



Signaline SKM-03 & Signaline SKM-03UK

Instruction Manual



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1.0 General/Product Features

- The Signaline SKM-03 and the Signaline SKM-03UK are linear heat detector controllers
- The maximum length of cable per controller is 300m
- Temperature increases are detected along the entire cable length
- The controller will accept the following cables:
 - Signaline HD, for use in general applications
 - Signaline HD-R, resistant to oils, chemicals and UV light
 - Signaline HD-S, exceptional mechanical protection
- The system is easy and economical to install
- The Alarm indicator is in accordance with DIN 14 623
- Approved to DIN/EN 54 pt5 Class C
- The VdS approved certificate No. is G203076 (SKM-03 only)

The sensor cable system is an early warning fire detection system when used with the Signaline SKM-03 or the Signaline SKM-03UK controllers. It can be used to detect fires and over heats on conveyor belts, cable trays or tunnels. For detection in open areas it can be mounted on the ceiling or also be mounted directly above a cable tray.

The sensor cable will self adjust to ambient conditions. It is also unaffected by steam, dust, chemicals (HD-R), or smoke thereby reducing the likelihood of false alarms which can happen with traditional fire detection.

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1.0 General/Product Features

Signaline Analogue Heat Sensing Cable System

- 1) Controller type SKM-03 or SKM-03UK
- 2) End of line box for SKM (included)
- 3) Sensor cable
 - standard (Signaline HD)
 - with Rilsan coated (Signaline HD-R)
 - with Stainless Steel protective braiding (Signaline HD-S)

Sensor Cable Construction

The cable is made of an inner and an outer conductor, the outer conductor is tinned copper braid. The insulation between both conductors is made from a plastic material with a negative temperature coefficient, which means with increasing temperature, the insulation resistance decreases.

In the end of line unit, at the end of the sensor cable, the sensor cable is connected with a defined resistor of 3K6 Ohm. Therefore, the whole system is always monitored for wire breakage (open circuit) and short circuit. A break or a short circuit on one of these conductors causes a fault alarm.

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2.0 Technical Data

Detector

Operating Voltage	24V DC
Current consumption standby	28 mA
Current consumption alarm	58 mA
Parallel indicator (external)	-Ub max. 30mA
Fire relay contact	N/C-C-N/O Relay contact
Fault relay contact	N/C-C-N/O Relay contact
Max. contact load	30V/1A

Temperature range

-25°C to +50°C

Indicators

- Fire Alarm
- Operation
- Malfunction

red LED
green LED, on
green LED, off

Dimensions Controller

110 x 110 x 65 mm

Weight

270g

Color

grey, RAL 9002

Ingress Protection

IP65

Dimensions end of line box W/H/D

80 x 80 x 52 mm



2.0 Technical Data

Heat Sensing Cable

Signaline HD

- Red outer sheath
- Plastic coaxial conductor
- 3.25 mm sensor cable diameter
- 1.6 kg per 100 metres

Signaline HD-R

- Black nylon outer sheath (Rilsan)
- plastic coaxial conductor
- 4.00 mm sensor cable diameter
- 3.0 Kg per 100 metres

Signaline HD-S

- Stainless steel outer braid
- Red sheath
- Plastic coaxial conductor
- 4.20 mm sensor cable diameter
- 3.75 Kg per 100 metres

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3.0 Installation Notes

The Signaline SKM controller connected to the sensor cable should be mounted in the area requiring protection. The controller and cable are designed and certified in conformity with VdS and EN 54 pt5. Local fire regulations may vary, particularly outside Europe. Always conform to your local fire regulations.

The cable is not to be installed 6 metres higher than the protected area. The sensor cable must be installed as per *Figure 1*. It is important to make sure that the distance between the wall and the sensor cable is at least 0.5 metres. This also applies when laying parallel to beams. Crossing of ceiling beams is possible, but the length of sensor cable on the beams should not be longer than 10% of the overall cable length.

Before you install the sensor cable system, make a sketch drawing of the area which will be monitored and mark out the proposed layout. The sensor cable must be laid out in accordance with BS, EN, DIN or your local regulations. The following points should be adhered to:

- The sensor cable should not have any contact with a material which cools the cable because this causes an alarm delay
- Laying on sharp objects and crushing the cable is to be avoided so that the outer insulation of the sensor cable is not damaged



3.0 Installation Notes

- When connecting two lengths of sensor cable use a Signaline Universal Connector Box (Signaline UCB) available from your local Signaline distributor.
- The minimum bend radius for Signaline Analogue Heat Sensing Cables are as follows:
 - HD - 5mm
 - HD-R - 18mm
 - HD-S - 20mm
- It is not advisable to mount Signaline Analogue Heat Sensing Cables in direct contact with a surface. Please see www.signaline.com for suitable fixing solutions. See *Figure 3* for an example of a fixing solution.
- The distance between the fixing clips should not exceed 1m.
- Mounting the sensor cable near objects which radiate heat must be avoided. These could be powerful light sources, steam pipes, heaters or similar and may cause false alarms.
- The end of line box must be mounted in the same zone as the controller.
- The end of line box should, where possible, be mounted at a height of 1,80m (+10cm/-20cm) and marked with a sign.

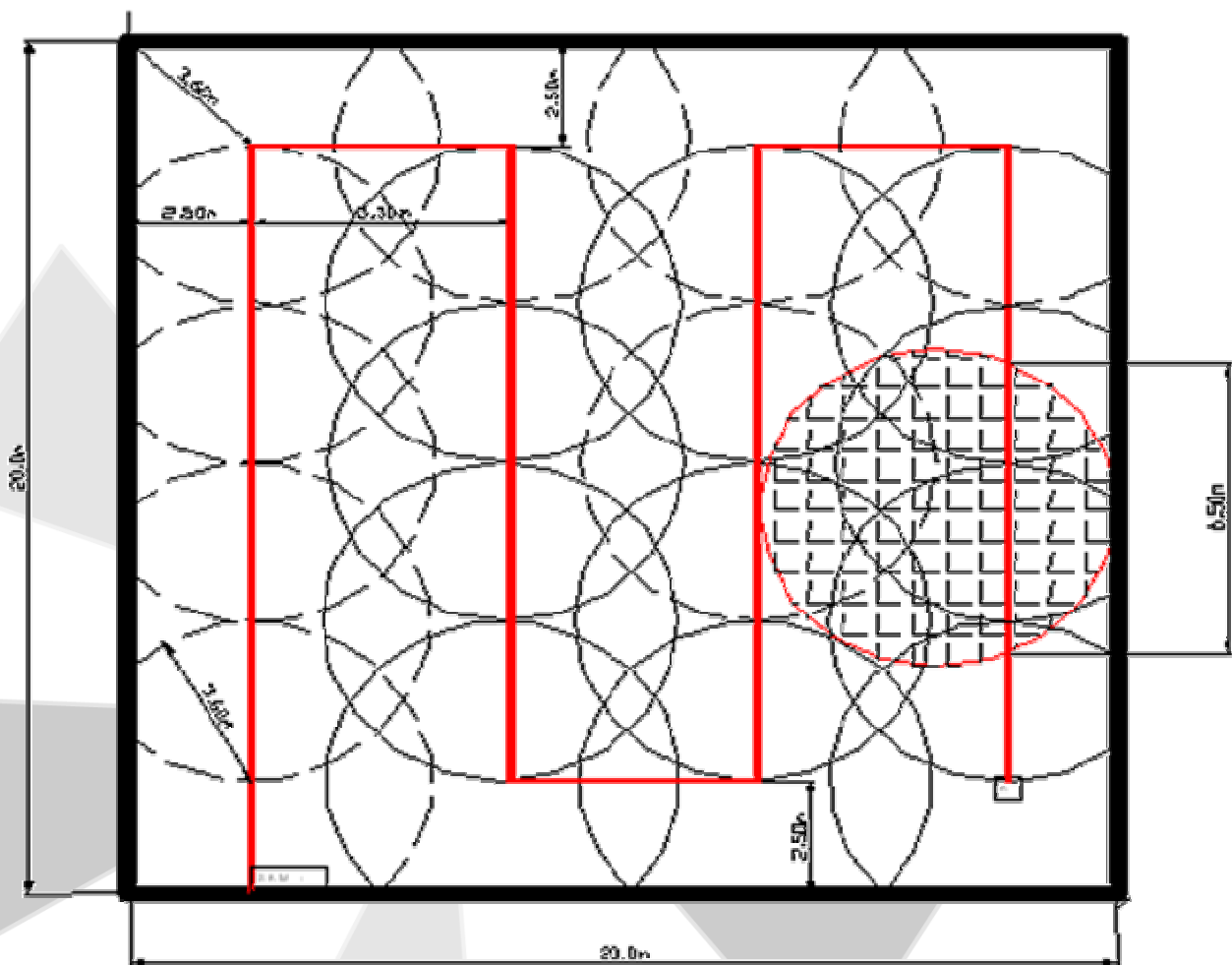
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3.1 Complete Monitoring in Accordance with EN54 pt5

Figure 1 demonstrates a detection system which is in accordance with EN54 pt5 for 5 metres of sensor cable. It is important to make sure that from every point of the monitored area at least 5 metres of sensor cable is located within a radius of 3.6m.

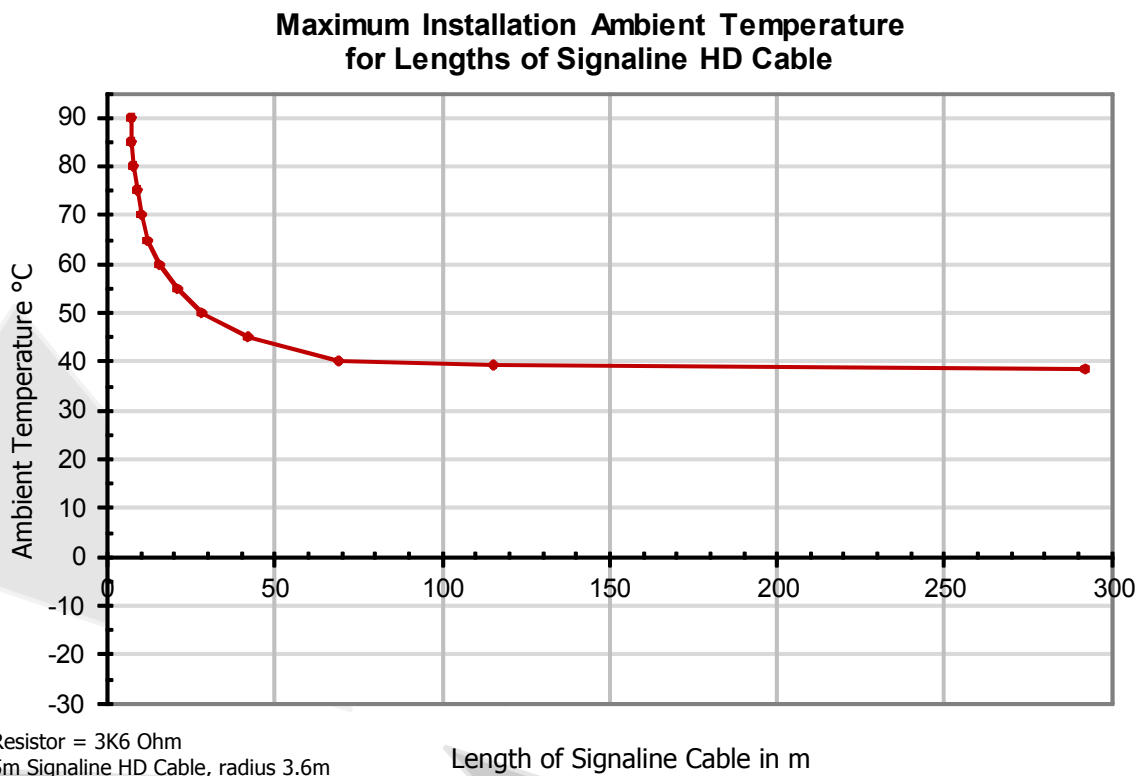
Figure 1



3.2 Maximum Cable Length

The Figure below shows the maximum allowed cable length dependent on the maximum ambient temperature

Figure 2



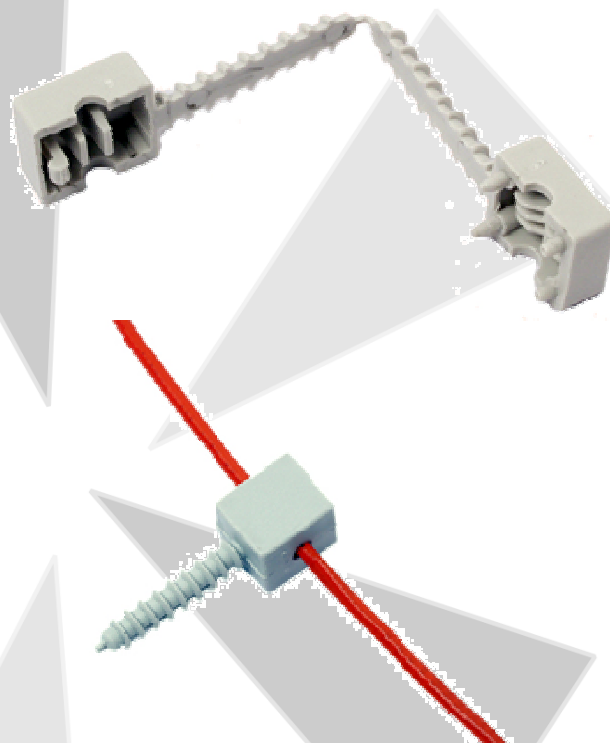
An alarm will be detected when 5 metres of sensor cable is heated between 84°C and 100°C. If a large length of Signaline Analogue Heat Sensing Cable is heated then the alarm temperature will be proportionally lower.

4.0 Assembly Tools

To attach the sensor cable to the protected area you can use different clips depending on your application. The cable should be at least 5mm away from the ceiling.

The K clip is simple and easy to install, allowing lower installation time and cost. Simply drill a 6mm Ø hole, click the cable in place, and plug it in. K clips can be used with Signaline HD and Signaline HD-R cables.

Figure 3



For alternatives please contact our offices;

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5.0 Control Unit Indicators

The indicators for alarm and fault alarm are visible through the clear cover on the controller housing.

The alarm indicator is compliant with DIN 14 623

Figure 4



- When the green LED glows the Signaline SKM Controller is operational
- If there is no green LED then the Signaline SKM controller has a fault
- When the red LED is illuminated then the Signaline SKM controller is indicating a fire

5.1 End of Line Unit

Signaline SKM-03 End of Line Unit

In the end of line unit you will find a 3K6 Ohm resistor. This is used for monitoring incase of a cable break or short circuit. There is no setup required for this unit

Signaline SKM-03UK End of Line Unit

In the end of line unit you will find a set of dip switches. These should be set according to the length of cable installed and the required alarm temperature. This is shown in the table below

60°C

Installed Cable Length	Switch 1	Switch 2	Switch 3	Switch 4
5 to 25 m	X			X
50 to 75 m	X			
75 to 100 m		X		X
125 to 150 m		X		
175 to 250 m			X	X
275 to 300 m			X	

80°C

Installed Cable Length	Switch 1	Switch 2	Switch 3	Switch 4
20 m		X		X
50 m			X	

(where X = on)

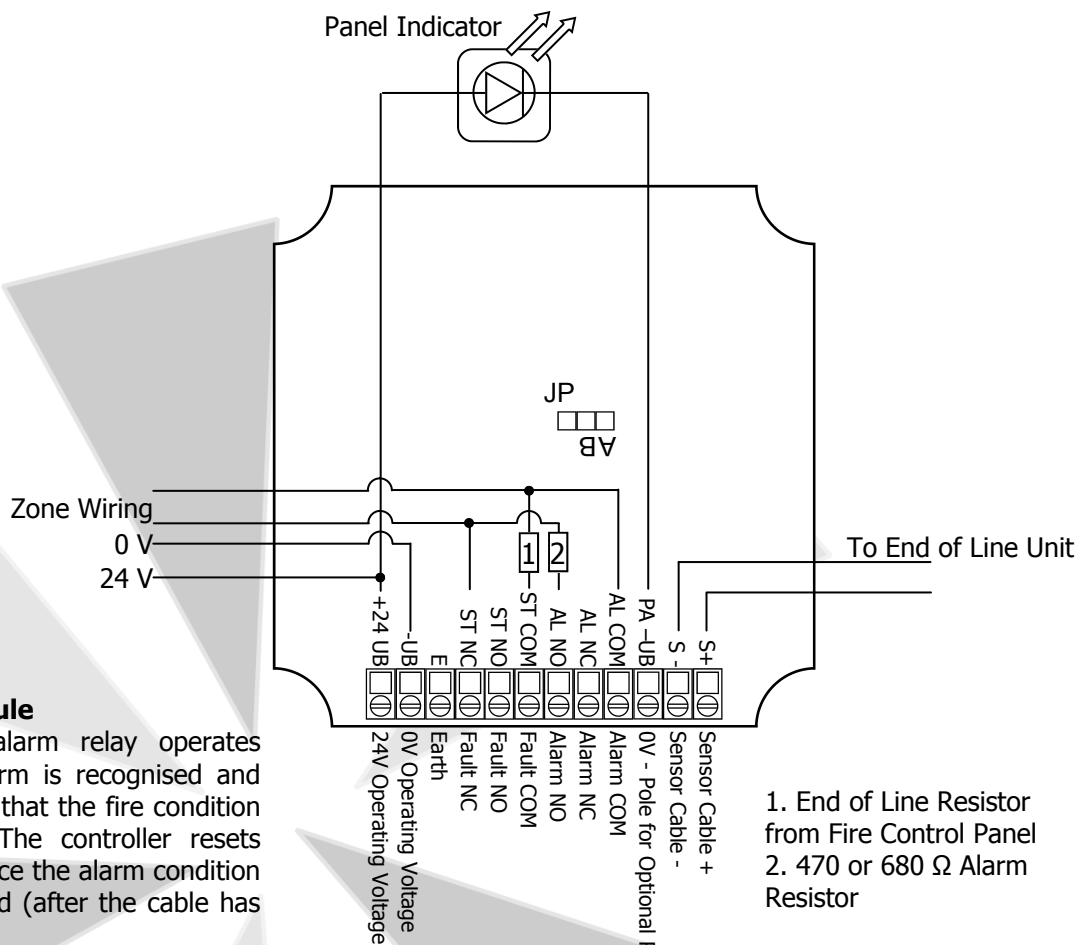
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6.0 Wiring of the Control Unit

The Signaline Control Unit is designed that all the LEDs are behind the clear cover in the IP65 housing. Connect the cable using the 12 way terminal block. Please see *Figure 5*.

Figure 5



Jumper Schedule

Open - The alarm relay operates when a fire alarm is recognised and for the duration that the fire condition is maintained. The controller resets automatically once the alarm condition is no longer valid (after the cable has cooled down).

Pos A - When a fire alarm is recognised, the alarm relay latches (even after the cable has cooled down) until the controller is reset. This is done by interrupting the supply voltage for approximately one second.

Pos B - Test

1. End of Line Resistor from Fire Control Panel
2. 470 or 680 Ω Alarm Resistor

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7.0 Testing the System

The green LED lights when the operating voltage is good and there is no fault.

SKM-03 Controllers: With the jumper open (see *Figure 5*) heating up a minimum of 5 metres of sensor cable to 100°C (max. 115°C) will raise an alarm. Allow the cable to cool and the controller will reset. Return the jumper to position 'A'.

SKM-03-UK Controllers: With the jumper open (see *Figure 5*) heating up a 1 metre of sensor cable to 60°C or 80°C depending on the End of Line box switch setting will raise an alarm. Allow the cable to cool and the controller will reset. Return the jumper to position 'A'.

A 'Test' alarm could also be simulated by setting the jumper to position 'B'.

The red alarm LED and remote indicator if connected should illuminate in both cases.

IMPORTANT NOTE: If the sensor cable is heated up to 150°C or more then that part of the cable cannot be used any more and should be replaced.

WARNING: Obtain permission of the site safety manager before starting live heat tests. Live heat tests MUST NOT be conducted in a designated hazardous area or when the Signaline HD sensor cable forms part of an intrinsically circuit.

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8.0 Calculating the Installed Length of Sensor Cable

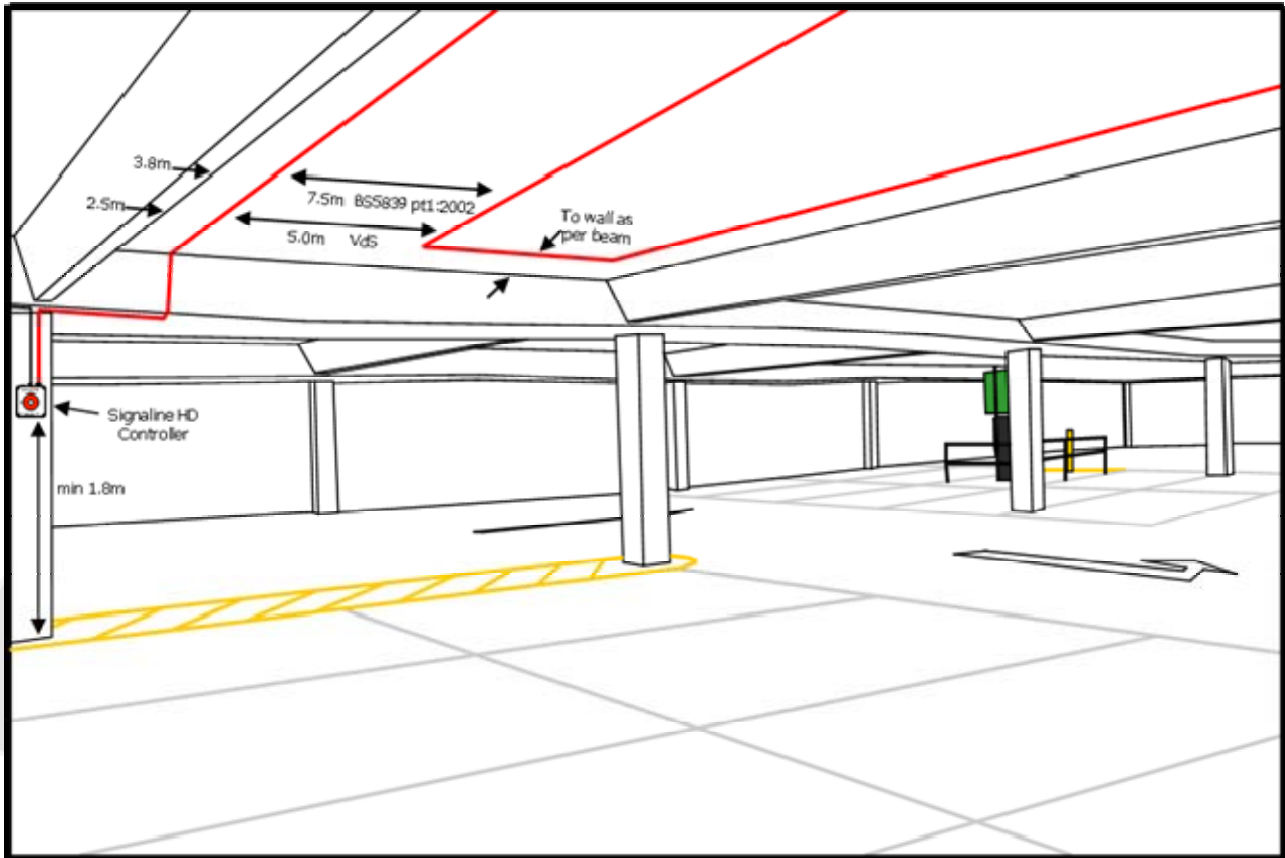
If the total length of an installed sensor cable is not known, it is possible to be calculated with the help of a multi-meter. For this then both wires of the sensor cable should be clamped together in the end of line unit. The resistance of the cable should then be measured at the other end. The sensor cable has a resistance of 0.2 Ohms per metre.

The cable length is calculated as follows:

$$\text{Length in metres} = \frac{\text{resistance (Ohms)}}{0.2 \text{ (}\Omega/\text{m)}}$$

9.0 Installing Sensor Cable in a Car Park

Figure 6

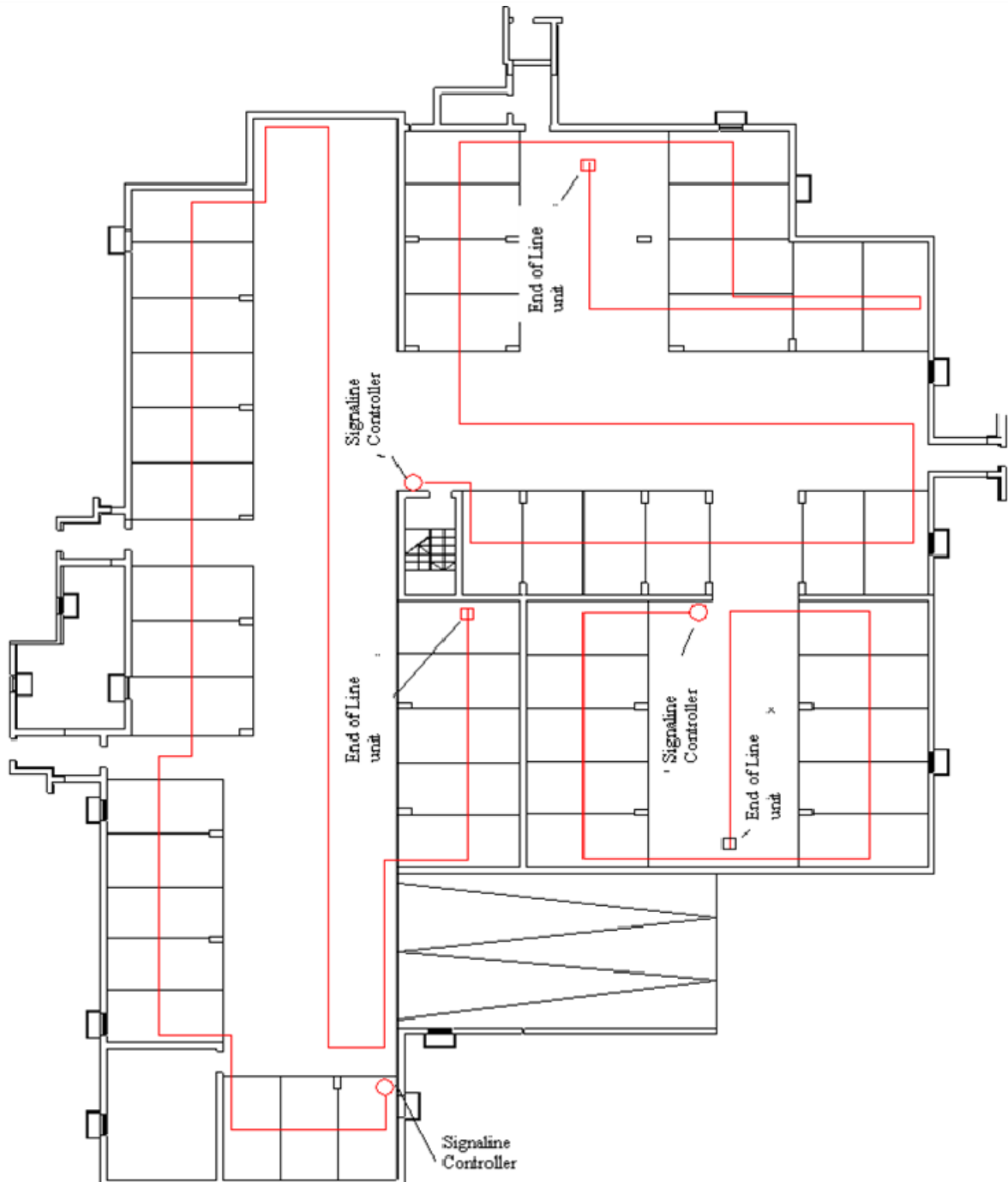


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9.0 Installing Sensor Cable in a Car Park

Figure 7



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