Kidde
United Technologies

ALARMLINE II

Alarmline II Digital Linear Heat Sensor Cable Technical Manual

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Advisory messages alert you to conditions or practices that can cause unwanted results. The advisory messages used in this document are shown and described below.

WARNING: Warning messages advise you of hazards that could result in injury or loss of life. They tell you which actions to take or to avoid in order to prevent the injury or loss of life.

Caution: Caution messages advise you of possible equipment damage. They tell you which actions to take or to avoid in order to prevent the damage.

Note: Note messages advise you of the possible loss of time or effort. They describe how to avoid the loss. Notes are also used to point out important information that you should read.

Note: Kidde Products Ltd has taken every care to ensure that Alarmline II Digital Linear Heat Detection systems are as simple to install as possible but in case of difficulty, please contact our Help Line to ensure trouble free installation and operation. Kidde Products Ltd takes no responsibility for damage or injury occasioned as a result of failing to install or operate the equipment in accordance with these instructions.

Chapter 1
Introduction to product

Summary

This chapter gives an introduction to the product and product range.

Content

Introduction

Alarmline II Digital sensor cables are a flexible durable and cost-effective form of fire detection, suitable for protecting a wide range of commercial and industrial applications.

They provide flexibility in installation enabling them to be used for general area protection or proximity detection close to a specific point of risk. A wide range of alarm temperatures, protective coatings and installation fixings ensure system design and installation is specific to the risk. Alarmline II Digital sensor cables are especially suited for confined areas or areas and harsh environmental conditions, which prohibit the use of other forms of detection.

Alarmline II Digital sensor cables can be easily integrated to any fire control panel through a monitored input i.e. conventional detection zone, Zone Monitor Unit or Switch Monitor Unit. The Digital Location Control Unit provides additional functionality to the Alarmline II digital sensor cable system by being able to determine the alarm location along extended lengths of digital sensor cable (up to 3000m).

This manual provides technical information, installation guidelines and design recommendations for some typical applications. This manual does not cover all possible applications, therefore for any design and installation advice you require please contact Kidde Products Ltd technical support on the first page (Contact information).

Operation

Alarmline II Digital sensor cables are constructed from a twisted pair of tri-metallic conductors covered with an advanced temperature sensitive polymer. A protective outer coating is then extruded over the twisted pair.

Figure 1: Cable construction

Tri-metallic cores

Protective coating

Advanced temperature sensitive Polymer
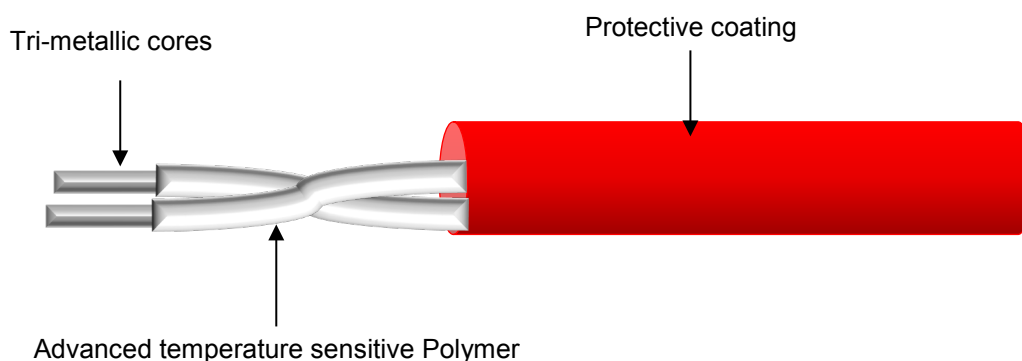
The two inner cores of the digital sensor cable are tightly twisted together to provide a mechanical tension between them. When the temperature sensitive polymer reaches a specified temperature it begins to soften, the tension between the two inner cores forces the two conductors together creating a short circuit.

The simplistic operation of the Alarmline II digital sensor cable makes it compatible with any control equipment capable of accepting contact closure type initiating devices.

Product range

The Alarmline II digital sensor cable range consists of 4 different fixed alarm temperature cables with a selection of available protective outer coatings.

Table 1: Alarmline II product range

Part number	Description	Comments
AD68	Alarmline II Digital Sensor Cable – 68°C (155°F) PVC	Interior applications, general area coverage
AD68N	Alarmline II Digital Sensor Cable – 68°C (155°F) Nylon	Chemical/UV protection, exterior applications
AD68P	Alarmline II Digital Sensor Cable – 68°C (155°F) Polypropylene	Increased chemical protection in caustic environments
AD68SS	Alarmline II Digital Sensor Cable – 68°C (155°F) Stainless Steel over PVC	Increased mechanical protection
AD88	Alarmline II Digital Sensor Cable – 88°C (190°F) PVC	Interior applications, general area coverage
AD88N	Alarmline II Digital Sensor Cable – 88°C (190°F) Nylon	Chemical/UV protection, exterior applications
AD88P	Alarmline II Digital Sensor Cable – 88°C (190°F) Polypropylene	Increased chemical protection in caustic environments
AD88SS	Alarmline II Digital Sensor Cable – 88°C (190°F) Stainless Steel over PVC	Increased mechanical protection
AD105	Alarmline II Digital Sensor Cable – 105°C (221°F) PVC	Interior applications, general area coverage
AD105N	Alarmline II Digital Sensor Cable – 105°C (221°F) Nylon	Chemical/UV protection, exterior applications
AD105P	Alarmline II Digital Sensor Cable – 105°C (221°F) Polypropylene	Increased chemical protection in caustic environments
AD105SS	Alarmline II Digital Sensor Cable – 105°C (221°F) Stainless Steel over PVC	Increased mechanical protection
AD185N	Alarmline II Digital Sensor Cable – 185°C (365°F) Nylon	Chemical/UV protection, exterior applications
AD185SS	Alarmline II Digital Sensor Cable – 185°C (365°F) Stainless steel over Nylon	Chemical/UV and mechanical protection

Additional coated cables are available for special applications:

- Polypropylene outer coating: Provides increased chemical protection within caustic environments.
- Stainless steel outer braid: Provides increased mechanical protection.

For further information regarding the specialist coatings please contact your local sales representative.

Approvals

FM approvals

Table 2: FM approval

Alarmline II Digital Sensor cable – 68°C (155°F) PVC	Maximum spacing 9m (30ft) between sensor cable runs for general area coverage.
Alarmline II Digital Sensor cable – 88°C (190°F) PVC	Maximum spacing 9m (30ft) between sensor cable runs for general area coverage.
Alarmline II Digital Sensor cable – 105°C (221°F) PVC	Maximum spacing 7.6m (25ft) between sensor cable runs for general area coverage.

UL/ULC approvals

Alarmline II Digital sensor cables have been tested and approved by UL and ULc to UTHV Heat actuated devices for special application & UQGS Heat-automatic fire detectors.

Table 3: UL/ULC approval

Alarmline II Digital Sensor cable – 68°C (155°F) PVC	Maximum spacing 10.6m (35ft) between sensor cable runs for general area coverage
Alarmline II Digital Sensor cable – 68°C (155°F) Nylon	Maximum spacing 4.5m (15ft) between sensor cable runs for general area coverage.
Alarmline II Digital Sensor cable – 88°C (190°F) PVC	Maximum spacing 10.6m (35ft) between sensor cable runs for general area coverage.
Alarmline II Digital Sensor cable – 88°C (190°F) Nylon	Maximum spacing 4.5m (15ft) between sensor cable runs for general area coverage
Alarmline II Digital Sensor cable – 105°C (221°F) PVC	Maximum spacing 10.6m (35ft) between sensor cable runs for general area coverage
Alarmline II Digital Sensor cable – 105°C (221°F) Nylon	Maximum spacing 4.5m (15ft) between sensor cable runs for general area coverage
Alarmline II Digital Sensor cable – 185°C (365°F) Nylon	Proximity detection only

Technical Specifications

Table 4: AD68x products

Part number	AD68	AD68N	AD68P	AD68SS
Alarm temperature	68°C (155°F)			
Outer coating material	PVC	Nylon	Polypropylene	Stainless Steel over PVC
Outer jacket colour	Red	Black	Red	Red
Outer diameter	3.6mm +/- 0.12mm (0.142" +/- 0.005")	4.44mm +/- 0.12mm (0.175" +/- 0.005")	4.5mm +/- 0.12mm (0.177" +/- 0.005")	4.1mm +/- 0.12mm (0.161" +/- 0.005")
	2 x Tri-metallic conductors ⌀ 0.912mm (0.036")			
Max. ambient temperature	Up to 45°C (113°F)			
Min. installation temperature	-10°C (14°F)			
Min. operating temperature	-40°C (-40°F)			
Min. bend radius	50mm (2"), extended to 100mm (4") for low temperature environments			
Max. voltage rating	30VAC, 42VDC			
Insulation rating	1kV tested protective outer coat			
Max. resistance	100 Ω/km (30 Ω/1000ft) per conductor @ 20°C			
Capacitance	88-150 pf/m (26-45 pF/ft)			
Inductance	540-1050 nH/m (165-320 nH/ft)			

Table 5: AD88x products

Part number	AD88	AD88N	AD68P	AD88SS
Alarm temperature	88°C (190°F)			
Outer coating material	PVC	Nylon	Polypropylene	Stainless Steel over PVC
Outer jacket colour	White	Black	White	White
Outer diameter	3.6mm +/- 0.12mm (0.142" +/- 0.005")	4.44mm +/- 0.12mm (0.175" +/- 0.005")	4.5mm +/- 0.12mm (0.177" +/- 0.005")	4.1mm +/- 0.12mm (0.161" +/- 0.005")
	2 x Tri-metallic conductors ⌀ 0.912mm (0.036")			

Part number	AD88	AD88N	AD68P	AD88SS
Max. ambient temperature	Up to 69°C (156°F)			
Min. installation temperature	-10°C (14°F)			
Min. operating temperature	-40°C (-40°F)			
Min. bend radius	50mm (2"), extended to 100mm (4") for low temperature environments			
Max. voltage rating	30VAC, 42VDC			
Insulation rating	1kV tested protective outer coat			
Max. resistance	100 Ω/km (30 Ω/1000ft) per conductor @ 20°C			
Capacitance	88-150 pf/m (26-45 pF/ft)			
Inductance	540-1050 nH/m (165-320 nH/ft)			

Table 6: AD105x products

Part number	AD105	AD105N	AD105P	AD105SS
Alarm temperature	105°C (221°F)			
Outer coating material	PVC	Nylon	Polypropylene	Stainless Steel over PVC
Outer jacket colour	White	Black	White	White
Outer diameter	3.6mm +/- 0.12mm (0.142" +/- 0.005")	4.44mm +/- 0.12mm (0.175" +/- 0.005")	4.5mm +/- 0.12mm (0.177" +/- 0.005")	4.1mm +/- 0.12mm (0.161" +/- 0.005")
	2 x Tri-metallic conductors ≈ 0.912mm (0.036")			
Max. ambient temperature	Up to 125°C (257°F)			
Min. installation temperature	-10°C (14°F)			
Min. operating temperature	-40°C (-40°F)			
Min. bend radius	50mm (2"), extended to 100mm (4") for low temperature environments			
Max. voltage rating	30VAC, 42VDC			
Insulation rating	1kV tested protective outer coat			
Max. resistance	100 Ω/km (30 Ω/1000ft) per conductor @ 20°C			

Part number	AD105	AD105N	AD105P	AD105SS
Capacitance	88-150 pf/m (26-45 pF/ft)			
Inductance	540-1050 nH/m (165-320 nH/ft)			

Table 7: AD105x products

Part number	AD105	AD105N	AD105P	AD105SS
Alarm temperature	105°C (221°F)			
Outer coating material	PVC	Nylon	Polypropylene	Stainless Steel over PVC
Outer jacket colour	White	Black	White	White
Outer diameter	3.6mm +/- 0.12mm (0.142" +/- 0.005")	4.44mm +/- 0.12mm (0.175" +/- 0.005")	4.5mm +/- 0.12mm (0.177" +/- 0.005")	4.1mm +/- 0.12mm (0.161" +/- 0.005")
	2 x Tri-metallic conductors ⌀ 0.912mm (0.036")			
Max. ambient temperature	Up to 69°C (156°F)			
Min. installation temperature	-10°C (14°F)			
Min. operating temperature	-40°C (-40°F)			
Min. bend radius	50mm (2"), extended to 100mm (4") for low temperature environments			
Max. voltage rating	30VAC, 42VDC			
Insulation rating	1kV tested protective outer coat			
Max. resistance	100 Ω/km (30 Ω/1000ft) per conductor @ 20°C			
Capacitance	88-150 pf/m (26-45 pF/ft)			
Inductance	540-1050 nH/m (165-320 nH/ft)			

Table 8: AD185x products

Part number	AD185N	AD185SS
Alarm temperature	185°C (365°F)	
Outer coating material	Nylon	Stainless Steel over Nylon
Outer jacket colour	Black	White
Outer diameter	4.44mm +/- 0.12mm (0.175" +/- 0.005")	5mm +/- 0.12mm (0.197" +/- 0.005")

Part number	AD185N	AD185SS
	2 x Tri-metallic conductors ⌀ 0.912mm (0.036")	
Max. ambient temperature	Up to 125°C (257°F)	
Min. installation temperature	-10°C (14°F)	
Min. operating temperature	-40°C (-40°F)	
Min. bend radius	50mm (2"), extended to 100mm (4") for low temperature environments	
Max. voltage rating	30VAC, 42VDC	
Insulation rating	1kV tested protective outer coat	
Max. resistance	100 Ω/km (30 Ω/1000ft) per conductor @ 20°C	
Capacitance	88-150 pf/m (26-45 pF/ft)	
Inductance	540-1050 nH/m (165-320 nH/ft)	

Chapter 2
Design and Installation overview

Summary

This chapter covers the information and guidelines required for installation.

Content

Design guidelines

The design and installation of an Alarmline II Digital Linear Heat Detection system is unique to every site and application, therefore it is recommended that this work is only undertaken by trained and competent persons following the guidelines in this chapter.

There are two main types of protection that can be provided by the Alarmline II Digital sensor cable:

Proximity detection: This is where the sensor cable is installed very close to the point of risk, generally the sensor cable will be installed around the equipment to be protected. There is no specific design criterion for these applications but there are guidelines to be considered.

Area coverage: This is where cable is distributed throughout the risk area allowing protection of the general area as opposed to specific points. Alarmline II Digital sensor cable offers an alternative to point type heat detectors in this type of application.

Guidelines for proximity detection

1. Selection of the appropriate sensor cable type is critical to ensure correct performance of the system. The cable selection will be based on the maximum possible ambient temperature within the risk area and the required alarm temperature.

2. The sensor cable should be installed close enough to the point of risk to give an acceptable response, but not in a position where it can be damaged or foul any moving parts. The location of the sensor cable should not restrict access to any parts of the equipment which require maintenance.

3. The thermal path to the sensor cable should not be obstructed and a minimum distance of 25mm should be left between the sensor cable and any surface it is being mounted to.

4. It may be necessary in outdoor applications to shield the sensor cable from direct sunlight to control the ambient temperature around the cable and prevent the risk of false alarms.

5. For installation within a hazardous area galvanic isolators or IS (Intrinsically Safe) Barriers shall be required to provide an IS circuit.

6. Fixing of the cable will be determined by the application and the location at which the cable is to be installed. The cable shall be supported at a sufficient number of points to prevent sagging. The environmental conditions and practicality of clips to be used needs to be taken into consideration. The Kidde Products Ltd range of standard fixing clips are show in section Hazardous area installation.

Guidelines for Area coverage

In applications where the sensor cable is installed for general area coverage i.e. as an alternative to point type heat detectors the positioning of the sensor cable will generally follow the relevant local standards or approvals. The sensor cable will generally be installed at ceiling height and laid out in such a way that sufficient coverage is provided, see Figure 2.

Maximum spacing between cable runs will in general follow the same limits as normal point type heat detectors and local standards for these should be followed. The following recognised standards determine the maximum spacing as follows:

BS5839: Maximum spacing between sensor cable runs 7.5m

UL/ULc: Maximum spacing between sensor cable runs 9m (30ft)

FM: Maximum spacing between sensor cable runs 9m (30ft

Figure 2: Distributed sensor cable providing general area coverage
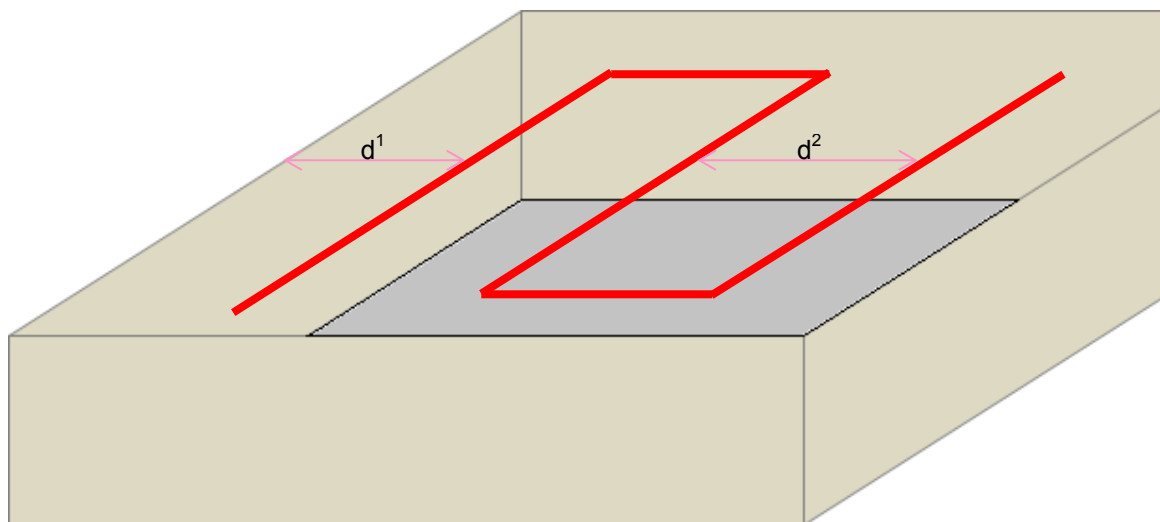
d^1 – Spacing of sensor cable from the wall
d^2 – Spacing between sensor cable runs

Other design recommendations for general area coverage systems are as follows:

1. Selection of the appropriate sensor cable type is critical to ensure correct performance of the system. The selection of the cable will be based on the maximum possible ambient temperature within the risk area and the alarm temperature of the cable.

2. The recommended total area coverage for a single Alarmline II Digital detection zone shall be no more than 2000m^2.

3. The Alarmline II Digital Sensor cable shall be installed no closer than 25mm and no further than 150mm from the fixing surface.

4. Fixing of the cable will be determined by the application and the location at which the cable is to be installed. Sensor cable shall be supported at no greater than 1m intervals, with additional supports where there are bends in the cable. The environmental conditions and practicality of clips to be used needs to be taken into consideration. Details of fixing clips provided in the Kidde Products Ltd range are shown in section 2.7

5. The minimum bend radius when installing the sensor cable is 50mm (2") for ambient conditions of 0°C (32°F) and above. For areas where ambient conditions are likely to be less than 0°C (32°F) the minimum bend radius is 100mm (4").

For installation within hazardous areas galvanic isolators or IS (Intrinsically Safe) Barriers shall be required to provide an IS circuit.

Installation

The installation of Alarmline II Digital Sensor Cable is specific to the application therefore it is recommended that the installation is undertaken by trained and competent operators. As well as the installation of the sensor cable within the risk area this section also provides details on interfacing the sensor cable into the fire alarm monitoring equipment.

Installation guidelines

Note: It is recommended that a continuity test is carried out on the reeled cable prior to installation to ensure no damage has occurred during transit.

As mentioned a number of times throughout this manual it is not possible to provide definitive installation instructions as each application will be uniquely different. The following provides some of the important requirements when installing the digital sensor cable.

1. Sensor cable must only be installed in the area to be protected. If the equipment monitoring the sensor cable is not installed within the risk area then a suitable interposing/leader cable can be connected between the sensor cable and the monitoring equipment.

2. Sensor cables can be provided with various outer sheaths to suit the environment such as PVC, Nylon, Polypropylene and Stainless steel braid. It is important to select the correct protective outer sheath to suit the environment.

3. Sensor cables should be terminated in junction boxes that are suitable to the environment.

4. Sensor cable fixing clips should be suitable for the environment and the surface they are being fitted to. There is no requirement for the sensor cable to be tensioned however on straight runs it is recommended to support the cable at a distance of 1 m to prevent sagging.

5. When using metal fixing clips it is necessary to protect the cable at the fixing points by using the neoprene sleeve around the sensor cable.

6. The minimum bend radius for the sensor cable is 50mm. This increases to 100mm for areas with an ambient temperature below 0°C i.e. cold storage areas.

7. Cable is supplied on drums of 100m, 500m and 1000m and can be easily jointed to create the required sensor cable length.

8. Sensor cable must not be painted.

9. Where possible fixing of the sensor cable should be the last stage in the installation to prevent any damage to the cable during other installation works.

10. It is recommended to check the continuity of the cable before installation to ensure it has not been damaged prior to installation being carried out.

11. Alarmline II Digital sensor cable should be pulled from the reel using a reel stand. DO NOT pull the cable of the reel vertically as this will twist and may damage the cable.

Chemical resistance

Table 9: Chemical resistance comparison (for the available outer sheath materials on the Alarmline II Digital sensor cable)

	Outer sheath material		
Chemical	PVC	Nylon	Polypropylene
Ammonia, liquid	*****	***	*****
Butane	*****	*****	*
Copper nitrate	*****		*****
Fuel oils	*****	*****	***
Gasoline	**	*****	**
Hydrofluoric acid	*	*	*****
Kerosene	*****	*****	*
Diesel fuel	*****	*****	****
Acetic acid	**	*	*****

Jointing

One of the advantages of the Alarmline II Digital sensor cable damaged sections of cable can be cut out and replaced without having to replace the whole sensor cable. When a cable has operated or has been damaged the affected section of

the sensor cable can be cut away and a new section of sensor cable can be jointed into the existing cable.

It is important when jointing the sensor cable to ensure it is done correctly to prevent any problems from bad connections etc. The cable can be jointed using junction boxes or it can be soldered. It is important if the joints are to be soldered that they are suitably protected using heat shrink sleeving, this will prevent short circuits between the cores and also prevent any humidity getting into the joints. Kidde Products Ltd can provide an In-line jointing kit, part number: 1-K82024 which is a selection of heatshrink sleeves which will protect the soldered joint.

Connecting sensor cable to a monitored input

Alarmline II Digital sensor cable can be connected directly to any control equipment with a monitored input which can detect the operation of a switch changeover. The most common types of system would be either a conventional fire alarm control panel or an addressable fire alarm control panel.

Conventional fire alarm panel: The Alarmline II digital sensor cable can be connected directly to a detection zone input. Any detection zone used would be specific to the Alarmline II digital sensor cable with no other detection devices attached to the zone.

Addressable fire alarm panel Connection of the Alarmline II digital sensor cable to an addressable fire alarm panel can be done in two ways. If the fire alarm panel contains monitored inputs within the panel then these can be used. The Alarmline II digital sensor cable can also be connected as a device on the addressable loop by using a suitable loop interface either a Zone Monitor Unit or Switch Monitor Unit would suffice.

Regardless of whether the Alarmline II digital sensor cable is to be fitted to a conventional detection zone or a loop interface on an addressable fire alarm control panel the configuration will be the same. Fugure 3 shows the connection configuration of the Digital Alarmline II sensor cable.

Figure 3: Connection of Alarmline II Digital sensor cable to a fire alarm control panel
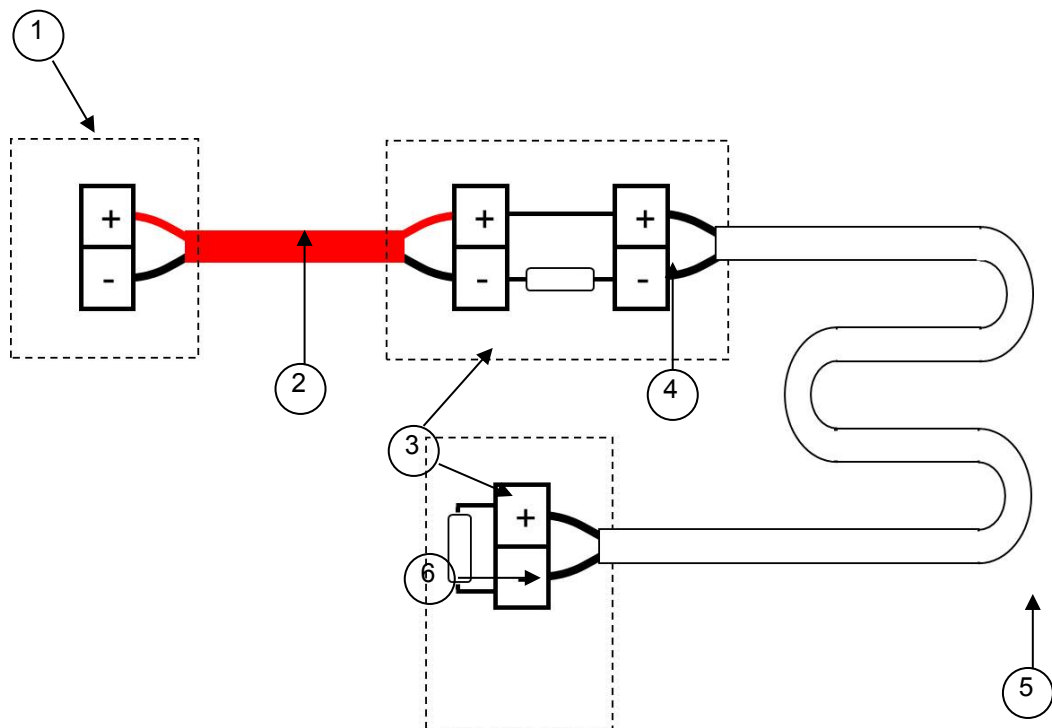
1. Connection terminals for monitored input, whether this is a conventional detection zone or a loop interface two terminals will be provided. This input will monitor for changes in the resistance of the circuit to determine the presence of an open circuit or an alarm condition (Short circuit).

2. Interposing or leader cable, the Alarmline II Digital sensor cable must only be installed in the area that itis to protect. If the control equipment or interface is to be mounted remotely to the protected area then a suitable two core fire rated cable can be used to make the connection between the two locations, see section "Interposing or leader cable".

3. Suitable junction boxes should be used when terminating the Alarmline II Digital sensor cable i.e. Ex junction boxes within hazardous areas. The diameter of the sensor cables range from 3.6 to 4.5mm therefore it is important to select the correct size glands for any junction boxes.

4. Alarm resistor, monitored inputs will monitor for changes in the resistance of the circuit connected to it and different resistance values will indicate different events. Conventional fire alarm panels and loop interfaces will have a specified alarm resistor value which must be fitted in series with the sensor cablefor the system to activate an alarm condition. The alarm resistor value will vary dependent on the control equipment/interface and will be specified by the equipment manufacturer. The position of the alarm resistor in the circuit is critical and must be located at the start of the sensor cable. If using an interposing cable this allows the interposing cable to be monitored for open and short circuit faults only. Only when the Alarmline II Digital sensor

cable operates (short circuits) will the alarm resistor be introduced to the circuit activating an alarm at the control equipment.

5. Alarmline II Digital sensor cable will be installed in the protected area only and will be monitored for open circuit faults, as short circuit on the sensor cable signifies an alarm. The correct temperature sensor cable should be selected for the application to prevent false alarms.

6. End of line monitoring resistor, allows the control panel to monitor the integrity of the circuit completing the circuit and allowing sufficient current flow from the positive to negative terminals. The end of line monitoring resistor must be located at the end of the sensor cable and the value will be specified by the control equipment manufacturer. In the majority of cases these resistors will be supplied inside the control panel.

Before connecting Alarmline II Digital sensor cable to any control equipment it will be necessary to consult the relevant equipment manuals and manufacturer.

Interposing or leader cable

Alarmline II Digital sensor cable is to be installed only within the area it is protecting. In some applications it is necessary to use an interposing or leader cable to connect the sensor cable to the monitoring equipment. An approved type of cable should be used which is preferably fire rated and when connecting the interposing/leader cable to the sensor cable an IP66/67 rated junction box should be used. The maximum length of the interposing/leader cable will vary based on the cross sectional area as shown below:

Note: The following maximum lengths of interposing/leader cable are based on the maximum length of sensor cable i.e. 3000m.

- 0.8mm^2 (18AWG) – Max 2,500m (8,200ft)
- 1.3mm^2 (16AWG) - Max 3,500m (11,500ft)
- 2.0mm^2 (14AWG) - Max 6,000m (20,000ft)
- 3.3mm^2 (12AWG) - Max 9,500m (31,000ft)

Digital location unit

For applications where long lengths of sensor cable are installed such as cable tunnels, road tunnels and conveyor belts Kidde Products Ltd provide a Digital Location Unit which can detect along a length of cable the location of the alarm activation.

A maximum of 3km of Alarmline II Digital sensor cable can be attached to the Digital Location Control Unit.

Hazardous area installation

Alarmline II Digital sensor cable is classified as "simple apparatus" when it comes to Hazardous areas and therefore does not require any certification. The sensor

cable can be installed within a hazardous area provided suitable safety barriers are used between the sensor cable and the control equipment.

The type of safety barrier shall be determined by the control equipment and therefore close liaison with the control equipment manufacturer is required to ensure the correct safety barrier is used. The safety barrier will be installed along with the control equipment in a safe area.

The relevant manufacturer's documentation should be consulted for wiring details of barriers, configuration of monitoring equipment etc.

Note: When installing equipment in hazardous areas close liaison with the responsible site personnel is essential.

To ensure that the system complies with Hazardous area requirements it is important to consider the electrical characteristics, each safety barrier specifies the maximum resistance, capacitance, inductance and L/R ratio of any device/cable that is attached to it. The capacitance, inductance and resistance of the Alarmline II Digital Sensor cable are provided in the specification table in "Product range" page 3.

These characteristics may have a significant impact on the design of the system and may limit the length of sensor cable that can be used dependent on the safety barrier.

All terminations and connections on a hazardous area installation must be done in suitably approved junction boxes for the type of area.

Installation accessories (Fixing clips)

Kidde Products Ltd provides a standard range of installation accessories which can be used on many different types of application. The range of accessories consists of fixing clips, junction boxes and cable reelers. This section provides details of all installation accessories available within the Kidde Products Ltd range.

Fixing clips

Although Kidde Products Ltd provides an extensive range of fixing clips they may not suit all applications. An assessment should be made to their suitability and an alternative fixing solution may need to be investigated by the installer.

There are no specific requirements for fixing clips other than they should not damage the sensor cable. It is recommended with most fixing clips that a neoprene sleeve is positioned around the sensor cable at the fixing point to ensure no damage is caused by the clip or the cable tie.

When installed it is not necessary for the cable to be taut, recommendations are that the cable should be supported every metre maximum with at least two fixing clips either side of a cable bend. The minimum bend radius for the sensor cable is 50mm (2"), in freezer/cold store applications this would be extended to 100mm (4").

T Clip

A common clip for fixing the digital sensor cable to flat surfaces such as ceilings, walls etc. The clip is fixed to the surface using a 6mm countersunk screw with the sensor cable positioned in the channel of the clip as shown in Figure 4. The sensor cable is held in place using a nylon cable tie (Part no. 1-B6782-121) wrapped around the clip in a figure of eight and tightened. It is important to be careful when fixing as over tightening of the fixing screw may cause the clip to split.

Figure 4 : T clip installation

1. Part no.: 1-B6782-004
2. Material: Plastic
3. Operating temperature: -50°C to +85°C (-58°F to +185°F) material degrades at 120°C

Tie wrap and cradle

The tie wrap and cradle are an alternative method for fixing Alarmline II digital sensor cable to flat surfaces. A cable tie is supplied with the cradle, although larger cable ties up to 8mm wide can be used as alternatives. Neoprene sleeve (Part no. 1-B6782-008) is recommended to protect the cable from being damaged by the cable tie, as shown Figure 5.

Figure 5: Tie wrap and cradle installation

1. Part no. 1-27400-K245
2. Technical specification (for cradle and cable tie):
    a. Material: Polyamide 6.6
    b. Operating temperature: -40°C to +85°C
    c. Melting temperature: 260°C

Edge clip

The edge clip is a quick and easy solution when fixing to a metal structure such as a girder, angle bar etc. It is designed to be knocked onto any metal edge using a hammer; four teeth bite into the metal edge securing it firmly with no requirement for fixing screws. A range of clip sizes are available for various thickness of metal, see part number list. A fixing hole in the clip allows the securing of the sensor cable as shown in Figure 6, although it can also allow the fixing of a distance piece (Part no. 1-B6782-120) to extend the position of the sensor cable. A neoprene sleeve (Part no. 1-B6782-008) is recommended to protect the cable from being damaged by the cable tie and insulate it from the metal clip.

Figure 6: Edge clip installation
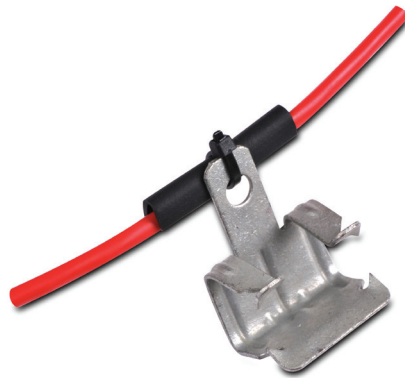
1. Part nos.:
    1-B6782-003: Suitable for 2-3mm thickness
    1-B6782-024: Suitable for 3-8mm thickness
    1-B6782-025: Suitable for 8-14mm thickness
    1-B6782-026: Suitable for 14-20mm thickness
    1-B6782-195: Suitable for 3-8mm, Stainless Steel version

2. Technical specification:
    a. Material: Spring steel
    b. Max. operating temperature: Approx. 815°C

Pipe clip

The pipe clip is designed to utilise existing pipework which may run through the protected area. It is designed to fit any size of pipe and should be fitted to the underside of the pipe and be secured in place using cable ties or strapping. The hole in the end of the clip allows for the securing of the cable using a neoprene sleeve and cable tie, or a distance piece can be connected to extend the position of the sensor cable. Without extending the clip the sensor cable will be supported approx. 60mm below the pipe.

Figure 7: Pipe clip installation

1. Part no. 1-B6782-005
2. Technical specification:
    a. Material: 304 Stainless Steel
   b. Max. operating temperature: approx. 815°C

V clip

The V clip is useful when installing sensor cables within cable tray installations. Where multiple layers of cable tray exist the V clip can be fixed to the underside of a cable tray supporting the sensor cable protecting the lower cable tray as shown in Figure 8 and Figure 9. The clip is designed to fit into the existing slots in the tray itself making it quick and easy to install. The sensor cable is located in the V channel which is approx. 60mm below the tray. The sensor cable is secured using a neoprene sleeve and cable tie.

Figure 8: V clip installation

1. Part no. 1-B6782-023
2. Technical specification:
    a. Material: 304 Stainless Steel
    b. Max. operating temperature: approx. 815°C

Figure 9: V clip installation
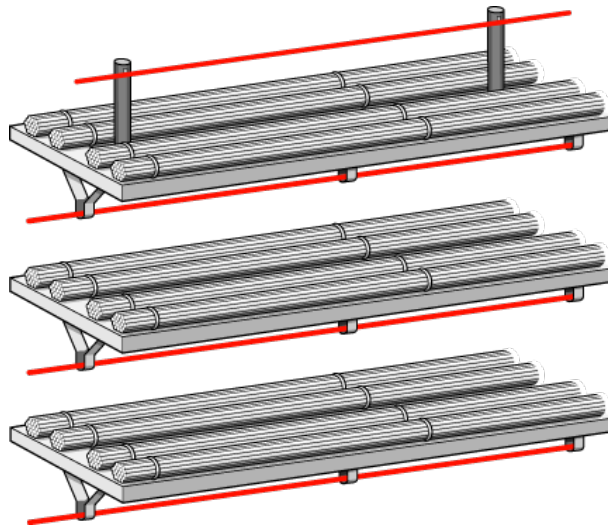
L bracket c/w strain relief cable gland

The L bracket can be used to support Alarmline II Digital Sensor cable either above or below the risk. It is commonly used on cable trays to support the sensor cable over the tray. A 6mm fixing hole is provided in the bottom of the L bracket for securing it to its mounting surface. A strain relief cable gland is also provided for securing the sensor cable to the bracket as shown in Figure 10.

Figure 10: L bracket c/w strain relief cable gland

1. Part no. 1-B6782-154
2. Technical specification:
   Bracket:
   a. Material: 18 swg Stainless Steel
   b. Max operating temperature: approx. 815°C
   c. Dimensions   : Height 150mm
   Cable gland
   a. Material: Nylon 6.6
   b. Maximum temperature: 105°C

Channel bracket

The channel bracket is an alternative option for securing Alarmline II Digital sensor cable to flat surfaces. Made from stainless steel the bracket has two 6mm

fixing holes and one 6mm hole for securing the sensor cable to it as shown in Figure 11. If necessary a distance piece can be attached to the bracket to extend the position of the sensor cable.

Figure 11: Channel bracket

1. Part no. 1-B6782-142
2. Technical specification:
    a. Material: 16 swg Stainless Steel
    b. Max operating temperature: approx. 815°C
    c. Dimensions   : Height 60mm, Width 20mm, Depth 50mm

L Bracket

The L bracket is primarily designed to be used with the edge clip as shown in Figure 12. This is a common type of clip arrangement used on floating roof tanks. Edge clips can be connected to the foam dam around the edge of the floating roof tank without any drilling or welding etc. A simple M6 nut and bolt arrangement is used to attach the L bracket to the edge clip enabling the sensor to extend out over the rim seal. The sensor cable is secured to the end of the L bracket using a cable tie and neoprene sleeve through the 6mm hole. Note: this solution may not be suitable for all floating roof tanks.

Figure 12: L bracket and edge clip

1. Part no. 1-B6782-194
2. Technical specification:
    a. Material: 16 swg Stainless Steel
    b. Max operating temperature: approx. 815°C
    c. Dimensions   : 200mm long

P Clip

The P clip is a general purpose clip which can be used to install the cable on to any flat edge or surface it can also be used to secure the sensor cable to either the edge clip, L bracket, channel bracket or distance piece. The clip is fitted with a TPE sleeve insulating the cable from the metal clip and protecting it against damage when clamped around the sensor cable. A 6.7mm diameter fixing hole is provided.

Figure 13: P clip

1. Part no. 1-27400-K244
2. Technical specification:
    a. Material: Clamp Zinc electroplate, cold rolled steel
    b.Sleeve: TPE
    c. Max operating temperature: approx. 95°C

Distance piece

The distance piece is designed to be used in conjunction with any of the metal clips within the Kidde Products Ltd range. In some installations the nearest fixing point for the support clip may not be close enough to the point of risk therefore the distance piece can be attached to extend the position of the sensor cable. The distance piece is easily bolted to the clips using the 6mm fixing hole.

Figure 14: Distance piece

1. Part no. 1-B6782-120
2. Technical specification:
    a. Material: Stainless steel 304
    b. Max operating temperature: approx. 815°C
   c. Dimensions: 200mm long

Installation accessories (Specialist application accessories)

A significant application for Alarmline II Digital Sensor cable is floating roof storage tanks. Installation of sensor cables in this particular application provides some significant challenges. The following accessories are specific to this type of application to overcome the installation issues.

Junction box – Tank top

On a floating roof tank the roof itself is designed to move up and down as the tank is filled or emptied preventing any vapour space in the tank. The difficulty is maintaining an electrical connection between the top of the tank and the moving tank roof.

The junction box – Tank top is installed at a fixed point at the top of the floating roof tank and enables a connection to be made between the site wiring from the monitoring unit and a retractable cable which terminates on the tank roof:
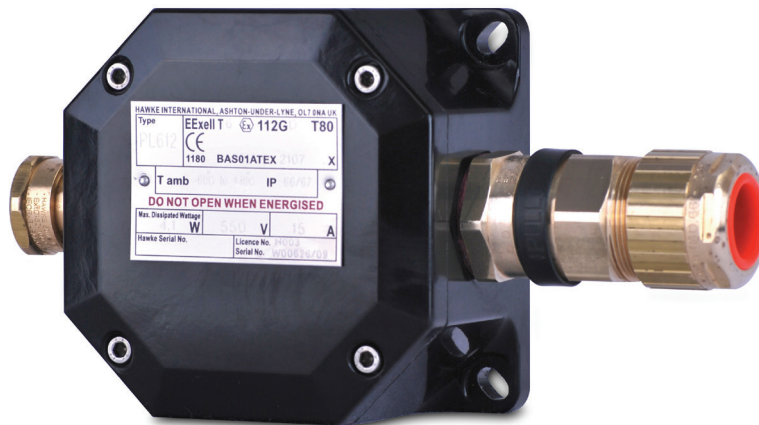
1. Part no. 1-B6782-189
2. Technical specification:
Enclosure
    a. Certification: Increased safety Exe dual certified ATEX/IECEx for use in Zone 1, Zone 2, Zone 21 and Zone 22
    b. Material: GRP, Natural black finish
    c. Dimensions: 120w x 120d x 74h
    d. Weight: 0.8Kg
    e. IP Rating: IP66
    f. Operating temperature: -60°C to +75°C
    g. Temperature Class: T6 40°C
    h. Terminals: 6 x 2.5mm & 1 x Earth 4mm

Cable glands

1. Type: 1 x Hawke 501/453/UNIVERSAL for use with single wire armour 'W', wire braid 'X', steel tape armour 'Z', elastomer and plastic insulated cables.

2. Certification: Flameproof Exd & Increased Safety Exe & Restricted Breathing ExnR Dual Certified ATEX / IECEx

3. Material: Brass

4. IP Rating: IP66

5. Operating temperature: -60°C to +80°C

6. Cable size: Inner sheath 8.4 to 14.3mm dia. Outer sheath 12.5 to 20.5mm diameter

7. Type: 1 x Hawke 501/421 A for use on non-armoured elastomer and plastic insulated cables

8. Certification: Exd, Exe and Extb, suitable for installation in Zone 1 (21) and Zone 2 (22) hazardous areas

9. Material: Brass

10. IP Rating: IP66

11. Operating temperature: -60°C to +100°C

12. Cable size: Outer sheath 10 to 14.3mm diameter

Junction box – Tank roof

This junction box is installed on the tank roof allowing termination of the sensor cable which runs around the rim seal of the floating roof. Three cable glands are provided which allow electrical connection from the junction box on the tank top as well as termination of both ends of the sensor cable.

1. Part no. 1-B6782-190
2. Technical specification:
Enclosure
    a. Certification: Increased safety Exe dual certified ATEX/IECEx for use in Zone 1, Zone 2, Zone 21 and Zone 22
    b. Material: GRP, Natural black finish
    c. Dimensions: 120w x 120d x 74h
    d. Weight: 0.8Kg
    e. IP Rating: IP66
    f. Operating temperature: -60°C to +75°C
    g. Temperature Class: T6 40°C
    h. Terminals: 4 x 2.5mm & 1 x Earth 4mm

Cable glands

1. Type: 1 x Hawke 501/421 A for use on non-armoured elastomer and plastic insulated cables

2. Certification: Exd, Exe and Extb, suitable for installation in Zone 1 (21) and Zone 2 (22) hazardous areas

3. Material: Brass

4. IP Rating: IP66

5. Operating temperature: -60°C to +100°C

6. Cable size: Outer sheath 10 to 14.3mm diameter

7. Type: 2 x Hawke 501/421 Os for use on non-armoured elastomer and plastic insulated cables

8. Certification: Exd, Exe and Extb, suitable for installation in Zone 1 (21) and Zone 2 (22) hazardous areas

9. Material: Brass

10. IP Rating: IP66

11. Operating temperature: -60°C to +100°C

12. Cable size: Outer sheath 3.2 to 8.0mm diameter

Retractable cable

On floating roof storage tanks where the roof moves up and down over a considerable distance it is necessary to provide a flexible electrical connection which can cope with the increased distance between the tank roof and tank top.

The coiled design of the retractable cable allows it to extend and contract as the floating roof moves up and down, this maintains the electrical contact between the junction boxes located on the tank top and the tank roof. The cable would be used in conjunction with the cable collector, Part number B6782-032.

A range of fixed length coils are provided by Kidde and the correct coil length should be selected based upon the height of the storage tank.

Technical specification:

Number of cores : 4
Core Colours: 1 Blue 2 Brown 3 Black 4 Yellow
Core Size: 0.75 mm 2
Core Insulation: Hytrel
Inner Sheath: Polyurethane
Outer Sheath: Hytrel
Cable OD: 10 mm
Coil OD: 230 mm Nom.

Electrical characteristics

Core to Ground Capacitance (Ci): 101 pF/m
Core to Core capacitance (Cd): 83 pF/m
Bus Capacitance (Cbus): 267 pF/m

Cable collector

The cable collector is used with the retractable cable on floating roof tank applications. As the tank roof rises and falls the retractable cable will extend and contract accordingly. The cable collector allows the cable to be neatly coiled without getting caught as the tank roof rises. This prevents the retractable cable from becoming snagged when the tank roof moves up and down.

Cable collector

1. Part no. B6782-002
   a. Material: 1.5mm BS.304 Stainless steel 304
   b. Dimensions: Diameter 624 mm (25")
   Height: 505 mm

Automatic cable reeler

The Kidde automatic reeler is an alternative system to using the retractable cable and cable collector. The Automatic cable reeler enclosure is installed on the top rim of the tank body and is fitted with an Ex approved junction box for the cable termination from the control panel. The cable to the tank roof is automatically fed out and automatically wound in by the reeler to ensure that there is no slack

cable as the tank roof moves. A safety brake is fitted internal to the reeler so that should the cable snap or come free then the reeler will not rapidly wind into the housing removing the possibility of friction build-up and static electricity.

ATEX certification is provided on the automatic cable reelers.

Cable reeler

1. Part nos.:53836-K241EX Auto cable reeler with Polycarbonate junction box.
   53836-K247EX Auto cable reeler with Stainless steel junction box
   2. Material: Stainless Steel
   3. Internal spring: Carbon steel
   4. Internal machinery: ABS/GRP
   5. Junction box: Polycarbonate or Stainless steel
   6. Certified Ex: Contains 4 pass through terminals 2.5mm^2 Ex e certified

Technical specification cable

- Conductors: 4 x 1.0mm^2
- Installation temp: -40 to +70°C
- Specific resistance: 19.5Ω/Km
- Specific capacitance: 80nF/Km
- Specific inductance: 0.9mH/Km
- External insulation resistance: 0.035MΩ
- Operating voltage: Max 48V
- Max cable extension length: 23m

Chapter 3
Commissioning

Summary

This chapter provides information on commissioning.

Content

Commissioning

It is important that the cable is fully tested and inspected prior to handover the following are recommendations to ensure this is carried out correctly.

Passive Checks

1. Visually inspect the cable to ensure correct installation in accordance with the specification and system design.

2. Check the correct alarm temperature cable has been installed.

3. Check each cable for mechanical damage, that all clips are securely held in place and that the cable is correctly installed within the clips.

4. Inspect all joints and terminations to ensure that they are correctly installed and appropriate for the application and environment.

5. Ensure that the correct value of end of line resistor is fitted appropriate to the monitoring equipment to which it is connected.

6. Ensure the correct value alarm resistor is installed in the correct location.

7. Check that insulation resistance between conductors (excluding end of line resistors) is 1000m ohm per km minimum

8. Check that conductor resistance is 100 ohm per km maximum

Functional testing

Alarmline II digital sensor cable is non-restorable and it is therefore not possible to test the cable by applying heat without damaging it. Therefore a simulated alarm test is the recommended solution.

Simulated fault test

1. Digital cable is monitored for open circuit fault only.

2. To trigger a fault condition, remove any connection between the monitoring equipment and the sensor cable.

3. Confirm that the monitoring equipment registers a fault condition for the sensor cable.

Simulated Alarm test

1. Ensure the cable is connected to the monitoring equipment and no faults are present.

Note: Testing of the cable will trigger an alarm at the monitoring equipment therefore it may be necessary to isolate the monitoring equipment outputs.

2. Place a short circuit across the end of the sensor cable.

3. Hold the short circuit in place until the relevant alarm condition appears on the control panel.

4. Once test has been completed remove the short circuit and return all control units to normal status.

Functional alarm test

If required a functional alarm test can be performed by attaching a spare length of sensor cable to the end of the installed cable which can be heated to generate an alarm condition.

1. Fix a short length of cable (1m/3ft) between the end of the installed sensor cable and the end of line device.

Note: Testing of the cable will trigger an alarm at the monitoring equipment therefore it may be necessary to isolate the monitoring equipment outputs.

2. Using a suitable heat source subject the cable to sufficient heat to trigger its alarm temperature.

2. Confirm that the cable indicates the relevant alarm condition.

4. Remove the length of test cable and connect the end of line device to the sensor cable before resetting the monitoring equipment.

Chapter 4
Application guidelines

Summary

This chapter provides guidance on most of the typical applications.

Content

Application guidelines

Kidde Alarmline Digital sensor cables have been successfully installed in a wide range of applications. Each application is different and a thorough risk assessment must be carried out to determine the best type of system and design. This section of the manual provides guidance on some of the typical applications.

The following list includes applications where Kidde Alarmline Digital sensor cables have been used:

- Cable trays and risers
- Boilers
- Conveyors
- Transformers
- Control room and computer suites - floor voids
- Cooling towers
- Alternator pits
- Control cubicle protection
- Ducting and pipework
- Radar
- Missile storage
- Engine bay protection
- Chemical/fuel storage tanks – fixed roof
- Fuel storage tanks - floating roof
- Well heads
- Power units and pumps
- Cold storage warehousing
- Service ducts
- Rolling stock
- Road and rail tunnels
- Dust extraction ducts
- Storage racking
- Grain silos and dryers
- Switchgear
- Cottages - Thatched roof
- Paint spray booths
- Paint storage
- Reactor vessels
- Extraction and ventilation systems
- Wet bench applications
- Food processing/preparation areas
- Car parks
- Passenger walkways
- Distilleries
- Baggage conveyors

- Escalators
- Industrial kitchens - Canopy protection

This list is for guidance only and other applications may exist which have not been included.

Conveyor belts

Conveyor belts are used on many sites to transport materials/product around the facility which can be anything ranging from coal, chemicals, luggage, minerals, grain etc.

The main causes of fires on conveyor belts are as follows:

- Friction: Misaligned belts/Seized rollers
- Overheat: Drive motors
- Burning material: Combustible material being carried on conveyor

The effect of a fire on a conveyor can be significant as a moving conveyor could assist with the spread of fire over a larger area.

A number of important issues need to be considered when carrying out the risk assessment of the conveyor belt:

Table 10: Conveyor belt risk assessments

Assessment	Considerations
Location	If the conveyor belt is located outdoors and is not covered then the detection system must be able to withstand being exposed to the elements without any effect on performance or causing false alarms.
Accessibility	If accessibility is likely to be an issue then a system which requires little or no maintenance once installed is a significant advantage. Accessibility will become more of an issue on covered conveyors.
Key risk areas	Many of the key risk areas may be out of site i.e. roller bearings underneath the belt, drive motor, cabinets etc.
Fuel type	What type of material is being carried on the conveyor is it combustible, is there the potential for a dust explosion. It may be necessary to provide a detection system which is suitable for hazardous areas. The fuel type would also help determine the requirement for any automatic fire-fighting equipment and which type.
Interaction	Should the detection system trigger an alarm what actions are to be taken i.e. Automatic shutdowns, Visual/Audible warnings, activation of automatic firefighting equipment etc.

Alarmline II Digital sensor cable can provide a very effective detection solution for the protection of conveyor belts. The flexibility of the sensor cable allows it to be installed very close to the point of risk i.e. in close proximity to the belt and the rollers. Once installed the cable should require no maintenance unless it has been activated then only the damaged section of cable need to be replaced without replacing the whole system. As it is a heat sensor the cable is unaffected

by the potential harsh environmental conditions providing the correct temperature cable is selected based on the maximum ambient.

Figure 15 shows the recommended areas for installing Alarmline II Digital sensor cable on a conveyor belt.

Three locations are recommended for the sensor cable to provide complete detection on the conveyor belt:

Table 11: Recommended locations

Location	
Roller bearings	Problems with friction from a misaligned belt or a seized bearing will cause an overheat, by placing the sensor cable as close as possible to the roller bearings the earlier a potential incident can be detected. A controlled shutdown can be implemented preventing a potential fire incident. It is recommended that cable is run down both sides of the conveyor.
Above the belt	If the conveyor is covered it is recommended that sensor cable is fixed to the canopy above the conveyor belt to detect for any fires on the belt, enabling a controlled shutdown preventing potential fire spread by the moving escalator.
Underneath	It is a recommendation that sensor cable can also be installed underneath the conveyor to detect any fires that may occur due to trash or combustible fuel that may have fallen from the conveyor belt.

Figure 15: Alarmline II Digital sensor cable (Shown in red) installed on a covered conveyor
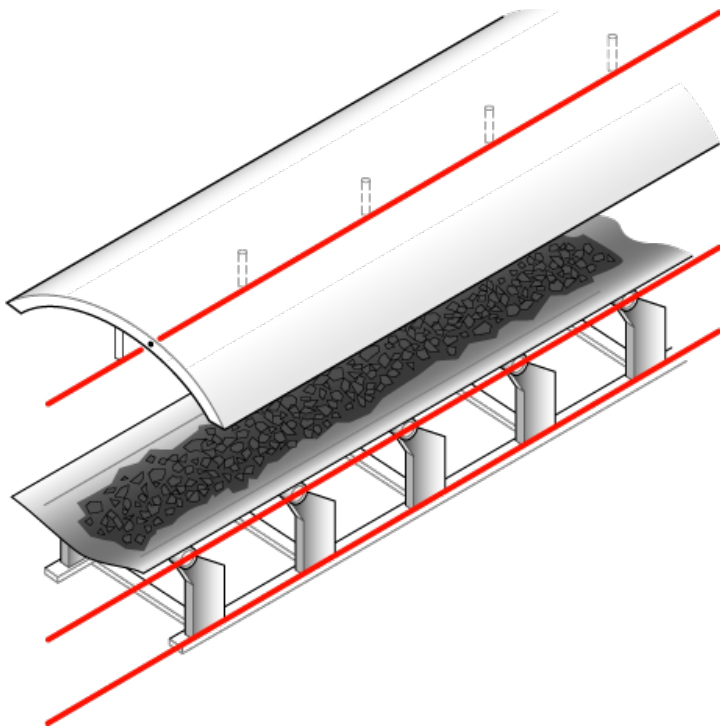
The sensor cable should be installed in such a way as not to interfere with maintenance and to prevent mechanical damage. Fixing clips should be selected

based upon fixing location and available fixing surfaces, most commonly edge clips have been used to fit to the metal framework of the conveyor.

Escalators and moving walkways

Escalators and moving walkways can be found in many buildings such as shopping centres, airports, train stations etc. Underneath the escalator there are many mechanical moving parts which if they become seized or damaged can overheat due to friction. Due to the confined space under the escalator and the harsh operating conditions i.e. dust, oil, grease it is a very difficult environment to install any fire detection equipment.

Like the conveyor belts discussed previously Alarmline II Digital sensor cable is flexible enough to be installed close to the main points of risk and be unaffected by the environment. Once the cable has been installed there is no need to access it for maintenance purposes.

Due to the number of moving parts within the escalator it may be advantageous to use the stainless steel braided version of the cable which provides additional mechanical protection. The recommended clip type for this application is the edge clip making installation easier and quicker.

There are three key areas of an escalator that should be considered when providing detection with Alarmline II Digital sensor cable:

- Bearings
- Trash collector trays
- Drive motor housings

Alarmline Digital can be used to protect all of these areas. Figure 16 shows the principle of protecting an escalator/moving walkway with Alarmline II Digital sensor cable. A continuous run of cable around the bearings and the trash collecting trays at either end provide significant coverage.

Figure 16: Protecting escalators/moving walkways using Alarmline II Digital sensor cable
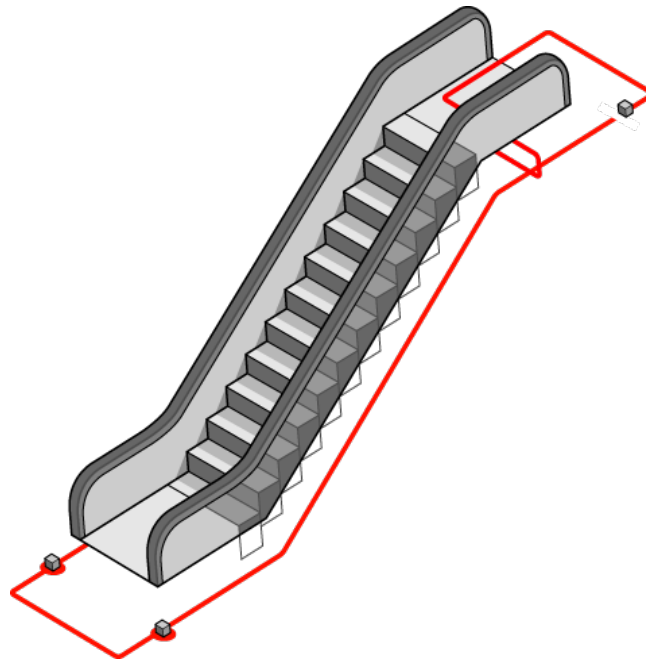
Cable Trays and Racks

In applications such as Petrochemical plants, Power generation plants etc. miles and miles of cables are used transporting high voltages around the plant. These can be external cable trays exposed to the elements or can be underground cable trays hidden out of sight; either way overheating in a high voltage cable can cause significant damage. Alarmline II Digital sensor cable is a recognised solution for being able to protect these cables close to the point of risk.

As shown in Figure 17 sensor cable is run above the cable tray to be able to detect an increase in temperature from the cables being protected. Generally one length of sensor cable would be run down the cable tray but this may depend on the width of the cable tray. Where multiple cable trays exist it is recommended that sensor cable is run above each cable tray as shown in Figure 17.

In power generation plants and large industrial installations the general principle of applying Alarmline II Digital sensor cable to cable tray and racks follows the recommendations of the United Kingdom electricity generation companies.

1. A single sensor cable can be used to protect cable trays up to 600mm wide.

2. Cable trays over 600mm wide will require multiple runs of sensor cable to provide adequate coverage i.e. cable tray up to 1200m wide requires two sensor cable runs, cable tray up to 1800mm wide would require three sensor cable runs and so on.

3. Sensor cable should be installed between 150mm and 250mm above the cable tray its protecting.

The Alarmline II Digital sensor cable is supported at 1m spacing at a height of between 150 and 250mm above each tray. This provides maximum operating sensitivity without obstructing access to power cables etc. mounted on tray work. It is recommended to install sensor cable on the underside of the bottom tray or rack to further protect against "rubbish" fires.

Figure 17: Alarmline II Digital sensor cable providing cable tray protection
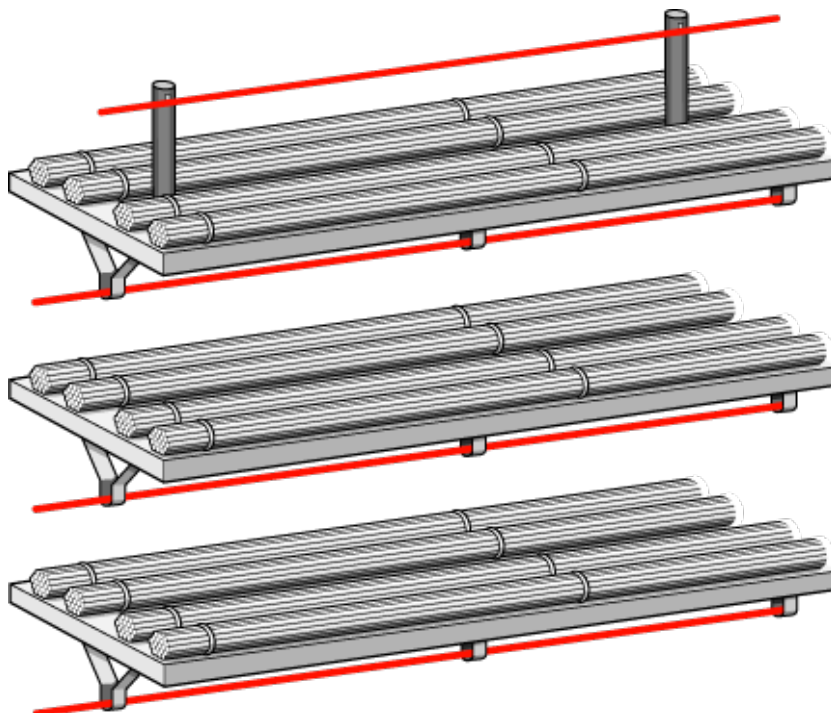
'V' clips are specially designed to support cables underneath layers of cable trays, this is a spring steel clip designed to fit the standard holes on a cable tray, see Figure 8: V clip installation, page 22 for further details.

Floating roof storage tanks and bund areas

Floating roof storage tanks are a high risk application and liaison with experienced site personnel with regards to the design and installation requirements is essential.

Floating roof storage tanks are specifically designed for the safe storage of petroleum products such as crude oil or concentrates the roof is designed to move up and down as the liquid content of the tank changes so there is no vapour space. A rim seal system is provided between the tank shell and the roof which prevents rim evaporation.

Alarmline II Digital sensor cable can be installed to detect an overheat condition or fire around the rim seal and can be used to provide a control signal to an automatic firefighting system such as a foam system.

Sensor cable is installed close to the upper edge of the weather seal, using the roof's steel straps or the edge of the foam dam, where provided, as anchor

points. Alternatively, support clips may be provided to suit. Sensor cable (or its interconnection wire) should be installed with consideration of the rise and fall of the floating roof, preferably using an approved retractable cable system, see the section "Hazardous area installation".

Alarmline II Digital sensor cable is classified as a simple device therefore requires no certification for use in hazardous areas, although suitable safety barriers MUST be installed between the sensor cable and the control equipment located in a safe area of the site. The type of safety barrier will be determined by the monitoring equipment this information should be readily available from the manufacturer of the monitoring equipment. Figure 18 and Figure 19 show the principles of installation.

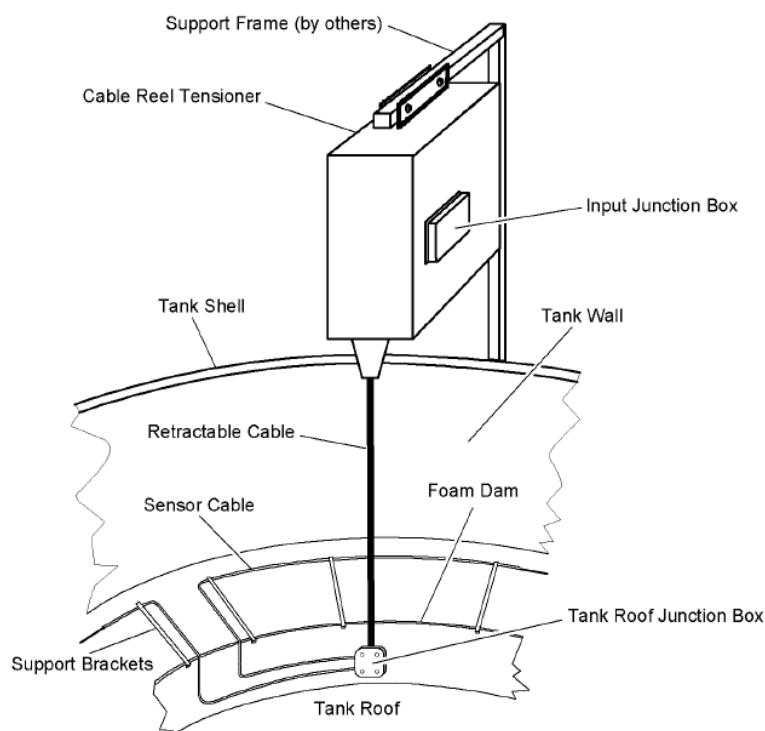**Figure 18: Basic configuration of Floating roof tank**
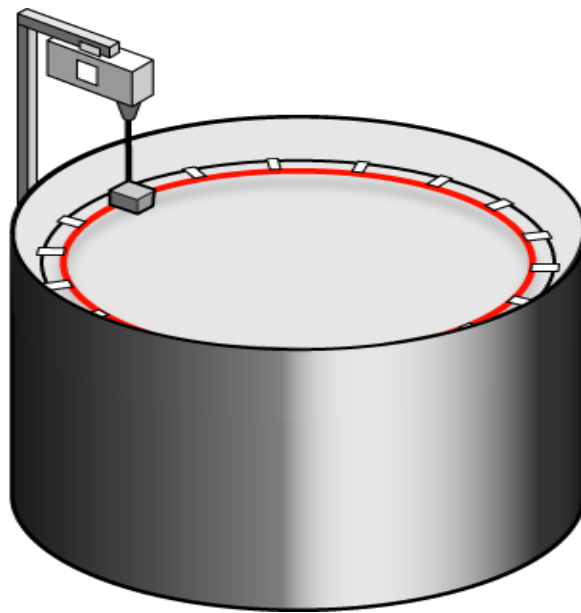
Figure 19: Detail of Floating tank roof detection system installation

Cold storage/Freezer warehouses

Cold storage areas and Freezer warehouses provide a difficult environment for many types of fire detection due to the sub-zero operating temperatures of such areas. Alarmline II Digital sensor cable can provide an acceptable solution with its minimum operating temperature of -40°C (-40°F) allowing it to be installed in the risk area without being effected by the environment.

There are two ways Alarmline II digital sensor cable can be used to provide fire detection in such an application providing general area coverage or in-rack detection.

General area coverage would follow the requirements detailed in section "Guidelines for Area coverage" on page 11 The alternative type of installation for these applications is storage rack detection. As with other applications such as conveyors, escalators etc. a significant advantage of Alarmline II Digital sensor cable is the flexibility to be able to install it close to the point of risk. In storage areas by being able to install the cable within the storage racking itself it is closer to the risk and therefore able to detect an overheat condition or fire condition considerably quicker than general area heat sensors. This system also allows more accurate location of where the condition occurs to provide quicker action. Installation of the Alarmline II Digital sensor cable can be done quickly and easily by using edge clips to fix the sensor cable to the framework of the racking. It is important to ensure the cable is installed in a position where it is not likely to be damaged by loading and unloading of the storage racks.

There a number of precautionary measures that must be considered when installing Alarmline II Digital sensor cable:

1. Installation should not occur in temperatures lower than -11°C (12°F) as this can make the cable less flexible and more prone to damage. It may be necessary to raise the temperature of the area for installation and return to the normal operating temperature once installed.

2. Electronic interfaces and monitoring equipment must be installed outside the low temperature area and therefore interposing/leader cables and IP66/67 junction boxes will be required.

3. The minimum bend radius at low temperatures is increased to 100mm.

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KeiSon
P R O D U C T S

Thank you for reading this data sheet.

For pricing or for further information, please contact us at our UK Office, using the details below.

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