LISTEC® GmbH
Lineare Sensor Technik

# SAFETY AND TEMPERATURE MONITORING IN WAREHOUSES

Isen, Juli 2025
With the d-LIST system from LISTEC

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This white paper highlights the specific fire protection requirements in storage facilities and shows how LISTEC's innovative d-LIST linear heat detection system ensures the effective protection of people, stored goods and equipment through precise temperature monitoring and early fire localisation.

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# 1. Introduction & Press Reports

Warehouses and production facilities place the highest demands on safety technology. The diversity of stored goods, changing climatic conditions, high dust levels and freezing temperatures make it difficult to use traditional fire alarm systems.

**Fires in storage facilities.**
**Examples from press reports:**

October 29, 2025, Hesse
**Parcel centre on fire:**
**Employees must evacuate the building**

https://www.hna.de/hessen/raunheim-brennt-alarm-in-suedhessen-dpd-paketzentrum-in-zr-94008308.html

October 01, 2025, Bavaria
**“Massive flames”: Fire department in large-scale operation – Warehouse on fire**

https://www.merkur.de/bayern/brand-massive-flammen-feuerwehr-im-grosseinsatz-lagerhalle-in-93963761.html

# 2. Fire hazards & triggers

Storage facilities are subject to a variety of risks that can contribute to fires. In addition to technical defects, organisational and environmental factors also play a decisive role. The most common causes of fire include:

- **Electrical faults**
  - Faulty wiring, overloaded cables, defective plug connections or damaged electrical devices can cause fires due to short circuits or overheating. Lighting systems in high-bay warehouses or charging areas for electric vehicles and industrial trucks are particularly at risk.
- **Mechanical friction and overheating**
  - In automated warehouses, conveyor systems or packaging stations, friction, blocked rollers or overheated motors can easily create ignition sources that can spark fires.
- **Spontaneous combustion of stored goods**
  - Certain materials – such as textiles, wood, paper, chemicals or organic waste – can spontaneously combust due to heat accumulation, oxidation or fermentation processes.
- **Open flames and welding work**
  - Working with open flames, welding or cutting in the vicinity of combustible materials is a classic fire risk, especially during maintenance or conversion work during ongoing operations.
- **Operating errors and human error**
  - Carelessness, improper storage of flammable materials or uncoordinated work processes can quickly lead to dangerous situations.
- **Technical defects by means of transport**
  - Defects in forklift trucks, conveyor vehicles or loading equipment – especially in electric drives and batteries – often lead to fires due to short circuits or overheated components.
- **External influences**
  - Weather conditions, lightning strikes or the entry of sparks and exhaust gases from neighbouring areas can also trigger fires in storage facilities.

# 3. LISTEC Solutions

**LISTEC GmbH** has been developing, manufacturing, and distributing innovative sensor cable systems for early fire detection and temperature monitoring for over 30 years. From our headquarters near Munich, we supply customers worldwide – **'Made in Germany'** stands for precision, reliability and durability.

Our LIST and d-LIST systems are specially designed for demanding applications. Thanks to the robust, enclosed design of our sensor cables, they work reliably under the most adverse conditions – such as dust, dirt, moisture, frost and vibrations. Solutions that have proven reliable for decades in tunnel systems, conveyor belt systems and industrial infrastructures also offer decisive safety advantages in storage facilities.

**Fire protection and temperature monitoring in storage facilities**

In storage and logistics centres, electrical systems, transport vehicles, frictional heat and self-igniting materials pose a wide range of fire risks. Early and accurate fire detection is therefore crucial to protect people, goods and operating equipment. The **d-LIST system** provides linear temperature monitoring, detecting temperature changes over the entire length of the cable and locating them precisely. This means that a fire or a rise in temperature can be detected in real time before major damage occurs. Our technology not only enables early fire detection, but also the monitoring of thermally critical areas, such as high-bay warehouses, cooling zones or hazardous material storage facilities.

**Advantages of the d-LIST system:**

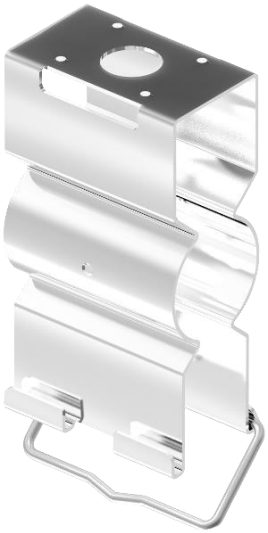

- Differential and maximum temperature evaluation
- Resistant to dust/dirt/gases/vibrations
- Can be installed in single-branch mode or with multiple branches
- Measurement resolution (always 0.1 °C, internally 0.0625 °C for d-LIST)
- Repeatability (always ± 0.1 K along the entire cable length)
- Freely selectable sensor spacing, individual identification possible at any time via cable markings
- Systems are generally maintenance-free, resulting in long-term cost savings
- Low commissioning and maintenance costs
- Calibration-free and location-specific resolution in the event of a fire over the entire service life
- Use of individual sensors for object monitoring can be integrated into sensor cable installations

# 4. Application/ Installation /Monitoring

Thanks to various cable fastenings, our SEC 15 sensor cable is not only easy to install, but can also be customised. We recommend our plastic or stainless steel fastening clamps, especially for the food industry.

**Polyamide cable clamp CLIC 15**


**Stainless steel cable clamp MDC**



# 5. Certificate excerpt

The **d-LIST / SEC 15 system** is a system recognised by VdS, among others, in accordance with EN 54-22:2015+A1:2020 and may also be used in EX areas Zone 2 and 22.

Anerkennung
Approval

VdS

von Bauteilen und Systemen
of Components and Systems

Inhaber der Anerkennung / Holder of the Approval

LISTEC GmbH
Am Sandberg 34
DE-84424 Isen

| Anerkennungs-Nr. / Approval No. | Anzahl der Seiten / No. of pages | gültig ab (TT.MM.JJJJ) / valid from (dd.mm.yyyy) | gültig bis (TT.MM.JJJJ) / valid until (dd.mm.yyyy) |
|---|---|---|---|
| G 221004 | 14 | 26.06.2023 | 25.06.2027 |

Gegenstand der Anerkennung / Subject of the Approval

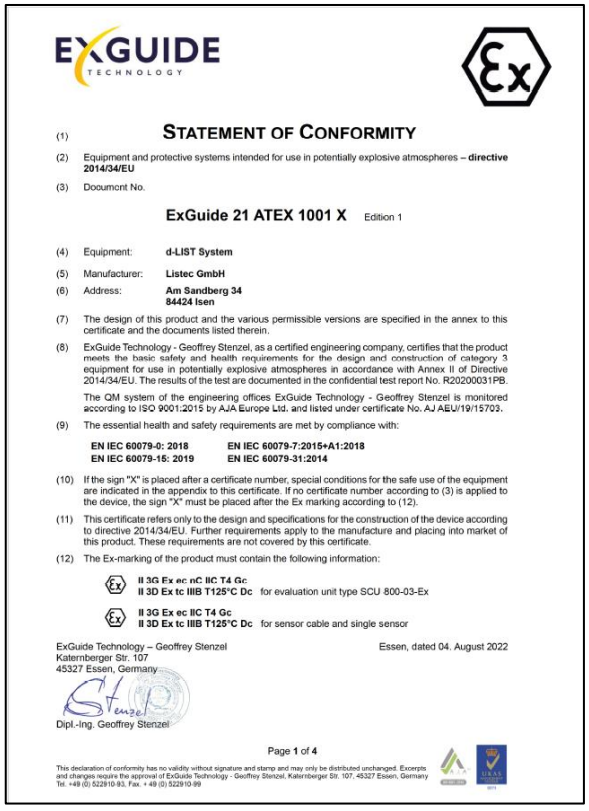
Rücksetzbarer linienförmiger Wärmemelder /
Resettable line-type heat detector
d-LIST

Verwendung / Use

in automatischen Brandmeldeanlagen /
in automatic fire detection and fire alarm systems

Anerkennungsgrundlagen / Basis of the Approval

VdS 2344:2014-07
VdS 2543:2021-03
EN 54-17:2005 + AC:2007
EN 54-22:2015 + A1:2020



EXGUIDE TECHNOLOGY

(1) **STATEMENT OF CONFORMITY**

(2) Equipment and protective systems intended for use in potentially explosive atmospheres – **directive 2014/34/EU**

(3) Dooumont No.

**ExGuide 21 ATEX 1001 X** Edition 1

(4) Equipment: **d-LIST System**

(5) Manufacturer: **Listec GmbH**

(6) Address: **Am Sandberg 34**
**84424 Isen**

(7) The design of this product and the various permissible versions are specified in the annex to this certificate and the documents listed therein.

(8) ExGuide Technology - Geoffrey Stenzel, as a certified engineering company, certifies that the product meets the basic safety and health requirements for the design and construction of category 3 equipment for use in potentially explosive atmospheres in accordance with Annex II of Directive 2014/34/EU. The results of the test are documented in the confidential test report No. R20200031PB.

The QM system of the engineering offices ExGuide Technology - Geoffrey Stenzel is monitored according to ISO 9001:2015 by AJA Europe Ltd. and listed under certificate No. AJ AEU/19/15703.

(9) The essential health and safety requirements are met by compliance with:

**EN IEC 60079-0: 2018** **EN IEC 60079-7:2015+A1:2018**
**EN IEC 60079-15: 2019** **EN IEC 60079-31:2014**

(10) If the sign "X" is placed after a certificate number, special conditions for the safe use of the equipment are indicated in the appendix to this certificate. If no certificate number according to (3) is applied to the device, the sign "X" must be placed after the Ex marking according to (12).

(11) This certificate refers only to the design and specifications for the construction of the device according to directive 2014/34/EU. Further requirements apply to the manufacture and placing into market of this product. These requirements are not covered by this certificate.

(12) The Ex-marking of the product must contain the following information:

**II 3G Ex ec nC IIC T4 Gc**
**II 3D Ex tc IIIB T125°C Dc** for evaluation unit type SCU 800-03-Ex

**II 3G Ex ec IIC T4 Gc**
**II 3D Ex tc IIIB T125°C Dc** for sensor cable and single sensor

ExGuide Technology – Geoffrey Stenzel
Katernberger Str. 107
45327 Essen, Germany

Essen, dated 04. August 2022

Dipl.-Ing. Geoffrey Stenzel

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This declaration of conformity has no validity without signature and stamp and may only be distributed unchanged. Excerpts and changes require the approval of ExGuide Technology - Geoffrey Stenzel, Katernberger Str. 107, 45327 Essen, Germany
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