LRS Aspirating Smoke System

- **Early and fast detection and immediate intervention reduce expenses caused by fire damage to a minimum**
- **Four freely configurable alarm levels**
- **Reduction in false alarms through two-level air sample filtration and wide detection ranges**
- **Automatic learn function for easy adaptation to the environment**
- **Reduced maintenance costs through self-cleaning laser measuring chamber and central accessibility**
- **200m total suction pipe length and 1,600m² monitoring area per detector unit**
- **Transparent data analysis through integrated event memory**
- **LRS compact EB is directly operated on the esserbus**

LRS 100/LRS-S 700:

The system for highest safety requirements - active and early fire detection through laser technology

In early fire detection, time and detection quality determine the degree of damage caused by a fire, since the time between the pre-fire state and flame generation influences the further spread of damage. This is where the laser technology implemented in the new LRS aspirating smoke system provides a crucial advantage: its high detection sensitivity enables sources to be rapidly detected. Via a maximum of four suction pipes, the air to be monitored in each room is continuously passed through a laser detection module. Thus, even the smallest quantity of fire aerosol particles, which normally cannot be detected by point detectors in rooms with high ceilings and ventilation systems, is recognised.

With its wide detection range of 0.005% to 20% (light absorption per metre), its built-in filters and its automatic learning function, the LRS aspirating smoke system is even capable of coping with complex requirements in terms of monitoring the air composition in a room.
Another advantage of this innovative system is its flexible use even under difficult application conditions. Its modular design also allows simple extension and upgrading.

Via potential-free contacts provided in LRS systems as well as via esserbus transponders, the LRS aspirating smoke system can be fully integrated into an Esser fire alarm system.

LRS compact: cost-effective protection even for smaller objects
The highest safety requirements can now be cost-effectively satisfied for even the smaller objects with laser technology from Esser products: the active LRS compact and the LRS compact/net aspirating smoke systems. In contrast to the LRS compact, with the LRS compact/net multiple units can be networked so that all units can accessed from a central control unit.
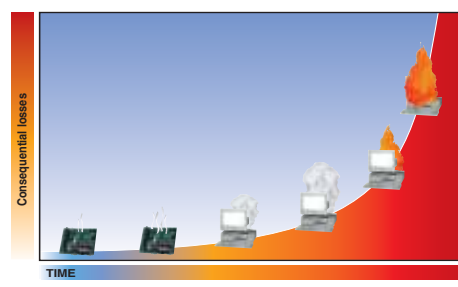
Through its extreme detection speed resulting from four alarm levels and the alarm hierarchy implemented in the system, the LRS gains crucial advantages in time.

A simple but highly effective mechanism

In monitored areas, the air is actively sucked by up to four suction pipes to be conveyed to the heart of all LRS aspirating smoke systems: the detection module.

Within the detection chamber, a laser measures the specific light absorption in the air and thereby the various particles contained in the air. The detection range (alarm threshold) lies between 0.005% and 20% (light absorption per metre) with a resolution of 0.0015%.

Compensation for ambient conditions, such as air contamination in rooms with production residues, can be taken into account by installing additional reference detectors.

Top quality technology for early fire detection

Cost-effectiveness and the efficiency factor play a vital role in planning and constructing modern buildings. Therefore, the integration of security systems must be able to adapt to these requirements, since modern trade building architecture does not leave much room for installing security systems and cable networks.

The IQ8Control fire alarm panel ideally complies with these requirements through an attractive price /performance ratio, minimised installation expenses, flexible application and expansion options as well as its total expense over the entire lifetime of the system. This is guaranteed through various system features as well as through reliable loop technology.

Powerful suction pipe for fast and reliable detection

With the suction module especially developed for the LRS detection module, air samples can be extracted via pipes with an approximate total pipe length of 200m per detector. Due to the separate air extraction, transport speeds can be achieved, which result in very short detection times. Even in detection areas with very high air speeds, such as air-conditioning ducts, low-level smoke concentration can be reliably detected.

The branched suction pipe network can be configured as a network of interlinked suction ports. In addition, a system with multiple detection levels can be created with the suction pipes being installed in intermediate ceilings or raised floors. Optionally, flexible pipes can be integrated into an electronic control cabinet or located below an air-conditioning system.

Reliable event logging

An integrated event memory system stores up to 18,000 events such as alarm messages, fault reports as well as changes in smoke concentration. Those events are stored as long-term protocols and can therefore be evaluated whenever required.
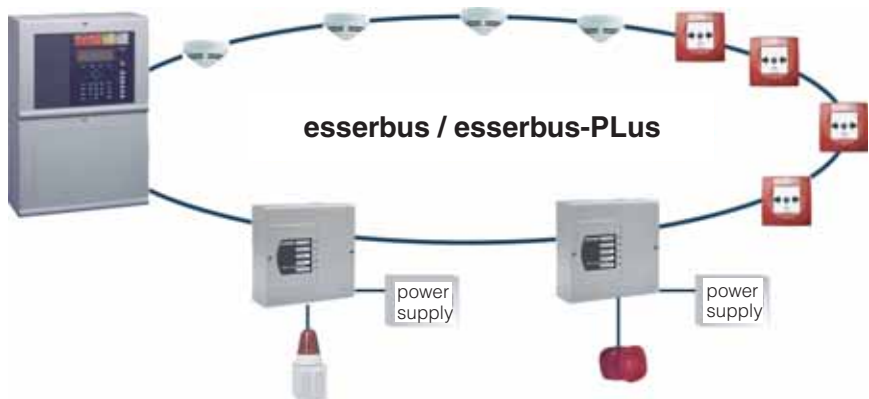
Application example

Excellent project planning tool

The "ASPIRE" software tool supports suction pipe and air stream calculations. For each suction port, the resulting detection sensitivity can be determined. Thus, suction pipe systems can be more effectively planned when using the "ASPIRE" software tool.

LRS Aspirating Smoke System

Automatically cleaned laser optics with two-stage intelligent filter element

During the first stage, the automatically monitored filter removes dust and dirt from the air sample, leaving any smoke particles to enter the detection chamber without hindrance. A second superfine filter stage uses the filtered air to create an air barrier in order to protect the laser optics from contamination and to continuously clean the optics. Thus, even in difficult detection areas with high atmospheric pollution levels false alarms can be prevented.

Simple installation and cost-saving maintenance

Maintenance is particularly simple and cost-saving, since the system can be easily accessed. Compliance with the pre-defined maintenance intervals specified in the VdS and VDE standards, usually means that no further laser optics maintenance is required, since the second filter stage caters for self-cleaning of the laser optics.
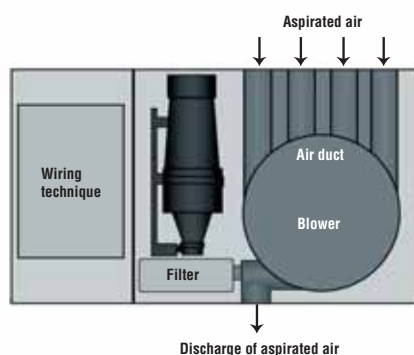
A scanner for exact fire source detection

Optionally, the LRS-S 700 is available with integrated scanner module. The scanner detects exactly which suction pipe contains smoke particles. Thus, even in branched suction pipe networks, intervention procedures can be quickly and precisely initiated at the specific source of a fire.

Flexible for each application

Unobtrusive system installations result in the visual appearance of the room being unaffected and sabotage as well as acts of vandalism being prevented in public areas or buildings with high security requirements. For special applications, a water separator or an additional filter for heavily polluted areas are also available.
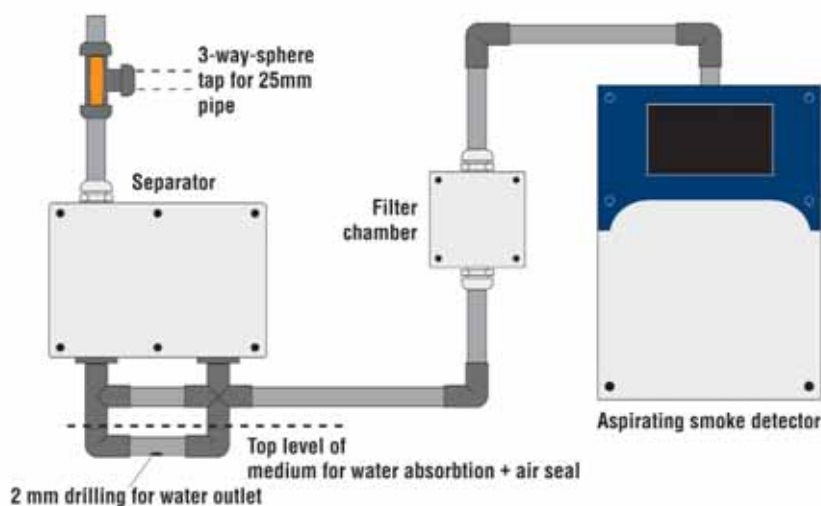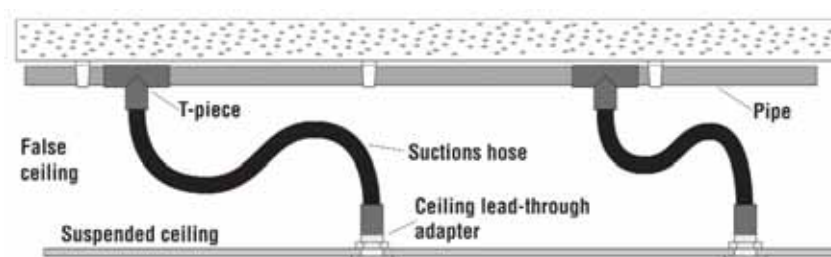
*Cyclical events are taken into account due to the learning function*
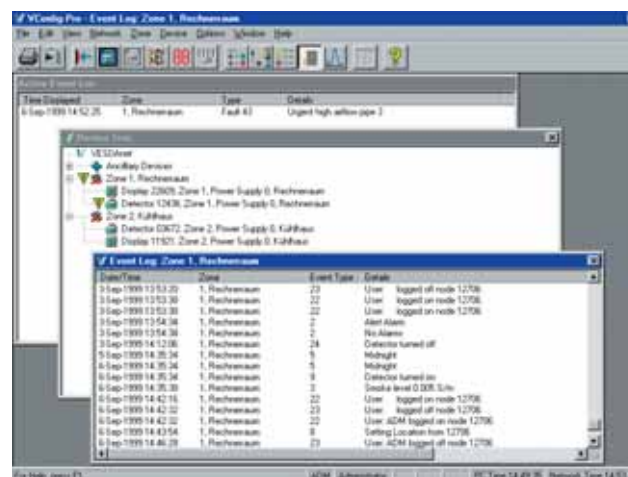
Event table evaluation can be used for later analysis

Fast programming

Apart from the LRS compact system, all components can be quickly and easily programmed via the menu interface in LRS 200/LRS 210 hand-held programming devices or in LRS 300 PC interfaces. The LRS compact system can be directly programmed via a PC when using the interface cable provided. The event memory can be read out with both programming tools.

LRS 300 PC Interface/"VConfigPRO"

All network components can be connected to the VESDAnet™ bus system via the LRS 300 PC interface, whereby the components can easily be programmed from a PC via the "VConfigPRO" software.

When connected to the PC via the interface cable, the LRS compact system can directly access and use the software tool. During evaluation the smoke concentration in the room and the configured alarm threshold are displayed graphically.
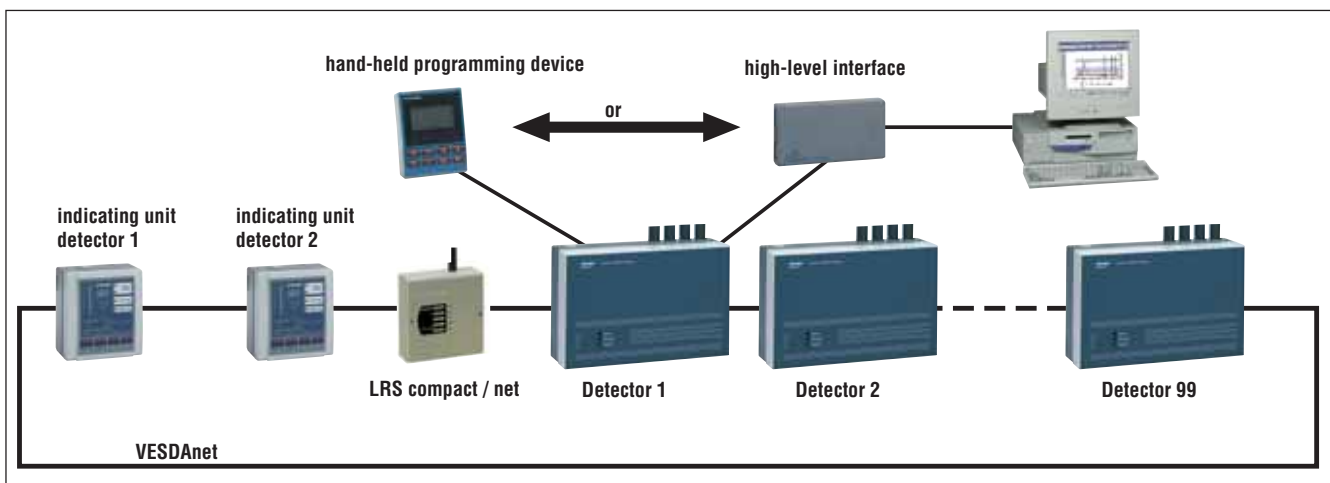

Each module can be programmed on a PC via the LRS 200/210 hand-held programming device or via the HLI.

Indicator and operating module LRS

The LRS indicator and operating unit

The indicator and operating panel is used to clearly display all important information and to control each operation. The detected turbidity is indicated in an LED diagram. The four configured alarm thresholds and faults are indicated by means of arrow-shaped LEDs. The indicating and operating panel can be placed as desired on the VESDAnet™. One LRS detector can be allocated multiple indicator and operating units for monitoring and controlling different
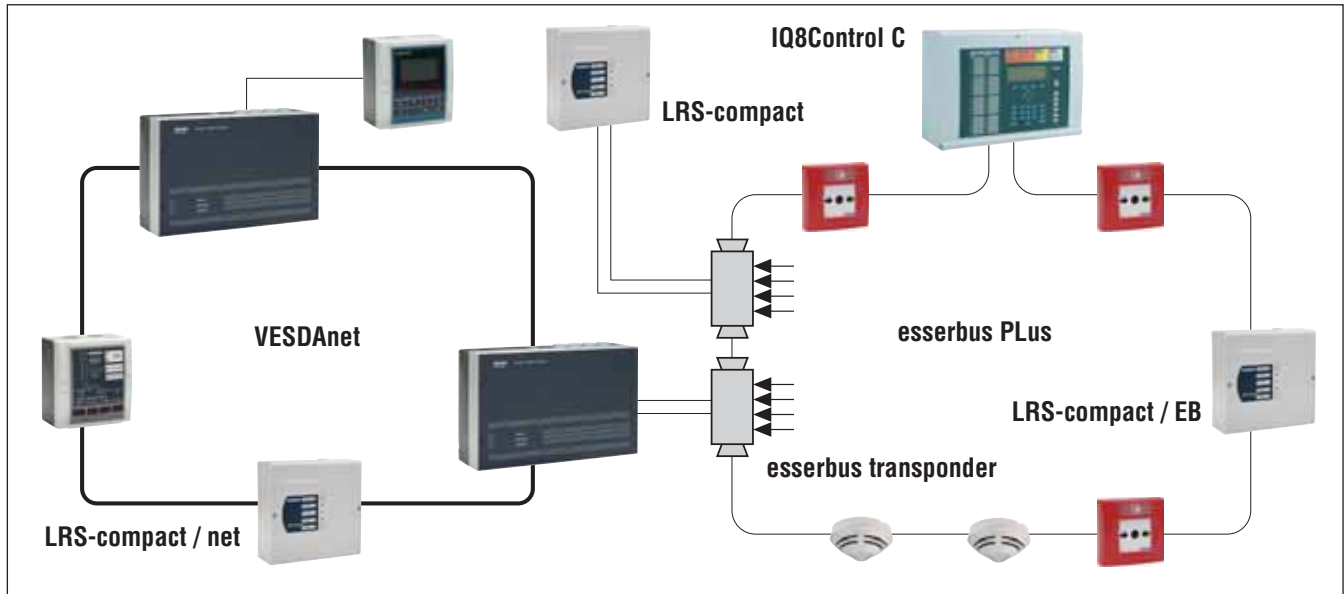
VESDAnet™ integration into the esserbus can be performed via potential-free contacts and esserbus transponders

Four alarm thresholds

For fire detection as early as possible, four individually programmable alarm thresholds can be configured:

- Information alarm - a small amount of smoke, not necessarily caused by fire, has been detected.
- Pre-alarm - the smoke concentration detected might have been caused by fire.
- Main alarm 1 - initial fire generation has been detected
- Main alarm 2 - very high smoke concentration has been detected so flame generation must be anticipated. The alarm threshold is configured much higher than for main alarm 1.

Automatic learn function

The LRS aspirating smoke system is provided with an automatic lean function implemented as an 14-days learn mode so that the system electronics can be adjusted to the ambient conditions and to pollution levels depending on the time of day. Thus, the system is automatically adapted to different alarm thresholds during the day and at night. Weekends and holidays can also be considered. Through pre-configured

alarm thresholds, the detection activity is not impeded during the automatic learn mode. Therefore, a sophisticated and powerful safety network can be easily and flexibly installed. With the fault-tolerant VESDAnet™ bus system, a maximum of 99 LRS detector modules can be networked. Even in case of line outage or loop module malfunction, the functionality of the remaining detectors and modules is maintained.

In the VESDAnet™ bus system, the maximum line length between two bus devices is 1,300m. Therefore, the installation location of detectors as well as indicating and operating modules can be flexibly geared to the individual building conditions.

Full integration

The system is integrated into Esser fire alarm systems via potential-free contacts in LRS transponders and esserbus transponders with freely programmable inputs and outputs. Thus, messages and reports can be directly forwarded to the fire alarm panel so that full integration into a new or already existing fire alarm system can be easily achieved whenever required. Integrating the VESDAnet™ into the esserbus system to be networked via the complex essernet structure enables central alarm signalling and connection to fire services. Accordingly, specially secured rooms can be ideally integrated into the entire fire alarm system.

The system can be programmed and commissioned via the fire alarm panel (System 8000/IQ8Control). All alarm messages, caution messages or fault reports are conveniently transmitted to the fire alarm panel.

Technical data:

	LRS compact/LRS compact EB	LRS 100/ LRS-S 700 detector unit
Operating voltage range	18 V to 30 V DC	18 V to 30 V DC
Rated voltage	24 V DC	24 V DC
Current consumption	170 mA to 190 mA (LRS compact) 225 mA to 245 mA (LRS compact EB)	240 mA to 500 mA (depending on the ventilator speed)
Temperature range for sucked air	-10 °C to +60 °C	-10 °C to +60 °C
Relative air humidity	10% to 95% (w/o condensation)	10% to 95% (w/o condensation)
Relay contacts	2 NO contacts 1 change-over contact, potential-free	7 change-over contacts, potential-free (LRS 100) 12 change-over contacts, potential-free (LRS-S 700)
Contact rating		max. 30 V DC/1A
Connection board	screw terminals, 0.2mm^2 to 2.5mm^2 lead	screw terminals, 0.2mm^2 to 2.5mm^2 lead
Maximum line length for four suction pipes per detector unit		reference value: 200m (depending on the application type, the ref. value can be exceeded)
Maximum pipe length	max. 80m (or 2 x 50m when using a branch connection)	
Maximum area to be monitored	500 m^2	1.600 m^2
Housing	plastic, grey	metal plate with plastic fasteners and grey-blue front foil
Dimensions (W x H x D)	225 mm x 225 mm x 85 mm	350 mm x 225 mm x 110 mm
Weight	1.9 kg	approx. 3.5 kg

	LRS 110/ LRS-S 710 **Indicating and Operating Unit**	LRS 200/LRS 210 **Programming Device**
Operating voltage range	18 V to 30 V DC	internal via programming cable
Rated voltage	24 V DC	
Current consumption	110 mA to 130 mA	80 mA
Admissible cross section for connection cable	0.2 mm^2 to 2.5 mm^2	
Relay contacts	7 changeover contact, floating	
Housing	metal plate with plastic fasteners and grey-blue front foil	plastic with grey-blue front plate
Dimensions (W x H x D)	140 x 150 x 90 mm	104 x 135 x 60 mm
Weight	approx. 0.8 kg	approx. 0.4 kg

Order information:

	Part No.:
LRS compact	761515
LRS compact/net	761516
LRS compact/EB	801519
LRS 100 detector unit	761500
LRS-S 700 detector unit with integrated scanner module	761502

For further order information please refer to our "Fire Alarm Technology" product line catalogue.