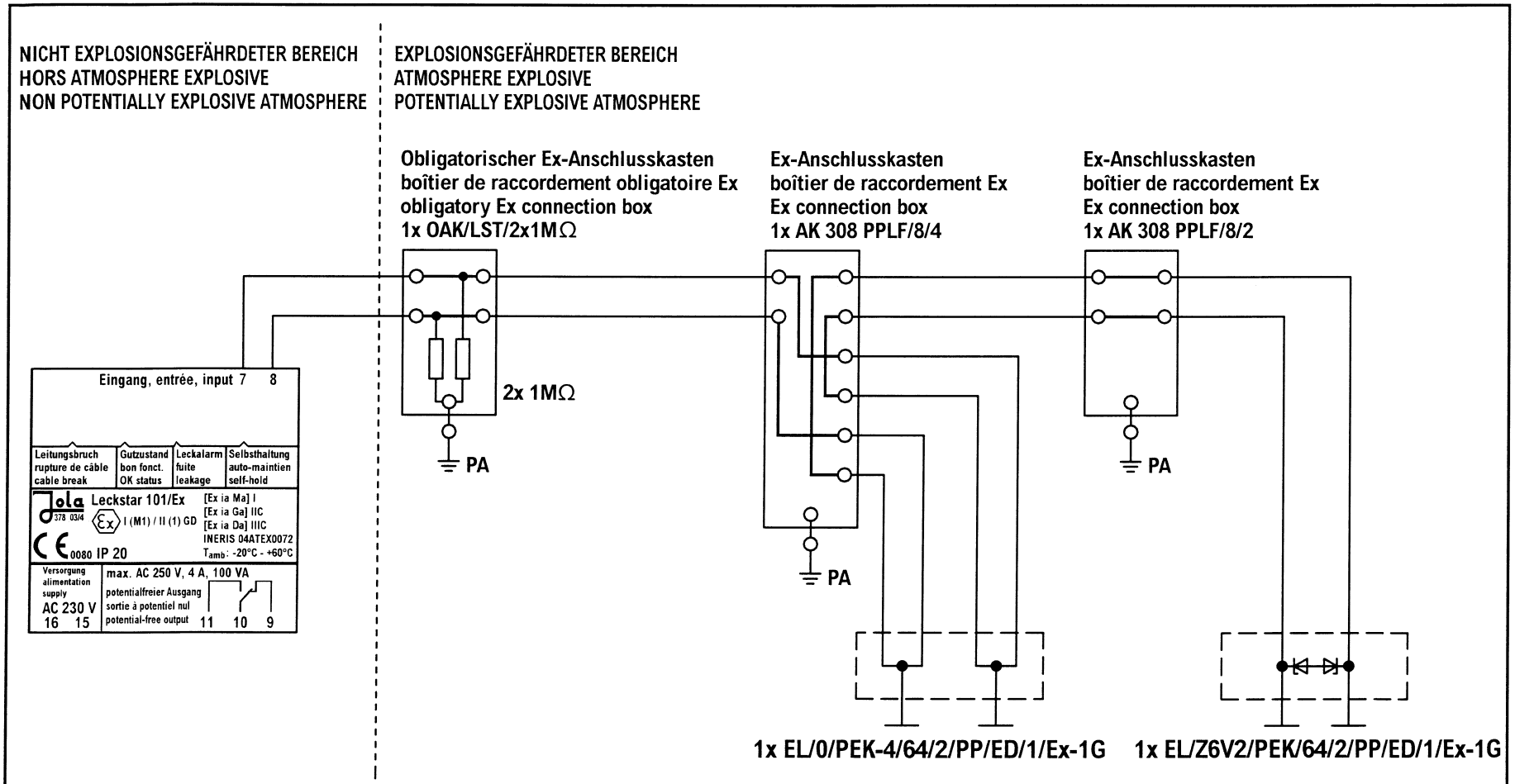
Dessin apparenté :
aucune modification
permise sans l'accord
de la personne autorisée Ex

Ex 26.07.2013 Lager Nr. -				Allgemeintoleranzen DIN ISO 2768-m	Maßstab 1:1.5	Gewicht [kg]:
					Werkstoff: Rohteil:	
				Datum / Name	Obligatorischer Anschlusskasten OAK/LST/2x1MOhm	
				Bearb. 09.04.2013 Kissel		
				Gepr. 24.07.13		
				Norm		
				CAD: C:\0011091.SZA		
1	OAK+PA-Durchf.	03.07.2013	Kuhn	Jola	90P-7579 Index: 1	Blatt von Bl.
Zust.	Änderung	Datum	Name	Ursprung	Ers. f.:	Ers. d.:


NON POTENTIALLY EXPLOSIVE ATMOSPHERE
POTENTIALLY EXPLOSIVE ATMOSPHERE
yellow LED flashes = cable break
green LED lights = OK status
red LED lights = alarm
obligatory Ex connection box
OAK/LST/2x1MΩ
2x 1MΩ
PA
connecting cable
1)
Z6V2
PA if applicable
conductive electrode, type EL/Z6V2/…;
(with Z6V2 cable break monitoring element)
1) Other conductive electrodes of the type EL/0/…
(without Z6V2 cable break monitoring element)
can be connected in parallel.
Position of contact when electrode relay without voltage
AC 230 V or
AC 240 V or
AC 115 V or
AC 110 V or
AC 24 V
Eingang, entrée, input 7 8
Leitungsbruch rupture de câble cable break
Gutzustand bon fonct. OK status
Lockalarm fuite leakage
Selbsthaltung auto-maintien self-hold
Leckstar 101/Ex
max. AC 250 V, 4 A, 100 VA
potentialfreier Ausgang
sortie à potentiel nul
potential-free output
Versorgung alimentation supply
AC 230 V
16 15
11 10 9
Aus der Zulassungszeichnung resultierende verwandte Zeichnung:
Keine Modifizierung zugelassen ohne Zustimmung des Ex-Beauftragten
Dessin apparenté :
Aucune modification permise sans l'accord de la personne autorisée Ex
Connection diagram of the Leckstar 101/Ex electrode relay
Zust.
Änderung
Datum
Name
Bearb.
04.07.13
Kissel
Gepr.
Zchng. Nr.:
55P-7644
Blatt
von Seiten
Ers. durch:
Ers. für:


NICHT EXPLOSIONSGEFÄHRDETER BEREICH
HORS ATMOSPHERE EXPLOSIVE
NON POTENTIALLY EXPLOSIVE ATMOSPHERE
EXPLOSIONSGEFÄHRDETER BEREICH
ATMOSPHERE EXPLOSIVE
POTENTIALLY EXPLOSIVE ATMOSPHERE
Obligatorischer Ex-Anschlusskasten
boîtier de raccordement obligatoire Ex
obligatory Ex connection box
1x OAK/LST/2x1MΩ
2x 1MΩ
PA
1x EL/0/PE/64/2/PP/ED/0/Ex-1G
1x EL/Z6V2/PE/64/2/PP/ED/0/Ex-1G
Eingang, entrée, input 7 8
Leitungsbruch rupture de câble cable break
Gutzustand bon fonct. OK status
Leckalarm fuite leakage
Selbsthaltung auto-maintien self-hold
Leckstar 101/Ex
[Ex ia Ma] I
[Ex ia Ga] IIC
[Ex ia Da] IIIC
INERIS 04ATEX0072
0080 IP 20
Tamb: -20°C - +60°C
Versorgung alimentation supply
max. AC 250 V, 4 A, 100 VA
potentialfreier Ausgang
sortie à potentiel nul
potential-free output
AC 230 V
16 15 11 10 9
Aus der Zulassungszeichnung resultierende verwandte Zeichnung:
Keine Modifizierung zugelassen ohne Zustimmung des Ex-Beauftragten
Dessin apparenté :
Aucune modification permise sans l'accord de la personne autorisée Ex
Prinzipdarstellung: Erhaltung der Leitungsbruchüberwachung
Bearb. 11.10.05 Scherer
Gepr. 05.07.13
Zchng. Nr.: 55P-5355a
Blatt
von Seiten
Ers. durch
Ers. für:
a an 55P-5357 angepasst 03.07.13 Kissel
Zust. Änderung Datum Name


NICHT EXPLOSIONSGEFÄHRDETER BEREICH
HORS ATMOSPHERE EXPLOSIVE
NON POTENTIALLY EXPLOSIVE ATMOSPHERE
EXPLOSIONSGEFÄHRDETER BEREICH
ATMOSPHERE EXPLOSIVE
POTENTIALLY EXPLOSIVE ATMOSPHERE
Obligatorischer Ex-Anschlusskasten
boîtier de raccordement obligatoire Ex
obligatory Ex connection box
1x OAK/LST/2x1MΩ
2x 1MΩ
1x EL/0/PEK-2/2/64/2/PP/ED/1/Ex-1G
PA
Ex-Anschlusskasten
boîtier de raccordement Ex
Ex connection box
1x AK 308 PPLF/8/2
1x EL/Z6V2/PEK/64/2/PP/ED/1/Ex-1G
PA
Eingang, entrée, input 7 8
Leitungsbruch rupture de câble cable break
Gutzustand bon fonct. OK status
Leckalarm fuite leakage
Selbsthaltung auto-maintien self-hold
Jola Leckstar 101/Ex
0378 1034
(M1) / II (1) GD
[Ex ia Ma] I
[Ex ia Ga] IIC
[Ex ia Da] IIIC
INERIS 04ATEX0072
0080 IP 20
Tamb: -20°C - +60°C
Versorgung alimentation supply
AC 230 V
16 15
max. AC 250 V, 4 A, 100 VA
potentialfreier Ausgang
sortie à potentiel nul
potential-free output
11 10 9
Aus der Zulassungszeichnung resultierende verwandte Zeichnung:
Keine Modifizierung zugelassen ohne Zustimmung des Ex-Beauftragten
Dessin apparenté :
Aucune modification permise sans l'accord de la personne autorisée Ex
16.07.2013
Prinzipdarstellung: Erhaltung der Leitungsbruchüberwachung bei Ausrüstung der Elektroden mit 2 x 2-adrigem Kabel
Datum
Name
Bearb 11.10.05 Scherer
Gepr 05.07.13
Zchng Nr.
55P-5356a
Jola
Blatt
von Seiten
Ers. für:
Ers. durch
a an 55P-5357 angepasst 03.07.13 Kissel
Zust. Änderung Datum Name



Aus der Zulassungszeichnung resultierende verwandte Zeichnung:	**Dessin apparenté :**
Keine Modifizierung zugelassen ohne Zustimmung des Ex-Beauftragten	Aucune modification permise sans l'accord de la personne autorisée Ex

10.07.2013

c	OAK/ ergänzt	03.07.13	Kissel
b	Adertarbe schwarz in blau	07.06.11	Kissel
a	Adertarben+3-sprachig	12.02.07	Fösser
Zust.	Änderung	Datum	Name

Prinzipdarstellung: Erhaltung der Leitungsbruchüberwachung bei Ausrüstung der Elektroden mit 1 x 4-adrigem Kabel

	Datum	Name
Bearb.	11.10.05	Scherer
Gepr.	05.07.13	

Zchng. Nr.: 55P-5357c

Ers. für: | Ers. durch | Blatt | von Seiten

Installation, Operating and Maintenance Instructions for

Jola Electrode Relay
Leckstar 101/Ex ⟨Ex⟩ I (M1) / II (1) GD
[Ex ia Ma] I
[Ex ia Ga] IIC
[Ex ia Da] IIIC

These Installation, Operating and Maintenance Instructions must always be handed over to the fitter/operator/service personnel of our products together with all other user documentation and information!
They should be stored in a safe place together with all other user documentation and information so they can be consulted again when necessary at any time!

Jola Spezialschalter GmbH & Co. KG
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Tel. +49 6325 188-01 • Fax +49 6325 6396
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1. Area of application

The electrode relay Leckstar 101/Ex

JOLA
D-67466 Lambrecht

CE 0080
Leckstar 101/Ex Ex I (M1) / II (1) GD

(serial number)
(production year)

[Ex ia Ma] I
[Ex ia Ga] IIC
[Ex ia Da] IIIC

Tamb : - 20°C to + 60°C
INERIS 04ATEX0072

is designed to transmit electrical signals coming **from one or more conductive electrodes installed in a potentially explosive atmosphere** to non-hazardous areas. **The electrode relay Leckstar 101/Ex must be installed outside potentially explosive atmospheres or be protected by a suitable standardised ignition protection class.**

°°°°°°°°°°°°°°°°°°°°

The conductive electrodes are, **for example, used for leakage detection or for the purpose of overflow or run-dry protection in tanks.**

All the **technical parameters of the conductive electrodes and/or the electrode relay** are listed in this brochure and/or the accompanying product descriptions. These documents also contain the corresponding **installation recommendations**.
You must always observe and follow all the instructions relating to these parameters and installation recommendations. The relay may not be used for applications outside the specified parameter range.

If the product descriptions are not supplied with the products or are lost, **you must always request a copy of the descriptions prior to installation, connection or start-up and ensure that they are read and observed by the suitably qualified specialist personnel. Otherwise the conductive electrodes and/or the electrode relay may not be installed, connected and started up.**

2. Preconditions for safe use

- **Maximum parameters of the conductive electrodes**
  The maximum parameters of the conductive electrodes are listed in the corresponding product documentation.

- **Special requirements/conditions for the safe use of the conductive electrodes**
  The special requirements/conditions for the safe use of the conductive electrodes are listed in the corresponding product documentation.

- **Maximum parameters of the electrode relay Leckstar 101/Ex**

  Rated supply voltages (terminals J15, J16):
  U = AC 24 V, AC 110 V, AC 115 V, AC 230 V or AC 240 V

  Maximum electrical parameters of the electrical circuit connected to terminals J9, J10 and J11:
  Umax. = 250 V; Imax. = 4A, **but max. P = 100 VA**

  Maximum electrical parameters at output terminals J7 and J8:
  Uo = 11.8 V; Io = 12 mA, but max. Po = 0.055 W

- **Special requirements/conditions for the safe use of the electrode relay Leckstar 101/Ex**

  The electrode relay Leckstar 101/Ex must be **installed outside potentially explosive atmospheres** or be protected by a suitable standardised ignition protection class.

  The electrical circuits connected to terminals J7 and J8
  must be approved for use
  - in above-ground areas which could be at risk due to a potentially explosive atmosphere caused by gases (groups IIC, IIB or IIA) or
  - in underground areas in mines as well as in above-ground areas of mines which could be at risk due to firedamp and/or flammable dusts (group I) or
  - in above-ground areas which could be at risk due to a potentially explosive atmosphere caused by dusts

  and their suitability in terms of intrinsic safety must be ensured.

The maximum parameters of the external circuits that may be connected are as follows:

For explosion group IIC	For explosion group IIB and for dust	For explosion groups IIA and I
Co(L=0) = 1.5 µF Lo(C=0) = 117 mH or Lo/Ro = 1.6 mH/Ohm	Co(L=0) = 9.9 µF Lo(C=0) = 724 mH or Lo/Ro = 6.6 mH/Ohm	Co(L=0) = 39 µF Lo(C=0) = 1593 mH or Lo/Ro = 12.9 mH/Ohm

3. Additional conditions for safe operation

Before using the conductive electrodes, you must ensure that the materials used in the respective conductive electrode are sufficiently chemically and mechanically resistant to the liquid to be monitored and all other external influences.
In case of doubt, consult a suitably trained expert prior to use. Do not use the product before these questions have been fully clarified.

4. Installation, connection, start-up and maintenance, general regulations

Installation, connection, start-up and maintenance of the conductive electrodes and the electrode relay may only be performed by suitably qualified specialist personnel in line with all the information material and documentation supplied with the units and following all instructions contained therein.

The qualified specialist personnel must ensure that they are familiar with all valid standards, regulations, local requirements and specific conditions, in particular the standards, regulations, local requirements and specific conditions relating to explosion protection – and must proceed accordingly.

You must always read – and adhere to the instructions outlined in - the yellow DIN A 5 leaflet "User information/Instructions for use with mounting, operating and maintenance instructions for the product...". If the leaflet is not supplied with the product or is lost, you must always request a replacement leaflet from Jola.

5. Installation and connection of the electrode relay Leckstar 101/Ex

The electrode relay Leckstar 101/Ex must be installed outside potentially explosive atmospheres or be protected by a suitable standardized ignition protection class.
The entire installation set-up must always comply with the standard EN 60 079-14 resp. the replacing standard.

The unit is designed exclusively for installation in a switch cabinet or in a suitable protective housing and may therefore only be installed in these locations. It is only suitable for use in clean environments.

6. Start-up

Prior to start-up, you must re-check the mounting position of all the units, the mechanical fastening and the electrical connection.

In particular, you must check once again that the electrodes are connected to the corresponding, admissible intrinsically safe circuit(s).

In addition, you must also check and verify that there is no possibility whatsoever of hazardous conditions occurring due to non-adherence to any of the relevant instructions, standards or official regulations.

Only then may the unit in question be started up electrically.

7. Maintenance

The maintenance intervals are listed in the product documentation for the conductive electrodes.

To rule out any risks, however, the conductive electrodes and electrode relay must be sight-checked and function-tested by qualified specialist personnel at least once a year.
Where risks cannot be ruled out, you should adhere to an inspection frequency suited to the application in question and laid down in consultation with the relevant supervisory authorities.

If the conductive electrode(s) and electrode relay are installed as safety elements within a system, they must always be inspected and checked at intervals to be agreed with the local supervisory authorities.

Prior to all maintenance work, the qualified specialist personnel must inform themselves of all valid standards, regulations, local guidelines and special conditions, in particular standards, regulations, local guidelines and special conditions concerning explosion protection and proceed accordingly.

8. Repair

All alterations and repairs to the conductive electrode(s) and/or the electrode relay Leckstar 101/Ex must be performed in the manufacturer's facility. Under no circumstances may other individuals or companies perform unauthorised alterations or repairs.